

WPI's Gordon Library Video Game Archive Collection and Use Pertaining to the Nintendo
Entertainment System

An Interactive Qualifying Project
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Abstract

This project attempts to make the Gordon Library's Video Game Archive more accessible to the WPI community and to allow easier accessioning for newly donated items. We created resources for archive staff to take in new items, properly clean and care for items and setup exhibits that require video game related items.

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Executive Summary

Our goals for this project were focused around restoring many of the items in the archive to working condition, as well as making a set of guidelines to make sure items in the future could stay in working condition and allow other people to enjoy the games found in the archives, to get a better understanding of the art form and how it has progressed. We also set a goal of starting a new Interactive Media Archive (IMA) inventory to catalog each of these items, with a more detailed description of condition and grouping by system versus other means. After completing many of these previous goals, we set an additional goal of creating an exhibit to showcase the items in the Interactive Media Archive.

To accomplish these goals, we worked with the archives to create multiple resources for the staff and learned how the archives take in items from donations. In order to allow others to enjoy the games found in the archive, we created a station that could be set up and moved easily for anyone to use. This station was inspired by previous IQP team's projects. The station uses two CRT TVs to allow for two NESs to be used at once and to create a similar environment to what it was developed with. This setup will be available by request for interested students, IMGD or otherwise. These students can contact the Gordon Library Archive to set a time to use the station for educational or recreational use, thus furthering our project's goal of education and preservation.

To restore the NES items to working condition, we used a cleaning solution to clean the game cartridges and ports. We then bought replacement parts for the consoles and repaired the broken parts. We created a cleaning and maintenance guide to help the archive staff with cleaning and troubleshooting potential problems with the NESs, as seen in **Appendix B**. We then tested each item to make sure they are in a usable state and we were able to restore most of the collection.

When we first started working in the archives, we were introduced to the IMA list that contains each of the items donated with a certain collection⁴. This list was confusing to use since it was organized by the group or individual who donated each set of items, versus by what system or generation each item belonged to. We felt that the archive should be organized into

⁴, (2014). A guide to the WPI video game collection. .

collections based on the consoles each item is associated to. We began to work with going through each series and sorting the games and accessories into separate sections based on the console it was associated with. We mostly focused our work with the Nintendo items since that was our goal for the project, but we did spread into other consoles as we went on. Each item was listed with its name, sorting number, system, release date, publisher, acquisition date, original archive box number, new archive box number and condition. This can be seen in **Appendix E**. Even though this list is not complete we left it available for future IQP groups to add in other console groups following the format we left.

To help the archive make more informed decisions on what video game items to take in, we developed an accessioning guide, in **Appendix G**, detailing items of note and how to rate the quality of the item. Our goal was to focus mainly on the NES collection of games in the archive, so we created a list of all officially released NES games in order of value to the archive. The games were ranked 1-5 with the following attributes in mind: cultural significance, brand origins, history with the NES, sales numbers, notable features, and popularity. To help determine the quality of donated video game items, we created a step by step guide to walk the staff member through the process of determining whether to keep or return the items. In **Appendix C**, there is the guide that was created. There are two versions of the guide, an NES version and a general version. The guide was created with a priority flow where the first steps help to find important items faster. For example, the first aspect to look for in an item is to see if it is sealed, has a box or has a manual. If the item in question does not meet those requirements, the next step is to look at its rating on the accessioning list and the quantity in the archive currently. Our goal was to ensure that the staff could make proper decisions on determining whether or not to take an item in even if they are not familiar with video game items.

Our final goal was achieved by creating a library exhibit about the history of Mario. “Let’s-a-Go! A Brief History of Mario” was a library exhibit that shows a brief history of the Super Mario series from Super Mario Bros. to Super Mario Sunshine. We wanted to display what the archive had and to let students know about the IMA. We also wanted to make the exhibit interactive, so we scheduled certain times in the week in which the exhibit games were playable. The exhibit consists of three parts: The entrance, the main table, and the NES Station, as shown in **Appendix F**.

The transient nature of electronics means that preservation of artifacts is a key task, and one with a constantly-ticking clock. As time passes, more and more video game related items will become unavailable due to plastics and electronics corroding, the deterioration of magnetic storage systems, and the greatest threat of all, obsolescence. Many individuals have simply forgotten that they own something, be that a console or a game or an old trunk of shoes. The goal of the archives is to prevent the loss of components that otherwise would be destroyed by time, and a key aspect of this undertaking is to find those forgotten objects in attics and closets and garages and add them to the collection.

We accomplished every goal we set in this project, from restoring the old hardware, to establishing the station for playing games both educationally and recreationally, to finally setting up the exhibit and publicizing both it and the existence of the IMA. The greatest advice we can give to those who continue this project is to be respectful of the hardware, to be sure to plan ahead for large events like an exhibit, and to follow our guidelines but do not be afraid to modify and improve them as you find shortcomings.

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1-Introduction

The Merriam-Webster Dictionary defines an archive as “A place in which public records or historical materials (such as documents) are preserved.”⁵ The Gordon Library Archive maintains a large quantity of historically significant content, ranging from books such as Sir Isaac Newton’s *Philosophiae Naturalis Principia Mathematica* (Third Edition) to first edition manuscripts of works by Charles Dickens to an extensive collection of video game-related esoterica. The current administration at the WPI Gordon Library Archives believes that video games have had a significant cultural impact historically and deserve to be preserved in the archives alongside the works listed above. The mission of the archives is "To preserve video games and related materials, in order to provide an insight into the unique culture that formed around video games, and to provide an educational resource⁶." One may have heard of the tragedy of early silent films, where an estimated 90 percent of all American silent films made before 1950 have been lost forever.⁷ Our IQP, as well as those previous with the archives, aim to prevent any similar losses of history from occurring within the realm of video games.

Two IQP teams^{8 9} have worked on the archive in the recent past, which inspired us to go in the direction we did with this project. Our central goal was to make the video game archival artifacts available to the student body at WPI for both educational and entertainment purposes. In 2006, the earliest projects related to the archive were completed, which established the video game collections that the Gordon Library has today^{10 11 12}. We have been furthering the goals of these other projects, but while they mainly focused on other consoles and the establishing of the archive’s collection, we have concentrated our efforts on the preservation of the NES and its

⁵ "Archive." Merriam-Webster. Accessed February 11, 2019. <https://www.merriam-webster.com/dictionary/archive>.

⁶ Perry, Brendan A., Arnold, Matthew J., Benecke, Nikki L. *Establishing a collection of video game ephemera*. Worcester Polytechnic Institute. WPI Digital Commons. March 13, 2006. Accessed February 28, 2019.

⁷ Kehr, Dave. "Film Riches, Cleaned Up for Posterity." *New York Times*, October 14, 2010. Accessed February 11, 2019. <https://www.nytimes.com/2010/10/15/movies/15restore.html>.

⁸ Tang, David Yuhua, and Rasheeda Samih. *Expanding the Video Game Archive at Gordon Library*. Worcester Polytechnic Institute. WPI Digital Commons. April 30, 2018. Accessed February 11, 2019. <https://digitalcommons.wpi.edu/cgi/viewcontent.cgi?article=3491&context=iqp-all>.

⁹ Welch, Sean P. *Revising the Atari Collection and Maintenance Policies of the WPI Gordon Library*. Worcester Polytechnic Institute. WPI Digital Commons. May 2017. Accessed February 11, 2019. <https://digitalcommons.wpi.edu/cgi/viewcontent.cgi?article=1532&context=iqp-all>.

¹⁰ Perry, Brendan A., Arnold, Matthew J., Benecke, Nikki L. *Establishing a collection of video game ephemera*. Worcester Polytechnic Institute. WPI Digital Commons. March 13, 2006. Accessed February 28, 2019.

¹¹ Germain, Brandon M., Sutman, Eric Bishop, Foertsch, Montana J. *The game archives projects*. Worcester Polytechnic Institute. WPI Digital Commons. April 24, 2006. Accessed February 28, 2019.

¹² Chung, Christopher R., Chipman, Joseph Daly, Fanara, Steven Z. *ESTABLISHING A VIDEO GAME STUDY AREA*. Worcester Polytechnic Institute. WPI Digital Commons. March 9, 2010. Accessed February 28, 2019.

ephemera. We performed detailed analyses of history pertaining to the NES and obtained a perspective on the time in which it released and the context for its success, as well as gaining a better fundamental understanding of the inner workings of the system, allowing us to repair several damaged NESs that the archive had obtained. Our research has been wide-ranging and very in-depth, culminating in our creation of the exhibit that ran for three weeks in the WPI Gordon Library, wherein we demonstrated our knowledge of the subject matter at hand in a way that would make the content more available to our fellow students.

2-Background

2.1-A Brief Summary of the Consumer Market for Video Games at the time of the NESs Release

The main issue that Nintendo of America faced at the time of the release of the Nintendo Entertainment System was the Great Video Game Crash of 1983. The event was a recession (primarily in North America) in the video games market that had been caused by a variety of factors but is generally attributed to the oversaturation of the market¹³ for games and consoles, including both the Atari 2600 and 5600 as well as the Intellivision and ColecoVision. The surplus of differing consoles also led to the splitting of the market, such as what occurred in the early 2000s in the “exclusives war” between Microsoft’s XBOX and Sony’s PlayStation 2. The oversaturation led to many games feeling like cheap clones or low-effort products, causing distributors and consumers to lose faith in the idea of video games as a whole. The situation was further complicated by the fact that many people were moving to playing computer games as opposed to console games. Many of the predicted uses for home computers at the time had not come to fruition, but many people quickly discovered they were excellent for playing games, further driving the console market into the ground.

2.2-A Brief History of Nintendo leading up to 1982

Nintendo Co., LTD was founded in 1889. The initial focus of the company was on manufacturing playing cards¹⁴, which it continued doing until the 1960s, when it began branching out into other commercial interests such as, among others, starting a taxi service that eventually failed and an instant rice company, which also failed¹⁵. Later in the decade, they began venturing into electronics via light gun-based games¹⁶, such as those that later became

¹³ Kleinfield, N. R. "VIDEO GAMES INDUSTRY COMES DOWN TO EARTH." The New York Times. October 17, 1983. Accessed February 10, 2019. <https://www.nytimes.com/1983/10/17/business/video-games-industry-comes-down-to-earth.html>.

¹⁴ Kohler, Chris. "Sept. 23, 1889: Success Is in the Cards for Nintendo." Wired. January 14, 2018. Accessed February 10, 2019. <https://www.wired.com/2010/09/0923nintendo-founded/>.

¹⁵ Ndtv. "As Nintendo Turns 125, 6 Things You May Not Know About This Gaming Giant." NDTV Gadgets360.com. September 23, 2014. Accessed February 10, 2019. <https://gadgets.ndtv.com/games/features/as-nintendo-turns-125-6-things-you-may-not-know-about-this-gaming-giant-596606>.

¹⁶ Gorges, Florent, Isao Yamazaki, Raphael Mourlanne, and Benjamin Daniel. *The History of Nintendo*. Triel-sur-Seine: PixN Love Publishing, 2012.

available for the NES, including *Wild Gunman* (which they initially released as an arcade game and later re-released on the NES).

The *Color-TV Game* series were “Plug and Play” consoles, which only had access to the few games built into the console. However even with the limitation, the *Color-TV Game* series was the most popular out of the first generation of consoles, with over 3 million units sold, despite only releasing in Japan.¹⁷ As one of Nintendo’s first real forays into consumer electronics, it was widely successful, and it inspired them to further investigate the field. Their next main adventure was the *Game & Watch* system, an LCD-screen based handheld device which played a single game. In the 11 years they were sold, over 40 million units shipped worldwide¹⁸, making it one of the most successful early Nintendo products. The next main commercial success of Nintendo however, was not in the home. It came in the form of a woman-abducting ape.

2.2.1-Donkey Kong

Nintendo wanted to expand into North America. They initially set up a distribution center in Washington and New Jersey to hold arcade cabinets. The arcade cabinets were not being sold, since the game on them was of a poorly selling title: *Radar Scope*.¹⁹ In order to cement themselves as a video game company in America they needed a new game to sweep the nation. Most of the game designers at Nintendo were busy with other projects, so Yamauchi appointed Shigeru Miyamoto, the eventual father of Mario, to create this new game²⁰. This game turned out to be *Donkey Kong*, an arcade game where a carpenter named Jumpman climbs scaffolding to save his girlfriend, Lady, from the titular Donkey Kong, a giant ape. *Donkey Kong* was a massive success with over sixty thousand machines in use worldwide²¹and was eventually ported to the *Game & Watch* system in 1982 on the multiscreen series. This success opened the door for Nintendo to expand into North America and begin the plan to create and sell the NES.

¹⁷ Sheff, David. *Game Over, Press Start to Continue: The Maturing of Mario*. Wilton, CT: GamePress, 1999, 27.

¹⁸ Iwata, Satoru. "Iwata Asks: Game & Watch." Nintendo of America. Accessed February 12, 2019. <http://iwataasks.nintendo.com/interviews/#/clubn/game-and-watch-ball-reward/0/3>.

¹⁹ Ryan, Jeff. “Mario's Artist.” *Super Mario: How Nintendo Conquered America*, Portfolio, 2012, 19–20

²⁰ Ibid., 20–22

²¹ Ibid 31

2.2.2-Creation of Mario

Following the success of *Donkey Kong*, Miyamoto wanted to create a new game around Jumpman, now named Mario. However, Miyamoto wanted this game to have a narrative to answer the question of who Mario was,²² thereby beginning the process of creating the famous *Super Mario Bros*. As the development process went on, Miyamoto and the team would add more and more to the game—going from an initial 8 levels to 32 levels filled with many secrets, coins, enemies, and bosses. This caused the game to be delayed from its initial summer release date to September 13, 1985 in Japan arcades.²³

2.3-The NES

2.3.1-Predecessor to the NES: The Famicom

The Famicom was actually Nintendo's second venture into the home console market, following the success of the *Color TV Game* series of consoles in the late 1970s. Nintendo understandably wanted to venture again into the console market after this success and immediately began development on their next console. This was planned to be bigger and better than the *Color TV Game* series and have support for cartridges to allow for many games to be played on the console. Being so powerful compared to other consoles of the day, this console was more of a small computer than any other console before it. Thus, it was known as the Family Computer, or Famicom for short.

²² Ryan, Jeff. "Mario's Sunshine." *Super Mario: How Nintendo Conquered America*, Portfolio, 2012, 70–71

²³ Ibid 73–75



Figure 1: The Nintendo Famicom²⁴

With 2000 bytes of ram versus the 256 bytes of the Atari 2600, it was a force to be reckoned with²⁵. Hiroshi Yamauchi, the president of Nintendo at the time, had the goal that the Famicom would sell at the low price of 75 US dollars, but ended up releasing for \$100, which was about half the cost of the Atari 2600. “Forgo big profits on the hardware, because it is really just a tool to sell software. That is where we shall make our money.”²⁶ said Yamauchi, and Nintendo followed this principle. The Famicom uses two custom chips: its CPU and PPU (Picture Processing Unit). To get these chips, Nintendo struck a deal with Ricoh, a hardware company, for less than 2000 yen per chip. Ricoh originally refused the offer, but Yamauchi told his employees “Guarantee them a three-million chip order within two years. They will give us the price then”²⁷. Following his directions, this deal was made and the Famicom ended up selling over 2.5 million units by 1985 after its release in 1983.

²⁴ Amos, Evan. *Nintendo-Famicom-Console-Set-FL*. Photograph. Wikipedia. July 29, 2016. <https://en.wikipedia.org/wiki/File:Nintendo-Famicom-Console-Set-FL.jpg>.

²⁵ Sheff, 33.

²⁶ *Ibid.*, 34.

²⁷ *Ibid.*, 32.

2.3.2-The NES's Rise to Dominance in America

Minoru Arakawa, head of Nintendo of America, saw the success of the Famicom and wished to extend its market to the United States. Arakawa saw how many children in Japan enjoyed the Famicom, so how could the American children be any different?²⁸ One toy executive told Arakawa that “It would be easier to sell popsicles in the Arctic” than to sell a home console in America. So many people had met their downfall with the crash of the home video game market in America that nobody was willing to give Nintendo a chance. On the other hand, Arakawa saw that the downfall was primarily due to the quality of games released on the platform, with titles like *Pac Man* and *E.T.* for Atari 2600 being notoriously unplayable.



Figure 2: Nintendo Advanced Video System Peripherals²⁹

To help dissociate from these video game and toy companies, this “American Famicom” would look more like a computer than a toy. Known as the Advanced Video System, this system came with many peripherals, such as a keyboard, cassette drive, light gun, and musical keyboard.³⁰ Nintendo also made the decision to implement a lock-out chip into the system and prevent Famicom cross-compatibility due to concerns with Taiwanese bootlegs.³¹ This made it

²⁸ Sheff, 159.

²⁹ Bernice, Russell, and Chris Donlan. *Nintendo Advanced Video System (retouched)*. Photograph. Wikipedia. February 22, 2014. [https://en.wikipedia.org/wiki/File:Nintendo_Advanced_Video_System_\(retouched\).jpg](https://en.wikipedia.org/wiki/File:Nintendo_Advanced_Video_System_(retouched).jpg).

³⁰ Sheff, 160.

³¹ *Ibid.*, 161

so only games approved by Nintendo could run on the system. Unfortunately, this did not end up impressing the American market, as the memories of Atari were too close to everyone's minds. Thus, a revision was made resulting in the NES

The NES had all the same system hardware as the AVS, however was modified to look more toy-like, and computer-related peripherals were removed to focus on the “Fun” aspect of the console.³² Nintendo purposely avoided using terms related to video games to avoid being associated with the game consoles of the past.³³ They also introduced the Robot Operating Buddy, or R.O.B. for short. This was a “robot” that connected to the NES and would participate in certain games like *Stack-Up* or *Gyromite*. The addition of the R.O.B. helped to convince toy companies that this was not like video games of the past; however, to get the NES on shelves, Nintendo had a very risky policy. A store could have the NES on their shelves for free, and after 90 days would return the unsold units and pay for the ones sold,³⁴ which was the only deal Arakawa managed to strike to get stores stock the NES. This risk ended up paying off, as one million systems were sold within the first year of production.

2.3.3-Legacy of the NES

The NES is by far the most influential console to come out following the video game crash of 1983. This console pulled America out of this crash and inspired many other companies, such as Sega, to produce a similar system with higher quality hardware to get a share of the market. Over 34 million NES consoles were sold in the US alone.³⁵ *Super Mario Bros*, bundled with the NES, is the 6th most sold game of all time, with over 40 million copies sold on the NES alone.³⁶ The NES also started many beloved series in addition to Mario, who was more recognizable to children than Mickey Mouse according to some.²⁸ These included *Kirby*, *Metroid*, *Metal Gear*, *Mega Man*, and many more. A love for the NES continues into the modern day, and that is why many still play NES games to this very day.

³² Ibid., 162

³³ "25 Smartest Moments in Gaming." GameSpy. Last modified July 21, 2003. <https://web.archive.org/web/20120902124439/http://archive.gamespy.com/articles/july03/25smartest/index22.shtml>.

³⁴ Sheff, 165

³⁵ "Consolidated Sales Transition by Region." Chart. Nintendo of Japan. 2017.

https://www.nintendo.co.jp/ir/finance/historical_data/xls/consolidated_sales_e1703.xlsx.

³⁶ Stuart, Keith. "Super Mario Bros: 25 Mario facts for the 25th anniversary." The Guardian. Last modified September 13, 2010. <https://www.theguardian.com/technology/gamesblog/2010/sep/13/games-gameculture>.

2.4-Initial State of The Interactive Media Archive

Before our project began, the Interactive Media Archive (IMA) was organized by the group or individual who donated each set of items, versus by what system or generation each item belonged to. This led to needing to access many different documents to locate the box where items pertaining to a certain console were located in the archives. This was partially mitigated by the fact that many items were part of the “WPI Video Game Collection,” a generalized collection which contained all items not part of a specific collection. However, this also led to some contributors not having credit for items donated. An IMA inventory was set up to try to avoid this problem, however it was incomplete in many places, and some items were attributed to the wrong systems. This however did make it easier to find items, as the box number listed would point to where the item was stored.

The IMA is intended to be a mostly usable archive, with one copy of each item kept for preservation. This is because hardware deteriorates over time, and thus requires careful attention to prevent damage to items. However, the library also wishes to maintain a usable portion of the archive so students in the future will be able to experience these media. The hardware in the IMA was in various conditions, with only one NES in somewhat working condition. This NES would often fail to boot games, but would work more reliably when the cartridge was not pushed down. The other consoles would not boot at all, showing only a flashing grey screen or the game itself resetting quickly. The games would also have trouble booting with dirty contacts causing some strange behavior when booting games, many not booting at all. We also looked into the state of the Atari 2600, which was in working condition. However, many games would fail to boot, same as the NES games.

3-Methodology

3.1-Project Goals

Our goals for this project were focused around restoring many of the items in the archive to working condition, as well as making a set of guidelines to make sure items in the future could stay in working condition. This included attempting to restore each NES and game cartridge to working condition and writing a guide for maintaining and troubleshooting the NES and its various games. This guide had the goal of being easily understandable by someone who has very little experience with vintage hardware, such as much of the staff that may be working in the archives in the future. To keep track of each of these items and their various conditions, we also set a goal of starting a new IMA inventory to catalog each of these items, with a more detailed description of condition and grouping by system versus other means.

If more items are to be taken into the archives, a set of guidelines is needed to figure out what and how we should accept these items. Thus, a goal of our project was to create a guide for accessioning NES games into the archive. This includes ranking every game released for the NES so that staff in the future know what games to accept into the archive.

Another goal of our IQP was allowing other people to enjoy the games found in the archives, to get a better understanding of the art form and how it has progressed. To do this, we devised a plan to create a station for the NES which could be easily taken to various areas around the library or campus. This included making a guide for running the cart for someone who may have very little experience with video game hardware.

After completing many of these previous goals, we set an additional goal of creating an exhibit to showcase the items in the Interactive Media Archive. This would include coming up with a topic for the exhibit based on the items included in the archive currently, setting up a time and space for the exhibit to occur, advertising the exhibit, and creating informational cards for each item in the exhibit. Since our exhibit had the goal of being interactive, we also had to set up a schedule for the interactive portion of the exhibit.

3.2-Work In Archives

3.2.1-Creation of NES Station



Figure 3: The NES Station

Our IQP team is not the first to do a project with the Gordon Library Archive. There have been two previous projects specifically working with the Video Game Collections section of the Gordon Library Archives, namely one performed in 2018 by Rasheeda Smith and David Yuhua Tang, specializing in the Atari 2600 (creating a station that is the predecessor of our own NES Station) and the Sega Genesis.³⁷ The creation of the Atari 2600 cart and Sega Genesis cart Stations inspired us to create our own station set up on the same cart for the NES. It uses a second CRT that was donated by a member of the WPI student body so that both systems can be used at once and utilizes the AV ports on the NES to create a better image than what is available via the coaxial cable port. This setup will be available by request for interested students, IMGD or otherwise. These students can contact the Gordon Library Archive to set a time to use the station for educational or recreational use, thus furthering our project's goal of education and preservation.

³⁷Tang, David Yuhua, and Rasheeda Samih. *Expanding the Video Game Archive at Gordon Library*. Worcester Polytechnic Institute. WPI Digital Commons. April 30, 2018. Accessed February 11, 2019. <https://digitalcommons.wpi.edu/cgi/viewcontent.cgi?article=3491&context=iqp-all>.

3.2.2-NES Repair

Upon initial review, none of the NESs available in the archives were fully functional. Two of them (NES #1 and NES #3) would not properly turn on when a game was inserted, instead providing a screen where the console repeatedly rebooted itself. This error was consistent with what we knew of the “symptoms” of a damaged 72-pin connector, which is the piece of the NES which connected the console to the game cartridge (pictured below):



*Figure 4: The NES 72-pin connector*³⁸

The 72-pin connector is such a common point of failure that we were quickly able to trace the issue and purchase two online. We then replaced the connectors in NES #1 and NES #3, thereby restoring them functionality. NES #2, while initially the only console we could use to test game functionality, has now been recognized as a poorly-functioning model. NES #2 has issues with inserting game cartridges and often momentarily disconnects from the game cartridge during play, causing the game to restart.

3.2.3-Maintenance

Some of the items in the archive were in poor condition. We were able to clean a majority of the NES cartridges using 99% isopropyl alcohol and a cleaning pad. Cleaning the games allowed for them to be played more consistently on the first attempt. Over time, the NES cartridges become worn due to sliding in and out of the system, and dust can begin to

³⁸<https://www.lukiegames.com/NES-72-Pin-Connector-NES-Nintendo-Game.html>

accumulate while stored. Since the games and consoles need to be kept clean, we created a cleaning and maintenance guide to help the archive staff, which can be referenced in **Appendix B** of this paper. The guide covers how to clean NES cartridges, the NES exterior and troubleshooting solutions. We also tested each NES game in the collection to make sure they were operational, which was completed by playing 2 minutes of each game. If the game was able to be played smoothly for these 2 minutes, then it was considered to be in working condition. The games that had issues loading on startup were set aside and deemed unplayable. After using the cleaning guide we created, a majority of the games were able to pass the 2 minute play test and were deemed to be in working condition.

3.2.4-IMA Restructuring

When we first started working in the archives, we were introduced to the IMA list that contains each of the items donated with a certain collection³⁹. This list was confusing to use since it was organized by the group or individual who donated each set of items, versus by what system or generation each item belonged to. We felt that the archive should be organized into collections based on the consoles each item is associated to. We discussed this idea with Arthur Carlson, the Assistant Director of the WPI Archives, who agreed that the list should be reorganized. We began to work with going through each series and sorting the games and accessories into separate sections based on the console it was associated with. We mostly focused our work with the Nintendo items since that was our goal for the project, but we did spread into other consoles as we went on. Each item was listed with its name, sorting number, system, release date, publisher, acquisition date, original archive box number, new archive box number and condition. This can be seen in **Appendix E**. Even though this list is not complete we left it available for future IQP groups to add in other console groups following the format we left.

3.3-Item Accessioning

3.3.1-Accessioning List

To help the archive make more informed decisions on what video game items to take in, we developed an accessioning guide, in **Appendix G**, detailing items of note and how to rate the

³⁹ , (2014). A guide to the WPI video game collection. .

quality of the item. Our goal was to focus mainly on the NES collection of games in the archive, so we created a list of all officially released NES games in order of value to the archive. The games were ranked with the following attributes in mind: cultural significance, brand origins, history with the NES, sales numbers, notable features, and popularity. From these attributes each game was given a rating between 1 and 5, 1 representing a must have item and 5 representing an insignificant item. With these rankings, we hope the archive staff will be able to determine important items to keep from donations if the video game archive becomes full.

3.3.2-Accessioning Guide

To help determine the quality of donated video game items, we created a step by step guide to walk the staff member through the process of determining whether to keep or return the items. In **Appendix C**, there is the guide that was created. There are two versions of the guide, an NES version and a general version. The NES version was made specifically for receiving NES cartridges while the general version was made for other video game related items. The guide was created with a priority flow where the first steps help to find important items faster. For example, the first aspect to look for in an item is to see if it is sealed, has a box or has a manual. If the item in question does not meet those requirements, the next step is to look at its rating on the accessioning list and the quantity in the archive currently. Our goal was to ensure that the staff could make proper decisions on determining whether or not to take an item in even if they are not familiar with video game items.

3.4-The Exhibit: “Let’s-a-Go! A Brief History of Mario”

3.4.1-Library Layout

The WPI Gordon Library was generous to let us create an exhibit to celebrate the items in the video game archive. On the third floor of the library, there is an area called the Flip Space in which the WPI student body can collaborate on projects. We were given a corner of this space to prepare and set up an exhibit. We were also given little restrictions as to what we could use and display.

3.4.2-Plan for the Exhibit

Our IQP team was tasked to work on the NES collection of the WPI Video Game Archive, so we started to come up with multiple ideas relating to the NES. Some ideas for the

exhibit included: Officially licensed vs unlicensed games, Humble beginnings of Nintendo's mascots, the best and worst of the NES, and the history of Mario. We wanted the exhibit to reflect what the archive has in its collection, so we decided on the idea that had the most items pertaining to it in the collection, leading us to pick the History of Mario as our exhibit topic since we had a plethora of Mario games and collectibles. We worked closely with Arthur Carlson, the Assistant Director of the WPI Archives, to prepare for the exhibit. He provided us with marketing materials and advice on creating the exhibit.

As we began planning for the exhibit, we noticed that we have a lot of Mario items from a majority of Nintendo home video game consoles. We decided to expand from just displaying the NES Mario games to the console defining Mario games from the NES to the GameCube. The games displayed are *Super Mario Bros.*, *Super Mario Bros. 2*, *Super Mario Bros. 3*, *Super Mario World*, *Super Mario All Stars*, *Super Mario 64*, and *Super Mario Sunshine*. We would be using the newly created NES cart to display the NES and the Super Nintendo Entertainment System (SNES) on two CRT TVs and a larger television to display the Nintendo 64 (N64) and Nintendo GameCube (GCN) games.

We wanted to add interactivity in the exhibit, so we decided to have each game playable throughout the exhibit. The main issue with this is that the NES and SNES would need to be available outside of a glass case to swap games and fix any issues when preparing a game; this is due to the fact that each console had multiple games available as options and that the reset button on the consoles needed to be accessible. We decided to have the games be playable on Mondays, Wednesdays and Fridays from 4-6 PM. This would allow us to help run the playable station as well as answer any questions visitors may have about the exhibit or the games. We decided that the N64 and GCN could stay in the case and still be playable since they do not need to be powered on and off as often to play.

3.4.3-Exhibit Execution

The exhibit was opened on February 4, 2019. The interactive exhibit was open to visitors on Mondays, Wednesdays and Fridays from 4-6 PM. The exhibit consists of three parts: The entrance, the main table, and the NES Station, as shown in **Appendix F**.



Figure 5: The entrance exhibit



Figure 6: Main Exhibit Table



Figure 7: The NES Station

The entrance contains a NES, a Robotic Operating Buddy (ROB) and game cartridges for *Super Mario Bros.*, *Super Mario Bros. 2*, and *Super Mario Bros. 3* along with informational cards about each item as shown in **Appendix D**. This is located in the entranceway of the WPI Gordon Library to preview the exhibit for those entering the library. The cases are located in the flip space on the third floor of the library. This section contains items and information relating to the games and consoles on display, including promotional materials, instruction manuals, and accessories for the consoles and games. Alongside the cases is the cart where the interactive exhibit is. The interactive experience is only available during the times listed above, where visitors can play some of Mario's most important games such as *Super Mario Bros.*, *Super Mario World*, and *Super Mario 64*.

3.4.4-Post Mortem

The exhibit was opened for three weeks between the dates of February 4 and February 22. We were very happy with the result of the exhibit. On average, about 4 people visited the exhibit with the intention to play with the interactive exhibit each day it was available. Another positive was that nothing was stolen or broken during the exhibit's run time. We were limited by the time that we had between deciding we want an exhibit and the desired open date, but even

with the lack of time we still managed to present a successful exhibit that manages to teach visitors something new and entertain them with some classic games.

There are some aspects of the exhibit that were negative, however. One is that one of the games (*Super Mario Sunshine*) we wanted to display and be playable was delayed in the mail and was broken on arrival. This most likely could have been resolved if we had ordered the game earlier, but we determined that this was not a crucial part of the exhibit and decided to leave it be. Another negative was that we were unable to have an opening ceremony for the exhibit. We found out from our advisor that the Interactive Media and Game Design (IMGD) department head, Professor deWinter, wrote a book on the creator of Mario and we should reach out to her to give a talk on the exhibit. The exhibit had been already opened by the time we received this information; as such we were unable to schedule a time during the exhibits operating schedule. If we had learned the information sooner, we would have contacted her to arrange the talk more in advance. Our last major shortcoming was not having enough promotional materials. This may have impacted the awareness of students of the exhibit, and as a result a majority of visitors were students who were working nearby and only learned of the exhibit by seeing it in the library. Overall, our main issue was with time. Since the exhibit was added to the project as a goal later on (the concept was finalized at the beginning of our third and final term) we did not have a lot of time to adequately prepare for the exhibit.

In terms of tips for the future, the promotional materials issue could be fixed by having them more spread out and prevalent around campus, as well as placing them around campus farther in advance of the event. In terms of organizing a talk and/or opening ceremony, we would advise future teams to decide very early on in the project whether or not they want to set this as a goal. Coordinating something like this takes a lot of time and effort, much of which cannot be controlled by the person seeking the exhibit, as it relies on a great number of other people. As a result of this, we advise that if this is set as a goal for the project then organization of the talk should be commenced at least a six to eight weeks before the planned exhibit opening date. Keep in mind that if the talk will be an opening speech, the exhibit dates may need to be shifted to accommodate the speaker.

4-Conclusion

The transient nature of electronics means that preservation of artifacts is a key task, and one with a constantly-ticking clock. As time passes, more and more video game related items will become unavailable due to plastics and electronics corroding, the deterioration of magnetic storage systems, and the greatest threat of all, obsolescence. One of the key issues with older video game systems is the number of different pieces of technology required to make them function. For our NES cart alone, we need a functioning console, two functioning controllers, a functioning CRT, and cables to connect everything together. If any one part fails, it must be restored before any of the functionality of the others can be appreciated in full. Parts for restoration of these devices are limited; as mentioned in section 3.2.2 of this paper, we needed a 72-pin connector for restoration of two of our NESs. Since nobody is still producing 72-pin connectors for a console that came out over 30 years ago, the amount of repairs that can be performed on an NES are limited. In fact, any issues with the circuit board or integrated circuits of the device may not be fixable any longer.

The mission of the archive and by extension our team to preserve these historically and culturally significant relics is in fact key for the reasons listed above. Many individuals have simply forgotten that they own something, be that a console or a game or an old trunk of shoes. The goal of the archives is to prevent the loss of components that otherwise would be destroyed by time, and a key aspect of this undertaking is to find those forgotten objects in attics and closets and garages and add them to the collection. We do not want what happened to the aforementioned silent films of the early 20th century to be the fate of so many games that were beloved by people across the world.

The greatest advice we can give to those who continue this project is to be respectful of the hardware, to be sure to plan ahead for large events like an exhibit, and to follow our guidelines but do not be afraid to modify and improve them as you find shortcomings. If you want an exhibit, plan very far in advance, have advertising materials laid out a week before you want them printed and have them printed at least a week before you open the exhibit. As a team we accomplished almost every goal we set in this project, from restoring the old hardware, to establishing the station for playing games both educationally and recreationally, to finally setting up the exhibit and publicizing both it and the existence of the IMA. Our efforts have kindled an interest in many students at WPI who were shocked to learn the IMA existed and excited to visit

in the future. With the new station set up for NES play, widespread access to early Nintendo titles is finally a viable pursuit of leisure or learning time for WPI students.

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Appendix A: Game Cart Operational Manual

To setup the Nintendo Entertainment System (NES) station for use please follow these steps:

1. Go into the archive and retrieve the box containing the NES and accessories.
2. Roll the cart out to the specified location.
3. On the bottom of the cart is a cabinet, open it to find two TVs. Pick one and place it on top of the cart.
4. In that cabinet grab the RCA cable (Red, Yellow, White wire) and the brown extension cord (if needed).
5. Remove the NES and the power adapter from the box and place it on the top shelf of the cart.
6. Connect the power cable to the back of the NES in the AC Adapter port.
7. Connect the yellow and white RCA cable to the yellow and red ports respectively on the right side of the NES.
8. Connect the other end of the yellow and white cable to the yellow and white port on the TV.
9. Plug the power cable for the NES and the TV into an outlet, preferably with a surge protector.
10. Open the flap on the front side of the NES.
11. Insert a NES game cartridge, with the cartridge art facing up, into the front slot.
12. When the game is inserted, push down on the cartridge until you hear a click, this is a locking mechanism, and intended. If you are not able to push down the game (as in it is hitting the casing when being depressed) then you may need to insert the game a bit farther into the slot.
13. Close the flap.
14. Connect a controller into the left slot on the NES. If 2 players are playing, then insert another controller into the right slot as well.
15. Turn on the TV. If a menu appears asking for setup, press the menu button to exit.
16. Turn the NES on by pressing the power button. The game should load. If the game does not load after a couple of seconds or the NES power led is flashing, turn off the NES, remove the game cartridge, and reinsert it.
17. The game is now playable.
 - a. If it is not, please follow the troubleshooting and maintenance guide.



This is an example of the station set up with a NES and a SNES.

To disassemble the Nintendo Entertainment System (NES) station please follow the following steps:

1. Press the power button on the Front of the NES to turn it off.
2. Power off the TV.
3. Disconnect the controller(s) from the NES
4. Open the flap on the front of the NES, push the game down until it clicks and it raises itself back up.
5. Pull the NES game cartridge out of the slot (some light wiggling side to side may help with extracting the cartridge).
6. Disconnect the RCA cables from the NES and the TV.
7. Disconnect the AC adapter from the NES.
8. Unplug the AC adapter and power cable from the outlet/surge protector
9. Place the NES, controller(s), game(s), and AC adapter into the NES box neatly.
10. Place the TV back into the cabinet on the cart along with the RCA cable and extension cable.
11. Close the cabinet and lock it.
12. Roll the cart back to the storage location and return the NES box to where it was originally stored.

Appendix B: Cleaning and Maintenance Guides

Many problems with game consoles can come down to unclean ports or cartridges. Often, a game that will not boot can be fixed to working condition just by cleaning it once. Thus, if any game or game console is not working, cleaning is the first recommended step.

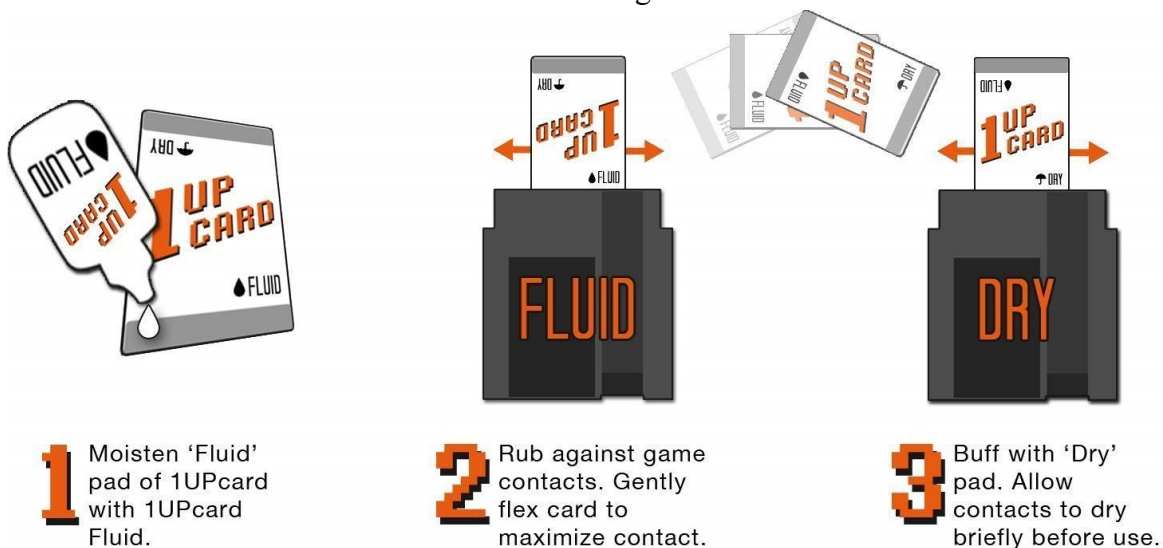
For Cartridges:

DO NOT BLOW INTO CARTRIDGES. Blowing into cartridges can introduce outside contaminants and further corrosion on the cartridge contacts, which will only make the problem worse. Often, just taking the cartridge out and putting back in will allow it to boot. Otherwise, try cleaning the cartridge.



To clean cartridges use the 1UP Card cleaner and fluid pictured above.

Follow the instructions below to clean the cartridge.



After using the cleaning pad, let the cartridge dry for 3 minutes before placing it into the NES.

The NES cartridge should be void of any alcohol smell. If fluid is empty, replace with 99% isopropyl alcohol. Lower concentrations may work, but will require longer drying times.

For the NES Console:

To clean the console's exterior

1. First unplug the console from the wall outlet, TV, games, and controllers.
2. Run a washcloth under hot water and wring it out.
3. Next, use the washcloth to wipe the console to remove dirt. Be careful when cleaning the front and back of the console to ensure no liquid comes into contact with any of the ports on the console.
4. Once wiped, let the console dry for 5 minutes before plugging anything back into the console.

To clean the inside of the console use the 1UP Card NES Console Cleaner. You do not need to use any fluids to clean the NES. Insert the console cleaner and remove it multiple times, just as if it was a game. After using the 1UP Card you can moisten the contacts using water to clean the inside of the 1UP Card console cleaner.

Troubleshooting:

Blinking Red Light: If the console has a blinking red light on the front of the console:

1. Turn off the console, remove the game and reinsert it.
 - a. If this does not fix the issue please try to use one additional game to test.
2. If both of the games cause the red light to continue to flash, try cleaning the NES console cartridge port using the 1UP Card NES Console Cleaner.
3. If this still does not fix the issue, the 72 pin connector is likely broken and will need to be replaced. This tutorial can help with the process:
<https://www.ifixit.com/Guide/Nintendo+Entertainment+System+72-PIN+Connector+Replacement/3822>.
 - a. **However, only attempt this if you are absolutely sure no games are working.**
4. If replacing the 72 pin connector does not fix the problem, either the replacement is faulty, or another part is faulty in the NES console. At this point, outside help is recommended.

Black Screen or Corrupted Textures: If the console is able to start up, but the game is not booting correctly, the game cartridge is likely not reading correctly. This can be fixed by:

1. Turning the console off
2. Taking the game out
 - a. And cleaning it!
3. Reinserting the game.

4. If this does not fix the issue, try cleaning the cartridge port of the NES. Otherwise, seek outside help.

Common problems with specific NESs in IMA archive:

- NES #2 has a problem with the cartridge port such that to put in a game, the game must be pushed down slightly once inserted to fully insert the cartridge. Once inserted, many games will only boot if the cartridge is not pressed down in the tray. The console can be coaxed into booting by taking advantage of the reset button on the NES when the the red light is blinking, but a title screen is visible.
- NES #3's Channel switch does not work when set to "4", so avoid using it by using Channel 3 on all CRTs.

Appendix C: Acquisition Guide

When receiving a NES Cartridge follow these rules:

1. If the item has a box, manual, or is unopened, those items take top priority.
2. Check the list of games to see how many copies of the game or accessory are archived.
 - a. Also check to see if the archives have enough storage to take in the items.
 - i. If the space is full, check the ranking of the game on the IMA list. If the item is ranked 1 or 2 then take it into the archive and replace a rank 4 or 5 item in the collection.
 - ii. If space is not full, then follow the next steps.
3. If there are less than two copies of the game, take it into the archive.
 - a. If there are two or more copies, please check its ranking.
 - i. If the ranking is 1, or 2, take it into the archive.
 - ii. If the ranking is 3, 4, or 5, check to see if there is space available in the archive. If yes, then take it into the archive. If no, return it to the donor.
4. If possible please test the items for working condition by using the respective console and controllers.
 - a. If it works then take it in.
 - b. If it doesn't work, follow guidelines in NES Troubleshooting document, and if still not working return to donor, but only if its not tier 1; or if missing components then return it to donor.
5. Take item in and Follow Archive protocol for taking in donations.

When receiving any video game related item follow these rules:

1. If the item has a box, manual, or is unopened, those items take top priority.
2. Check the list of games to see how many copies of the game or accessory are archived.
 - a. Also check to see if the archives have enough storage to take in the items.
 - i. If the space is full, check the ranking of the game on the IMA list. If the item is ranked 1 or 2 then take it into the archive and replace a rank 4 or 5 item in the collection.
 - ii. if space is not full, then follow the next steps.
 - iii. If there are less than two copies of the game, take it into the archive.
3. If there are two or more copies, please check its ranking.
 - a. If the ranking is 1 or 2, take it into the archive.
 - b. If the ranking is 3, 4 or 5, check to see if there is space available in the archive. If yes, then take it into the archive. If no, return it to the donor.
4. If possible please test the items for working condition by using the respective console and controllers.
 - a. If it works then take it in.
 - b. If it doesn't work or is missing components then return it to donor.
5. Take item in and follow archive protocol for taking in donations.

Appendix D: Interactive Media Archive Inventory

Hardware:

Title	#	System	Release Date	Publisher	Acquisition date	Original Box #	Condition
Atari 2600		Atari 2600	1972	Atari	~ 2005	MS017.01:001	Dusty, should be cleaned in the future
Atari 2600 Controller	1	Atari 2600	1972	Atari	~ 2005	MS017.01:001	Joystick is a bit stiff but works fine. Paint around center ring is worn. Dusty, should be cleaned in the future
Atari 2600 Controller	2	Atari 2600	1972	Atari	~ 2005	MS017.01:001	Paint around center ring is worn. Dusty, should be cleaned in the future
Atari 2600 Controller	3	Atari 2600	1972	Atari	~ 2005	MS017.01:001	Button and joystick does not work. Paint around center ring is worn. Button is scratched
Atari 2600 Controller	4	Atari 2600	1972	Atari	~ 2005	MS017.01:001	Joystick works but button does not. Paint around center ring is worn.
Atari 2600 power cable		Atari 2600	1972	Atari	~ 2005	MS017.01:002	Good
Nintendo Entertainment System	1	NES	1985	Nintendo	~ 2005	MS017.02:002	Working, in best condition of all NES
Nintendo Entertainment System	2	NES	1985	Nintendo	~ 2005	MS017.02:002	Working, problem with cartridge port. Most games will not boot if the cartridge is pressed down all the way, but will boot if not pressed down
Nintendo Entertainment System	3	NES	1985	Nintendo	~ 2005	MS017.02:001	Working. Channel 4 option is not functioning missing a screw
NES Controller	1	NES	1985	Nintendo	~ 2005	MS017.02:002	Working
NES Controller	2	NES	1985	Nintendo	~ 2005	MS017.02:001	Working but not well, can't hold down two buttons at once
NES Controller	3	NES	1985	Nintendo	~ 2005	MS017.02:002	Working, yellowed
NES Controller	4	NES	1985	Nintendo	~ 2005	MS017.02:002	Working well
NES	5	NES	1985	Nintendo	~ 2005	MS017.02:002	Working well

Controller							
NES Zapper	1	NES	1985	Nintendo	~ 2005	MS017.02:002	Working well
NES Zapper	2	NES	1985	Nintendo	~ 2005	MS017.02:002	Working well
NES Zapper	3	NES	1985	Nintendo	~ 2005	MS017.02:002	Working well
NES Power Glove	1	NES	1985	Nintendo	~ 2005	MS017.02:001	It works Perfectly. One of the sensors does not fit on the pole due to the wire being too long.
NES Power Pad	1	NES	1985	Nintendo	~ 2005	MS017.02:001	Unknown Condition, no games in collection to test with
Super Nintendo Entertainment System	1	SNES	August 1991	Nintendo	~2005	MS017.03:001	Works perfectly
SNES Controller	1	SNES	August 1991	Nintendo	~2005	MS017.03:001	Works fine
SNES Controller	2	SNES	August 1991	Nintendo	~2005	MS017.03:001	Does not work
Nintendo GameCube	1	GCN	November 18, 2001	Nintendo	~2005	MS017.05:001	Works, but is missing component cables to connect to tv. You can use the component cables from the SNES or N64. No Memory cards to save the games
Nintendo Gamecube Controller	1	GCN	November 18, 2001	Nintendo	~2005	MS017.05:001	Works but is dirty and control stick is sticky.
Nintendo 64	1	N64	September 29, 1996	nintendo	TBD	???	Works perfectly and has an jumper pak in it already. Possibly to be added. Does not have av cable, can use the SNES or Gamecube AV cables as a replacement.
Nintendo 64 Controller	1	N64	September 29, 1996	nintendo	TBD	???	Works perfectly. Possibly to be added. Need to double check with Arthur.
Nintendo 64 Controller	2	N64	September 29, 1996	nintendo	TBD	???	Works Perfectly. Possibly to be added. Need to double check with Arthur. The down c button is a bit sticky but still works when pressed.

Nintendo 64 Transfer Pak	1	N64	February 29, 2000	Nintendo	~2005	MS017.04:001	Unknown Condition, no games in collection to test with
Memory Card for the Nintendo 64	1	N64	???	Performance	~2005	MS017.04:001	Unknown Condition, no games in collection to test with
Gameboy	1	Gameboy	July 31, 1989	Nintendo	~2005	MS017.06:001	Works Perfectly but needs 4 AA batteries.
Gameboy Advance	1	GBA	June 11, 2001	Nintendo	~2005	MS017.06:001	Works Perfectly but needs 2 AA batteries.
Gameboy Color (purple)	1	GBC	November 18, 1998	Nintendo	~2005	MS017.06:001	Works Perfectly but needs 2 AA batteries.
Gameboy Color (purple)	2	GBC	November 18, 1998	Nintendo	~2005	MS017.06:001	Works Perfectly but needs 2 AA batteries.
Gameboy Color (clear)	1	GBC	November 18, 1998	Nintendo	~2005	MS017.06:001	Works Perfectly but needs 2 AA batteries.
Gameboy Color (clear)	2	GBC	November 18, 1998	Nintendo	~2005	MS017.06:001	Works Perfectly but needs 2 AA batteries. Missing Battery Cover
Gameboy Color (green)	1	GBC	November 18, 1998	Nintendo	~2005	MS017.06:001	Works Perfectly but needs 2 AA batteries.
Gameboy Color (red)	1	GBC	November 18, 1998	Nintendo	~2005	MS017.06:001	Works Perfectly but needs 2 AA batteries.
Gameboy Color (blue)	1	GBC	November 18, 1998	Nintendo	~2005	MS017.06:001	Works Perfectly but needs 2 AA batteries.
Worm Light	1	GBC	1998	Nyko	~2005	MS017.06:001	Works
Worm Light	2	GBC	1998	Nyko	~2005	MS017.06:001	Boxed
Multiplayer Link Cable	1	GBA	2001	Pelican	~2005	MS017.06:001	Boxed

NES Games:

Title	#	System	Release Date	Publisher	Developer	Acquisition date	Original Box #	Notes	Manual
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Tetris	1	NES	June 6, 1984	Nintendo	Nintendo Research and Development 1	~2005	MS017 .02:003	Works only when not pressed down. (May be due to console)	No
Castlevania	1	NES	September 26, 1986	Konami	Konami	~2005	MS017 .02:003	Works great	Yes
Super Mario Bros. 2	1	NES	October 9, 1988	Nintendo	Nintendo R&D4	~2005	MS017 .02:003	Works fine	Yes
Super Mario Bros. 2	2	NES	October 9, 1988	Nintendo	Nintendo R&D4	11/5/2018	TBD	Works only when not pressed down. (May be due to console)	Yes
Super Mario Bros. 3	1	NES	February 12, 1990	Nintendo	Nintendo R&D4	~2005	MS017 .02:003	Works Fine	Yes
Metroid	1	NES	August 6, 1986	Nintendo	Nintendo R&D, Intelligent Systems	~2005	MS017 .02:003	Works Fine	Yes
Anticipation	1	NES	November 1988	Nintendo	Rare	~2005	MS017 .02:003	Works Fine	Yes
Mario Bros. Arcade Classic Series	1	NES	June 23, 1986	Nintendo	Nintendo	~2005	MS017 .02:003	Works fine	Yes
John Elway's Quarterback	1	NES	1987	Tradewest	Leland Corporation	~2005	MS017 .02:003	Works fine	Yes
Super Mario Bros./Duck Hunt	1	NES	November, 1988	Nintendo	Nintendo	~2005	MS017 .02:003	With plastic case and manual, fully functional	Yes
Super Mario Bros./Duck Hunt	2	NES	November, 1988	Nintendo	Nintendo	~2005	MS017 .02:003	works great	Yes
Super Mario Bros./Duck Hunt	3	NES	November, 1988	Nintendo	Nintendo	~2005	MS017 .02:003	works great	Yes
Back To The Future	1	NES	September 1989	LJN	Beam Software	~2005	MS017 .02:003	Works fine	No

The Legend of Zelda	1	NES	February 21, 1986	Nintendo	Nintendo Research and Development 4	~2005	MS017 .02:003	A bit scratched and contains price stickers on back of the cartridge. Game is working after cleaning, battery seems to be functional	No
The Adventure of Link	1	NES	January 14, 1987	Nintendo	Nintendo Research and Development 4	~2005	MS017 .02:003	A bit scratched. Does not seem to work	Yes
The Adventure of Link	2	NES	January 14, 1987	Nintendo	Nintendo Research and Development 4	~2005	MS017 .02:003	A bit scratched. Works fine	Yes
Ninja Gaiden	1	NES	March 1989	Tecmo	Tecmo	~2005	MS017 .02:003	Sticker has a small tear, Cleaning cartridge restored to working condition	No
City Connection Manual	1	NES	1985	Jaleco	Jaleco	~2005	MS017 .02:003	Only the manual. No Cartridge	Yes, only the manual
Mario is Missing Poster	1	NES	1993	The Software Toolworks	Radical Entertainment	~2005	MS017 .02:003	Only the poster. No cartridge	No, just the poster
Wheel of Fortune	1	NES	September, 1988	GameTek	Rare	~2005	MS017 .02:004	Works Fine	Yes
Pac-Man (Licensed)	1	NES	1993	Tengen	Namco	~2005	MS017 .02:004	Working great	Yes
Dragon Power	1	NES	November 27, 1986	Bandai Co., Ltd	Tose Co., Ltd	~2005	MS017 .02:004	Works. A bit dirty	No
Adventure Island	1	NES	September 1988	Hudson Soft	Hudson Soft	~2005	MS017 .02:004	Works fine	No

Appendix E: Exhibit Text Cards

Front Display

Front Entrance, Gordon Library

NES

The Nintendo Entertainment System is the first in-home entertainment system ever manufactured by Nintendo Entertainment. As shown here, it has a spring-loaded cartridge port, two controller jacks, and a very neat and contained form factor. Despite the rocky pre-launch history of the NES and apparent lack of consumer interest, the NES was a smash hit in America. While little information can be found about NES launch sales, 3 years after its launch in 1988, the console still managed to sell 7 million units. Compared to the approximate 6.5 million units sold by the PS4 in 2016¹ (also 3 years after launch), which sold into a far more welcoming and established market, the NES was a marvel of the time, the likes of which have not been seen since.

1: "Sony Interactive Entertainment Inc." PLAYSTATION 4 SALES SURPASS 70.6 MILLION UNITS WORLDWIDE. Accessed January 30, 2019. <https://www.sie.com/en/corporate/release/2017/170105.html>.

SMB1/Duck Hunt

Super Mario Bros was a game to define a generation. Being released as a bundled launch title with the NES in 1985, this was Mario's first representation of the classic style we all love today. Super Mario Bros contained 32 levels and 8 bosses across 8 different worlds filled with many coins, power ups and secrets.¹ The classic level design of this game was inspired by Japanese scroll paintings, where the viewer of the art holds a scroll and slowly rolls it between two rollers, such that the viewer can only experience part of the painting at any time. This game has been so wide-ranging that it has, in one form or another, been ported to every single home Nintendo console with the exception of the N64.

1. Ryan, Jeff. "Mario's Sunshine." *Super Mario Has Nintendo Conquered America*, Portfolio, 2012, pp. 74-79.
2. Orland, Kyle, and Ute. "30 Years, 30 Memorable Facts about Super Mario Bros." *Ars Technica*. September 14, 2015. Accessed January 30, 2019. <https://arstechnica.com/gaming/2015/09/30-years-30-memorable-facts-about-super-mario-bros/>.

SMB2

Super Mario Bros. 2 was the sequel to Super Mario Bros. in North America. In Japan, Super Mario Bros. 2 was a different game than what was released in North America. The Japanese version was deemed to be too hard for Westerners, so Nintendo decided to rebrand another game, Yume Kōjō: Doki Doki Panic, to be released in North America instead.¹ This was the major reason why Super Mario Bros. 2 plays very differently from the original. Super Mario Bros. 2 also had 4 playable characters: Mario, Luigi, Toad, and Princess Toadstool, each having different playstyles to make them unique. Mario was average, Luigi can jump higher, Toad was fast, and Princess Toadstool could float.² The Japanese version of Super Mario Bros. 2 would not be released until the release of Super Mario All stars under the name: Super Mario Bros. The Lost Levels.

1. Ryan, Jeff. "Mario's Sunshine." *Super Mario Has Nintendo Conquered America*, Portfolio, 2012, pp. 85-88
2. *Super Mario Bros. 2 (U) instruction manual* (First ed.). America: Nintendo of America Inc. 1988.

SMB3

Super Mario Bros. 3 was the third Mario game to be released for the NES. This game went back to its roots and brought back the original side scrolling platforming, as well as adding a interactive world map. With new power ups and new kingdoms to explore. This was also the introduction to the Koopalings as well as new power ups such as the Super Leaf and Frog Suit.¹

1. *Super Mario Bros. 3 Instruction Booklet*. [Nintendo of America](#). February 12, 1990.

NES Display

Flip Space, 3rd Floor Gordon Library

NES

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1. Ryan, Jeff. "Mario's Sunshine." *Super Mario How Nintendo Conquered America*, Portfolio, 2012, pp. 74-79.
2. Orland, Kyle, and Ute. "30 Years, 30 Memorable Facts about Super Mario Bros." *Arts Technica*, September 14, 2015. Accessed January 30, 2019. <https://arstechnica.com/gaming/2015/09/30-years-30-memorable-facts-about-super-mario-bros/>.

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1. Ryan, Jeff. "Mario's Sunshine." *Super Mario: How Nintendo Conquered America*, Portfolio, 2012, pp. 85-88

2. *Super Mario Bros. 2 (U) instruction manual* (First ed.). America: Nintendo of America Inc. 1988.

SMB3

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1. *Super Mario Bros. 3 Instruction Booklet*. [Nintendo of America](#). February 12, 1990.

R.O.B.

The R.O.B. or Robotic Operating Buddy was a device that Nintendo of America sold with the initial NES launch as a way of convincing the American market that the NES was not a video game console (as after the video game crash of 1983 due to a flooded market from poor quality 3rd party Atari games, consumers and vendors were very cautious of “video games.”). The toy-like appearance swept America off its feet and enraptured audiences, despite the R.O.B. only ever receiving two games (one of which was bundled with the device and console).

SNES Display

Flip Space, 3rd Floor Gordon Library

SNES

The Super Nintendo Entertainment System was Nintendo's second home console in North America. The SNES allowed for better graphics and better sounds as compared to the NES. The SNES uses a new controller nicknamed "The Dogbone" that was more comfortable and had more buttons than the NES controller. The SNES contains a graphic mode called Mode 7 that allows for the background to appear to have depth. Some games that used this include: Super Mario World, Super Mario Kart, and Super Mario RPG.¹

1. [Super NES Player's Guide](#). Redmond WA, USA: Nintendo®, retrieved 2018-09-13

Super Mario World

Super Mario World was Mario's first leap to Nintendo's newest console in 1991. While keeping the side scrolling platforming the same, Super Mario World added many new features such as the introduction to Yoshi, the cape feather, and the ability to save the game.¹ Super Mario World also had its entire score recorded on a single electric keyboard by famous composer Koji Kondo!

1. Nintendo (1991). *Super Mario World* instruction manual. [Nintendo EAD](#). pp. 2-27.

N64/GC Display

Flip Space, 3rd Floor Gordon Library

Nintendo 64

The Nintendo 64 brought Nintendo into the 3D era of video games. Called the N64 for its 64 bit central processing unit, this processor based on the MIPS processor architecture by Silicon Graphics made this console one of the most powerful of its time.¹ Combined with hardware with the ability to natively display 3d graphics, this console was truly one of the best of the generation. Unlike its competitors, the N64 still used a cartridge based storage medium for games, versus a compact disc. This allowed for faster load times, but due to expensiveness of cartridges, there was less third party software compared to those who used CDs.

1. Nintendo, "Nintendo 64 Technical Details," Nintendo of UK, Accessed February 2, 2019, <https://www.nintendo.co.uk/Corporate/Nintendo-History/Nintendo-64/Technical-Details/Technical-Details-627050.html>.

Super Mario 64

Super Mario 64 was Mario's first leap into 3D as it launched alongside the Nintendo 64 in 1996. Players were finally able to control Mario in 3D as they explored Peach's Castle to find secrets and Power Stars to defeat Bowser and rescue Princess Peach.¹ Upon obtaining all 120 Power Stars (past the minimum 70 required to fight the final boss, Bowser), if the player uses an unlocked cannon, they can fly up to the roof of the castle, where they will find Yoshi who they can talk to in order to obtain 99 lives!²

1. *Super Mario 64 Instruction Booklet*. Nintendo. 1996. NUS-NSME-USA.
2. Siri, KL. "Super Mario 64 - What Happens after You Get 120 Stars." YouTube. November 23, 2015. Accessed February 01, 2019. <https://www.youtube.com/watch?v=KRURupQ3cFo>.

N64 Controller

The N64 controller was a modern marvel when it was introduced to America. Previously, the only thumb-controller analog sticks available to consumers were the NES Max from 1988 (which received almost no use at all) and the XE-1 AP, which was released by Japanese company Dempa, and only in Japan. The digital control stick popularized by the N64 launched gaming to the next level, allowing for 3D games to really take off.

1. *Super Mario 64 Instruction Booklet*. Nintendo. 1996. NUS-NSME-USA.

GameCube

The Gamecube was Nintendo's first console that used a compact disk for storage of games. These disks measured at 3 inches wide, and could hold up to 1.5 gigabytes of data.¹ This new console failed however to recapture the market share lost by the end of the N64 era, selling only 22 million units compared to Xbox's 24 million units sold and Playstation 2's 155 million units sold.

1. Nintendo. "Nintendo History: Nintendo Gamecube." Nintendo of UK. <https://www.nintendo.co.uk/Corporate/Nintendo-History/Nintendo-GameCube/Nintendo-GameCube-627129.html>.

Super Mario Sunshine

Super Mario Sunshine was the next 3D Mario game. Sunshine expanded upon Super Mario 64 by creating the more developed "hub world" of Isle Delfino with more secrets and areas to explore. Mario's movement options were also enhanced with the addition of FLUDD. Mario was now able to hover, spin jump, slide, and spray his way to save Isle Delfino.¹ This was also the first official use of voice acting to tell the story of a Mario game.

1. *Super Mario Sunshine instruction booklet*. Nintendo, 2002.

Appendix F: Additional Exhibit Pictures and Materials



Figure 5: The entrance exhibit



Figure 6: Main Exhibit Table



Figure 7: The NES Station

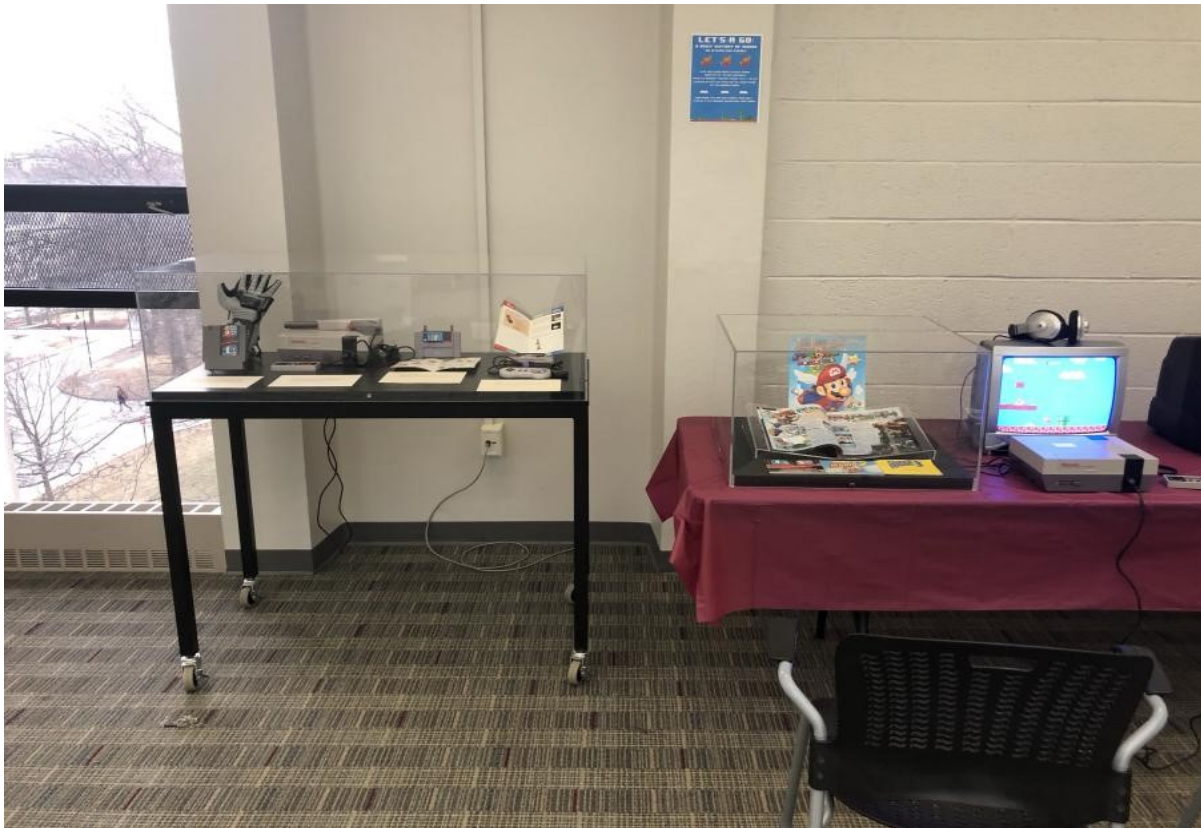


Figure 8: Large display case

LET'S-A GO!

A BRIEF HISTORY OF MARIO AN INTERACTIVE EXHIBIT



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COURTESY OF THE WPI ARCHIVES!
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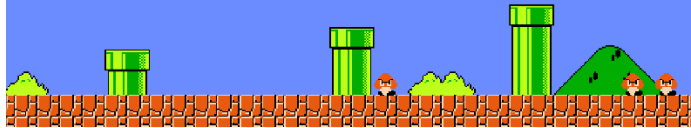


Figure 11: Exhibit Poster Small

Appendix G: Partial NES Game Accessioning Guide

Rating	Name	Release date NA	Publisher(s)	Developer(s)	Notes
1	10-Yard Fight	18-Oct-85	Nintendo	Irem	Brought Football out of the Atari era with graphics modern for the time. Had two player mode, but 2nd player had AI cheats
1	Balloon Fight	Aug-86	Nintendo	Nintendo Research & Development 1	Classic NES game, has sooooo many ports
1	Baseball	18-Oct-85	Nintendo	Nintendo Research & Development 1	
1	Castlevania	May-87	Konami	Konami	
1	Clu Clu Land	18-Oct-85	Nintendo	Nintendo Research & Development 1	
1	Contra (NA)Probotect or (EU)	Feb-88	Konami	Konami	
1	Donkey Kong Jr. Math	Jun-86	Nintendo	Nintendo Research & Development 2	
1	Dr. Mario	Oct-90	Nintendo	Nintendo Research & Development 1	
1	Duck Hunt	18-Oct-85	Nintendo	Nintendo Research & Development 1	Launch title for the NES. Used the NES Zapper light gun as a controller.
1	Excitebike	18-Oct-85	Nintendo	Nintendo Research & Development 1	Launch title for the NES. The NES version of the game has a save and load feature for the Stage builder that does not work due to the NES not having the Famicom's Data Recorder peripheral.

1	Final Fantasy	May-90	Nintendo	Square	
1	Galaga	Sep-88	Bandai	Namco	
1	Golf	18-Oct-85	Nintendo	Nintendo	
1	Gyromite	18-Oct-85	Nintendo	Nintendo Research & Development 1	
1	Hogan's Alley	18-Oct-85	Nintendo	Nintendo Research & Development 1;Intelligent Systems	
1	Ice Climber	18-Oct-85	Nintendo	Nintendo Research & Development 1	
1	Kung-Fu	18-Oct-85	Nintendo	Nintendo Research & Development 1	
1	Mach Rider	Aug-86	Nintendo	Nintendo Research & Development 2; HAL Laboratory	
1	Mega Man	Dec-87	Capcom	Capcom	
1	Mega Man 2	Jun-89	Capcom	Capcom	
1	Metal Gear	Jun-88	Ultra Games (NA)Konami (EU)	Konami	
1	Metroid	Aug-87	Nintendo	Nintendo Research & Development 1; Intelligent Systems	
1	Mike Tyson's	Oct-87	Nintendo	Nintendo	

	Punch-Out!!			Research & Development 3	
1	Ms. Pac-Man	Nov-93	Namco	Now Production	
1	Ninja Gaiden (NA)Shadow Warriors (EU)	Mar-89	Tecmo	Tecmo	
1	Pac-Man	Nov-93	Namco	Namco	
1	Pac-Man	Oct-88	Tengen	Namco	
1	Pinball	18-Oct-85	Nintendo	Nintendo Research & Development 1	
1	Stack-Up	18-Oct-85	Nintendo	Nintendo Research & Development 1	
1	Stadium Events	Sep-87	Bandai	Human Entertainment	Very Rare
1	Star Trek: 25th Anniversary	Feb-92	Ultra Games	Interplay Entertainment	First NES Trek Game
1	Star Trek: The Next Generation	Sep-93	Absolute Entertainment	Imagineering	First TNG game
1	StarTropics	Dec-90	Nintendo	Nintendo Research & Development 3; Locomotive Corporation	No Japan release
1	Super Mario Bros.	18-Oct-85	Nintendo	Nintendo Creative Department	
1	Super Mario Bros. 2	9-Oct-88	Nintendo	Nintendo Research & Development 4	

1	Super Mario Bros. 3	9-Feb-90	Nintendo	Nintendo Research & Development 4	
1	Tag Team Wrestling	Oct-86	Data East	Data East; Sakata SAS	Inspired Strongbad
1	Tecmo World Wrestling	Apr-90	Tecmo	Tecmo	First wrestling game with a play-by-play announcer
1	Tennis	18-Oct-85	Nintendo	Nintendo Research & Development 1; Intelligent Systems	Launch Game
1	Tetris	Nov-89	Nintendo	Nintendo Research & Development 1	
1	The Legend of Zelda	22-Aug-87	Nintendo	Nintendo Research & Development 4	
1	Top Gun: The Second Mission	Jan-90	Konami	Konami	Very well received, excellent graphics up from previous game, soundtrack, very anti-russian (but subtly)
1	Urban Champion	Aug-86	Nintendo	Nintendo Research & Development 1	First 2D nintendo Fighting game
1	Wario's Woods	10-Dec-94	Nintendo	Nintendo Research & Development 1	Last Nintendo NES game, only one with an ESRB rating
1	WCW Wrestling	Apr-90	FCI	Nichibutsu	First and to-date only NWA-based wrestling video game
1	Wild Gunman	18-Oct-85	Nintendo	Nintendo Research & Development 1; Intelligent Systems	Fairly unremarkable, used the zipper

1	Wizardry: Proving Grounds of the Mad Overlord	Jul-90	ASCII	Sir-Tech	First DND style adventure game in color, first true party-based RPG, perhaps had the first strategy guide
1	World Class Track Meet	Aug-88	Nintendo	Human Entertainment	Stadium Events, the alternate and original title, is one of the rarest games of all time for the NES, first PowerPad game
1	Wrecking Crew	18-Oct-85	Nintendo	Nintendo Research & Development 1	Nothing noticeable
1	Zelda II: The Adventure of Link	1-Dec-88	Nintendo	Nintendo Research & Development 4	I mean, its zelda
1	Soccer	18-Oct-85	Nintendo	Intelligent Systems	
1	Kirby's Adventure	May-93	Nintendo	HAL America	First Kirby Game on NES, first game with capture mechanic. Plays very well for an NES game and holds up to this day
1	Sesame Street: Big Bird's Hide & Speak	Oct-90	Hi Tech Expressions	RSP Inc.	First NES game to feature a digitized voice
1	Side Pocket	30-Nov- 87	Data East	Data East	Apparently just like, a really good billiards game
1	The Simpsons: Bart vs. the Space Mutants	Feb-91	Acclaim Entertainme nt	Imagineering	First simpsons video game
1	Skate or Die 2: The Search for Double Trouble	Sep-90	Electronic Arts	Electronic Arts	Surprisingly complex systems including bartering
1	Slalom	Mar-87	Nintendo	Rare	First NES game developed outside of Japan
2	1942	Nov-86	Capcom	Micronics	Capcoms first real hit game, has received several rereleases, vertical scrolling shmup style gameplay

2	The 3-D Battles of WorldRunner	Sep-87	Acclaim Entertainment	Square	Had 3d Scrolling, one of the first stereoscopic 3D games. Had 3d glasses packaged with game, thus difficult to find a complete copy
2	Adventure Island	Sep-88	Hudson Soft	Hudson Soft	Action platform game, generally well received
2	Adventure Island II (NA)The Adventure Island Part II (EU/AU)	Feb-91	Hudson Soft (NA/EU)Matel (AU)	Now Production	Direct sequel to original, improved upon with some new mechanics such as dinos to ride
2	Adventures of Lolo	Apr-89	HAL America	HAL America	Received very well, to the surprise of the developers. Adventure style game like Zelda 2
2	Adventures of Lolo 3	21-Nov-91	HAL America	HAL America	A good sequel, added new mechanics and was very well received
2	All-Pro Basketball	Dec-89	Vic Tokai	Aicom	One of the best basketball games for nes, but it is a basketball game. Long game with a vertically scrolling court and well programmed AI for defense, compared to other titles of the era.
2	Anticipation	Nov-88	Nintendo	Rare	First board game for NES, developed by rare.
2	Arkanoid	Aug-87	Taito	Atlus	Breakout style game that extended upon the formula, very well received, nes version included a custom controller
2	Battleship	Sep-93	Mindscape	Mindscape	Nothing noticeable
2	Bomberman	Jan-89	Hudson Soft	Hudson Soft	Was originally developed as a tech demo for Hudson Soft's BASIC compiler. Started the Bomberman Franchise
2	Bomberman II (NA)Dynablast er (EU)	Feb-93	Hudson Soft	Hudson Soft	Bomberman was not released in Europe so the name Dynablaster was used to not confuse the consumers. The only game in the Bomberman Series with a three player mode.
2	Bubble Bobble	Nov-88	Taito (NA/EU)Matel (AUS)	Taito	One of the first games to introduce multiple endings

2	Castlevania II: Simon's Quest	Dec-88	Konami	Konami	Second Game in the series to feature a non-linear explorative world. This helped to coin the term Metroidvania since its gameplay of exploration was similar to that of Nintendo's Metroid.
2	Castlevania III: Dracula's Curse	Sep-90	Konami (NA)Palcom (EU)	Konami	Rated as the ninth best NES game by Nintendo Power
2	Disney's Aladdin	Unreleased	Virgin Interactive	NMS Software	This game is a reworked port of the Sega Genesis version of the game.
2	Donkey Kong	Jun-86	Nintendo	Nintendo Research & Development 1	The NES version of Donkey Kong does not include the Cement factory level and cutscenes due to the lack of space available on the cartridges.
2	Donkey Kong 3	Jun-86	Nintendo	Nintendo Research & Development 1	Donkey Kong 3's gameplay was different from its predecessors. This game was a shooter where you needed to shoot bug spray at Donkey Kong instead of platforming up to him.
2	Donkey Kong Classics	Oct-88	Nintendo	Nintendo Research & Development 1	This was a compilation cartridge and contains Donkey Kong and Donkey kong Jr.
2	Donkey Kong Jr.	Jun-86	Nintendo	Nintendo Research & Development 1	Nothing noticeable
2	DuckTales	Sep-89	Capcom	Capcom	Was Capcom's highest selling game on the NES and is listed as the 13th best NES game by Nintendo Power.
2	Ghostbusters	Oct-88	Activision	Bits	The NES version was more difficult than other console versions, had low graphical resolution and had a different ending.
2	Kid Icarus	Jul-87	Nintendo	Nintendo Research & Development 1; TOSE	
2	Mario Bros.	Jun-86	Nintendo	Nintendo	

				Research & Development 1	
2	Mario Is Missing!	Jul-93	Mindscape	Radical Entertainment	
2	Mario's Time Machine	Jun-94	Mindscape	Radical Entertainment	
2	Millipede	Oct-88	HAL America	HAL America	
2	NARC	Aug-90	Acclaim Entertainment	Rare	
2	Ninja Gaiden II: The Dark Sword of Chaos (NA)Shadow Warriors II: Ninja Gaiden (EU)	May-90	Tecmo	Tecmo	
2	Ninja Gaiden III: The Ancient Ship of Doom	Aug-91	Tecmo	Tecmo	
2	Prince of Persia	Nov-92	Virgin Interactive	Brøderbund	
2	Q*bert	Feb-89	Ultra Games	Konami	
2	Super Mario Bros./Duck Hunt/World Class Track Meet	Dec-90	Nintendo	Various	
2	Super Mario Bros./Tetris/Nintendo World	Unreleased	Nintendo	Various	

	Cup				
2	Super Pitfall	Nov-87	Activision	Micronics	Apparently a really bad game. Known by some as a desecration of a classic
2	Tetris 2	Oct-93	Nintendo	Nintendo Research & Development 1	
2	Xevious	Sep-88	Bandai	Namco	first game to use pre-rendered graphics, one of the first vert-scroll shooters, first arcade game with a US TV commercial
2	Yo! Noid	Nov-90	Capcom	Now Production	Look more into bc of dominos teamup
2	Zanac	Oct-87	FCI	Compile	Notably good AI, high praise at the time
2	Zoda's Revenge: StarTropics II	Mar-94	Nintendo	Nintendo Research & Development 3	Second to last first party game for the NES
2	Battletoads	Jun-91	Tradewest	Rare	
2	Tombs & Treasure	Jun-91	Activision	Compile	Only Infocom console game, pretty unique and had excellent modifiers for different player actions
2	Ultima III: Exodus	Feb-89	FCI	Newtopia Planning	massive genre influence like the rest of ultima
2	Where in Time Is Carmen Sandiego?	Oct-91	Konami	Brøderbund	Came with an encyclopedia, pretty legendarily well known
2	Wizards & Warriors	Dec-87	Acclaim Entertainment	Rare	Second game ever by Rare, way ahead of its time technically, pretty unique, started a massive series
2	WWF WrestleMania: Steel Cage Challenge	Sep-92	LJN	Sculptured Software	First cage match console game
2	Xenophobe	Dec-88	Sunsoft	Sunsoft	Far ahead of its time graphically, notably had splitscreen (Could be first??)
2	Yoshi	1-Jun-92	Nintendo	Game Freak	Nothing noticeable

	(NA)Mario & Yoshi (EU)				
2	Taboo: The Sixth Sense	Apr-89	Tradewest	Rare	Interesting, bypassed some nintendo guidelines
2	Tecmo NBA Basketball	Nov-92	Tecmo	Sculptured Software	First game with an NBA and NBPA license
2	Tecmo Super Bowl	Dec-91	Tecmo	Tecmo	Still Popular apparently
2	Teenage Mutant Ninja Turtles (NA)Teenage Mutant Hero Turtles (EU)	Jun-89	Ultra Games	Konami	
2	Teenage Mutant Ninja Turtles II: The Arcade Game (NA)Teenage Mutant Hero Turtles II: The Arcade Game (EU)	Dec-90	Ultra Games (NA)Konami (EU)	Konami	Prominent Pizza Hut Ads
2	Tiger Heli	Sep-87	Acclaim Entertainment	Micronics	Good shoot 'em up, great port, featured destructible random stuff
2	Times of Lore	May-91	Toho	Origin Systems	Good Map stuff, excellent Port
2	Adventure Island 3	Sep-92	Hudson Soft	Now Production	Another sequel, pretty well received
2	Mega Man 3	Nov-90	Capcom (NA)Nintendo (EU)	Capcom	
2	Mega Man 4	Jan-92	Capcom (NA)Nintendo	Capcom	

			o (EU)		
2	Mega Man 5	Dec-92	Capcom (NA)Nintend o (EU)	Capcom	
2	Mega Man 6	Mar-94	Nintendo	Capcom	
2	Star Soldier	Jan-89	Taxan	Hudson Soft	Still getting sequels in 2007
2	Star Wars	Nov-91	JVC (NA)LucasA rts (EU)	Beam Software	
2	Star Wars: The Empire Strikes Back	Mar-92	JVC	Sculptured Software	
2	Street Cop	Jun-89	Bandai	Human Entertainment	
2	Strider	Jul-89	Capcom	Capcom	
2	Super C (aka Super Contra) (NA)Probotect or II: Return of The Evil Forces (EU)	Apr-90	Konami	Konami	
2	Super Glove Ball	Oct-90	Mattel	Rare	
2	Super Spy Hunter	Feb-92	Sunsoft	Sunsoft	
2	Super Team Games	Nov-88	Nintendo	Human Entertainment	Used Power pad
2	Superman	Dec-88	Seika	Kemco	
2	Bad News Baseball	Jun-90	Tecmo	Tecmo	Baseball game for nes, interesting since you can decide to play as girls teams or boys teams, similar to RBI baseball
2	Bad Street Brawler	Sep-89	Mattel	Beam Software	One of the only two games designed to use the powerglove. pretty bad game

2	Solar Jetman: Hunt for the Golden Warpsip	Sep-90	Tradewest	Zippo Games; Rare	
2	Barbie	Nov-91	Hi Tech Expressions	Imagineering	Developed as an attempt to get more girls to play video games. A typical platformer skinned in pink to get attention. Talked about in congress due to frequent counterfeiting of the game
2	Barker Bill's Trick Shooting	Aug-90	Nintendo	Nintendo Research & Development 1	Light gun game released by nintendo, carnival style gameplay
2	Batman	Feb-90	Sunsoft	Sunsoft	Platforming game with wall jumping, one of the best for nes
2	Battletoads & Double Dragon	Jun-93	Tradewest	Rare	crossover of battletoads and double dragon, pretty alright game. side scrolling action platformer. Had 3d scrolling backgrounds, which was uncommon for the era
2	Section Z	Jul-87	Capcom	Capcom	
2	Shadow of the Ninja (NA)Blue Shadow (EU)	Dec-90	Natsume (NA)Taito (EU)	Natsume	
2	Shatterhand	Dec-91	Jaleco	Natsume	
2	Short Order / Eggsplode!	Dec-89	Nintendo	TOSE	One of the few powerpad games
2	Silent Service	Dec-89	Ultra Games (NA)Konami (EU)	Rare	
2	Skate or Die!	Dec-88	Ultra Games	Konami	
2	Snake's Revenge	Apr-90	Ultra Games (NA)Konami (EU)	Konami	

3	1943: The Battle of Midway	Oct-88	Capcom	Capcom	Sequel to 1942, not of much importance - middle of the road in every way
3	720°	Nov-89	Mindscape	Tengen	Skateboarding game for nes, had good reception at time of release. Arcade port.
3	Abadox	Mar-90	Milton Bradley Company	Natsume	Very difficult shmup in gladius style, notable for unique setting and visuals. One hit = death
3	The Addams Family	Jan-92	Ocean Software	Ocean Software	Released for many consoles, including SNES, so NES not the best version to look for
3	The Addams Family: Pugsley's Scavenger Hunt	Aug-93	Ocean Software	Ocean Software	Same as Addams Family, originally released for SNES
3	Advanced Dungeons & Dragons: DragonStrike	Jul-92	FCI	Westwood Studios	Flight Sim with role playing elements, but NES versions had a top down perspective and much different gameplay compared to PC releases.
3	The Adventures of Bayou Billy	Jun-89	Konami	Konami	Beat-em-up game, brutally hard. Seems to have been well received
3	Adventures of Lolo 2	Mar-90	HAL America	HAL America	Gameplay is "Identical" to Lolo 1, not of much importance
3	The Adventures of Rad Gravity	Dec-90	Activision (NA)Mattel (AUS)	Interplay Productions	Notable for having a level with reversed gravity, well received.
3	Air Fortress	Sep-89	HAL America	HAL America	Standard space shooter with good gameplay
3	Arch Rivals	Nov-90	Acclaim Entertainment	Rare	arcade port of basketball game, nes version had glitch where you can get a 3 point dunk, 2v2 gameplay, not horrible
3	Archon	Dec-89	Activision	Free Fall Associates	One of the first games developed by EA, made for atari 8-bit systems then ported to nes. Apparently

					a pretty good battle chess game for the era
3	Arkista's Ring	Jun-90	American Sammy	American Sammy	Top down adventure game in zelda style, pretty good but not well known
3	Home Alone	Oct-91	THQ	Bethesda Softworks	One of the first game developed by THQ
3	Home Alone 2: Lost in New York	Oct-92	THQ	Imagineering	
3	King's Quest V: Absence Makes the Heart Go Yonder!	Jun-92	Konami	Novotrade	
3	Lemmings	Nov-92	Sunsoft	DMA Design	
3	Super Mario Bros./Duck Hunt	Nov-90	Nintendo	Various	
3	Zen the Intergalactic Ninja	Mar-93	Konami	Konami	Nothing noticeable
3	Zombie Nation	Jan-91	Meldac	KAZe	Nothing noticeable
3	To the Earth	Nov-89	Nintendo	Cirque Verte	Very difficult, not a lot of information. Did use Zapper
3	Top Gun	Nov-87	Konami	Konami	pretty unique dogfighter
3	Top Players' Tennis (NA)Four Player Tennis (EU)	Jan-90	Asmik	Home Data	possibly first four player NES tennis game
3	Track & Field (NA)Track & Field in Barcelona (EU)	Apr-87	Konami	Konami	NES port actually had more games

3	Trojan	Feb-87	Capcom	Capcom	Alternate vs mode from arcade version. Was Capcom's first attempt at the fighting game genre with that mode,
3	Twin Cobra	Jan-90	American Sammy	Toaplan	Toaplan's most popular arcade game
3	Ultima IV: Quest of the Avatar	Dec-90	FCI	Atelier Double; Infinity	one of the first games with ethical consequences possibly
3	Ultimate Air Combat	Apr-92	Activision	Activision	semi realistic combat sim, unsure of significance
3	Vegas Dream	Mar-90	HAL America	HAL America	Only video game ever with music from Professional Keyboardist Kuni Kawachi
3	Where's Waldo?	17-Sep-91	THQ	Bethesda Softworks	First Bethesda NES game, first Waldo video game, kinda shitty
3	Wizardry II: The Knight of Diamonds	Apr-92	ASCII	Sir-Tech	Possibly first game to allow carryover/data import from a previous game
3	Wrath of the Black Manta	Apr-90	Taito	AI	Notably stole art from How To Draw Marvel Comics by Stan Lee
3	WWF King of the Ring	Nov-93	LJN	Gray Matter Inc.; Eastridge Technology	Final WWF for the NES< last NES game by Gray Matter
3	Astyanax	Mar-90	Jaleco	Aicom	Action platformer released for nes and arcade at the same time, with differing stories and mechanics in both. pretty good game but nothing spectacular. REALLY good graphics for the era
3	Athena	Aug-87	SNK	Micronics	Interesting due to female protagonist before metroid, but as sexualised as you can be for 16 bit graphics. port from arcade and released on many other consoles, the nes version is probably the worst to have
3	Athletic World	1987	Bandai	Human Entertainment	This is an exercise game for nes that used the power pad. It was extremely difficult compared to other power pad games. What were they thinking

3	Friday the 13th	Feb-89	LJN	Atlus	One of the worst games of all time.
3	Tecmo Baseball	Jan-89	Tecmo	Tecmo	
3	Tecmo Cup Soccer Game	Sep-92	Tecmo	Tecmo	
3	Teenage Mutant Ninja Turtles III: The Manhattan Project	Feb-92	Konami	Konami	
3	Teenage Mutant Ninja Turtles: Tournament Fighters (NA)Teenage Mutant Hero Turtles: Tournament Fighters (EU)	Feb-94	Konami	Konami	Seems interesting
3	The Three Stooges	Oct-89	Activision	Incredible Technologies	Intentionally well-executed and funny game
3	Time Lord	Sep-90	Milton Bradley Company	Rare	Interesting timed mechanic
3	Tiny Toon Adventures	Dec-91	Konami	Konami	
3	Stanley: The Search for Dr. Livingston	Oct-92	Electro Brain	Sculptured Software	
3	Star Force	Nov-87	Tecmo	Hudson Soft	
3	Super Dodge Ball	Jul-89	Sony Imagesoft	Technōs Japan	
3	Super	Sep-91	GameTek		

	Jeopardy!				
3	Super Spike V'Ball	Feb-90	Nintendo	Technōs Japan	
3	Super Spike V'Ball/Nintendo World Cup	Dec-90	Nintendo	Various	
3	Sword Master	Jan-92	Activision	Athena	
3 (EU)	Bad Dudes (NA)Bad Dudes vs. DragonNinja	Aug-89	Data East (NA)Ocean Software (EU)	Data East	Arcade port, play as ninjas saving president ronnie. 'Merica
3	Solomon's Key	Jul-87	Tecmo	Tecmo	
3	Space Shuttle Project	Nov-91	Absolute Entertainment	Imagineering	
3	Spot: The Video Game	Sep-90	Arcadia Systems	Virgin Mastertronic	
3	Spy Hunter	Sep-87	Sunsoft	Sunsoft	
3	Spy vs. Spy	Oct-88	Seika (NA)Kemco (EU)	Kemco	
3	Bandit Kings of Ancient China	Dec-90	Koei	Koei	in depth text based rpg, seems pretty good but not well known
3	The Bard's Tale	Nov-91	FCI	Atelier Double	Port of rpg by EA, did really well in the pc market, okay game
3	Base Wars	Jun-91	Ultra Games	Konami	Robot baseball game that plays pretty similar to typical baseball games of the era, but the robots can beat up each other.
3	Baseball Simulator 1.000	Mar-90	Culture Brain	Culture Brain	Probably the one of the best baseball games to come out for nes
3	Baseball Stars	Jul-89	SNK	SNK	Pretty good baseball game, did really well

3	Bases Loaded	Jul-88	Jaleco	TOSE	pretty good baseball game but there is so many
3	Bases Loaded II: Second Season	Jan-90	Jaleco	TOSE	Another baseball game that improved upon the original
3	Batman Returns	Jan-93	Konami	Konami	Came out for SNES and NES, nes version better but a typical beat-em-up
3	Batman: Return of the Joker	Dec-91	Sunsoft	Sunsoft	Platforming game with password save feature, pretty good
3	Battle Chess	Jul-90	Data East	Beam Software	A port to nes from computer systems, okay game
3	The Battle of Olympus	Dec-89	Brøderbund (NA)Nintendo (EU)	Infinity	Action rpg, very similar to zelda 2, okay reception
3	Battle Tank	Sep-90	Absolute Entertainment	Imagineering	First person tank game, not the greatest.
3	S.C.A.T.: Special Cybernetic Attack Team (NA)Action In New York (EU)	Jun-91	Natsume (NA)Imagineer (EU)	Natsume	
3	Seicross	Oct-88	FCI	Nichibutsu	
3	Sesame Street: A-B-C	Sep-89	Hi Tech Expressions	Hi Tech Expressions	
3	Sesame Street: A-B-C/1-2-3	Nov-91	Hi Tech Expressions	Hi Tech Expressions	
3	Shingen the Ruler	Jun-90	Hot-B	Hot-B	
3	Shooting Range	Jun-89	Bandai	TOSE	
3	Silkworm	Jun-90	American	Tecmo	

			Sammy		
3	Silver Surfer	Nov-90	Arcadia Systems	Software Creations	
3	The Simpsons: Bart vs. the World	Dec-91	Acclaim Entertainment	Imagineering	
3	The Simpsons: Bartman Meets Radioactive Man	Dec-92	Acclaim Entertainment	Imagineering	
3	Ski or Die	Feb-91	Ultra Games	Konami	
3	Sky Kid	Sep-87	Sunsoft	Namco	
3	Sky Shark	Sep-89	Taito	Software Creations	
3	Smash TV	Sep-91	Acclaim Entertainment	Beam Software	
3	Snake Rattle 'n' Roll	Jul-90	Nintendo	Rare	
3	Snow Brothers	Nov-91	Capcom	SOL	
4	Advanced Dungeons & Dragons: Pool of Radiance	Apr-92	FCI	Marionette; SRS	Port from PC, generally well received RPG, biggest success of company at the time
4	Adventures in the Magic Kingdom	Jun-90	Capcom	Capcom	Side scrolling disney themed action platformer, areas themed after disney rides. Not very good
4	The Adventures of Gilligan's Island	Jul-90	Bandai	Human Entertainment	Not enough info, but seems not of importance. Apparently really bad
4	The	Dec-92	THQ	Radical	Released for nes, snes, genesis, and gameboy,

	Adventures of Rocky and Bullwinkle and Friends			Entertainment	apparently nes version is very glitchy and feels unfinished.
4	Airwolf	Jun-89	Acclaim Entertainment	Beam Software	Video game based on tv show of same name. Musical score good, gameplay dull
4	Al Unser Jr.'s Turbo Racing (NA)Turbo Racing (EU)	Mar-90	Data East	Data East	Standard racing game, not of much interest
4	Alfred Chicken	Feb-94	Mindscape	Twilight	Typical platformer ported to nes from snes and gameboy
4	Alien3	Mar-93	LJN	Bits Studios	Side scrolling action platformer, released for many platforms, snes version much better
4	Amagon	Apr-89	American Sammy	Aicom	Side scrolling action platformer. not very unique, kind bland action hero walking across an island
4	American Gladiators	Oct-91	GameTek	Incredible Technologies	NES versions varies greatly from others, side scrolling action. not horrible but not great. based on tv show
4	Bill & Ted's Excellent Video Game Adventure	Apr-91	LJN	Rocket Science Games	
4	Who Framed Roger Rabbit	Sep-89	LJN	Rare	Fairly standard but the old help line in the game is now a phone sex line. Could be considered an ARG?
4	Toki	Dec-91	Taito	Daiei Seisakusho	NES port had a health bar, pretty generic game, is getting a sequel now tho
4	Treasure Master	Dec-91	American Softworks	Software Creations	nothing noticeable, had an interesting prize system
4	The Uncanny X-Men	Dec-89	LJN	Unknown	only LJN game made by an undisclosed developer, last LJN game before sold to Acclaim Entertainment

4	Wall Street Kid	Jun-90	SOFEL	SOFEL	Unsure of Significance
4	WWF WrestleMania Challenge	Nov-90	LJN	Rare	Nothing noticeable
4	Xexyz	Apr-90	Hudson Soft	Atlus	Nothing noticeable
4	Yoshi's Cookie	Apr-93	Nintendo	Bullet-Proof Software	Nothing noticeable
4	Attack of the Killer Tomatoes	Jan-92	THQ	Imagineering	Typical platformer of the era, but based on the movie of the same name. Man its weird
4	Back to the Future	Sep-89	LJN	Beam Software	The director of back to the future told people not to buy this game because it sucks lol
4	TaleSpin	Dec-91	Capcom	Capcom	
4	Target: Renegade	Mar-90	Taito	Software Creations (US)	
4	Tecmo Bowl	Feb-89	Tecmo	Tecmo	
4	Tecmo World Cup Soccer	Unreleas ed	Tecmo	Tecmo	
4	The Terminator	Dec-92	Mindscape	Radical Entertainment	
4	Terminator 2: Judgment Day	Feb-92	LJN	Software Creations	
4	Terra Cresta	Mar-90	Vic Tokai	Nihon Bussan	Fairly unremarkable game, bad port
4	Thunder & Lightning	Dec-90	Romstar	SETA; Visco	Arkanoid clone
4	Thunderbirds	Sep-90	Activision		Nothing Noticeable
4	Thundercade	Jul-89	American Sammy	Micronics	Nothing Noticeable
4	Tiny Toon Adventures 2: Trouble in Wackyland	Apr-93	Konami	Konami	

4	Tiny Toon Adventures Cartoon Workshop	Dec-92	Konami	Novotrade International	
4	Spoon	Sep-87	Irem	Home Data	
4	Star Voyager	Sep-87	Acclaim Entertainme nt	ASCII	
4	Starship Hector	Jun-90	Hudson Soft	Hudson Soft	
4	Stealth ATF	Oct-89	Activision	Imagineering	
4	Stinger	Sep-87	Konami	Konami	
4	Street Fighter 2010: The Final Fight	Sep-90	Capcom	Capcom	
4	Super Cars	Feb-91	Electro Brain	Magnetic Fields	
4	Super Turrican	Unreleas ed	Imagineer	Rainbow Arts	
4	Swamp Thing	Dec-92	THQ	Imagineering	
4	Swords and Serpents	Aug-90	Acclaim Entertainme nt	Interplay Entertainment	
4	Back to the Future Part II & III	Sep-90	LJN	Beam Software	Verrrrry long with no saves, but a passcode to skip to the 2nd half of the game, not really of interest
4	Solstice: The Quest for the Staff of Demnos	Jun-90	Sony Imagesoft (NA)Nintend o (EU)	Software Creations	
4	Spelunker	Sep-87	Brøderbund	Tamtex; TOSE	
4	Spider-Man: Return of the	Oct-92	LJN	Bits Studios	

	Sinister Six				
4	Baseball Stars 2	Jul-92	Romstar		sequel to baseball stars, did okay
4	Bases Loaded 3	Sep-91	Jaleco	TOSE	Another sequel, its okay but its a baseball game. Removed a lot of features
4	Bases Loaded 4	Apr-93	Jaleco	TOSE	It's pretty much the same game as the first one
4	Beetlejuice	May-91	LJN	Rare	not great, not well known game
4	Sesame Street: 1-2-3	Jan-89	Hi Tech Expressions	Rare	
4	Sesame Street: Countdown	Feb-92	Hi Tech Expressions		
4	Shadowgate	Dec-89	Seika (NA)Kemco (EU)	Kemco	
4	Snoopy's Silly Sports Spectacular	Apr-90	Kemco	Kemco	
5	8 Eyes	Jan-90	Taxan	Thinking Rabbit	Mediocre action platform game
5	Advanced Dungeons & Dragons: Heroes of the Lance	Jan-91	FCI	Natsume	Originally released for PC, side scrolling action game with light role playing elements. Had 8 characters that acted as lives, couldn't switch on fly between them
5	Advanced Dungeons & Dragons: Hillsfar	Feb-93	FCI	Westwood Studios	Port from PC, received generally negatively on NES, but more traditional rpg
5	Adventures of Dino Riki	Sep-89	Hudson Soft	Hudson Soft	Nothing of importance
5	The Adventures of	Aug-89	SETA	Winkysoft	NES version and famicom level 5 as the first level, making the story incoherent and very hard.

	Tom Sawyer				Possibly one of the worst nes games officially licensed, because it is so boring. Not bad in a good way
5	Alpha Mission	Oct-87	SNK	SNK	Galaga clone ported to nes, not of much importance
5	Total Recall	Aug-90	Acclaim Entertainment	Ocean Software	NES version low rated, but also very different
5	Totally Rad	Mar-91	Jaleco	Aicom	Nothing noticeable
5	Touch Down Fever	Feb-91	SNK	SNK	Graphics downgrade from arcade, very similar to 10 yard fight but with rotating sticks, did have 2pt conversion 7 years before the NFL
5	Town & Country Surf Designs: Wood & Water Rage	Feb-88	LJN	Atlus	Nothing noticeable
5	Town & Country II: Thrilla's Surfari	Mar-92	Acclaim Entertainment	Sculptured Software	Nothing noticeable
5	Toxic Crusaders	Apr-92	Bandai	TOSE	Nothing noticeable
5	Track & Field II	Jun-89	Konami	Konami	Nothing noticeable
5	Trog!	Oct-91	Acclaim Entertainment	Visual Concepts	NES version was scaled down drastically. Only supports 2 players while arcade supported 4 players.
5	The Trolls in Crazyland	Unreleased	American Softworks	KID	nothing noticeable
5	Twin Eagle	Oct-89	Romstar	SETA	nothing noticeable
5	Ufouria: The Saga	Unreleased	Sunsoft	Sunsoft	nothing noticeable
5	Ultima V: Warriors of Destiny	Jan-93	FCI	Origin Systems	nothing noticeable

5	Ultimate Basketball	Sep-90	American Sammy	Aicom	eh
5	Uncharted Waters	Nov-91	Koei		nothing noticeable
5	Uninvited	Jun-91	Seika	Kemco	nothing noticeable
5	Vice: Project Doom	Nov-91	American Sammy	Aicom	nothing noticeable
5	Videomation	Jun-91	THQ	FarSight Studios	Not huge, but could do full video animation
5	Volleyball	Mar-87	Nintendo	Nintendo Research & Development 1	nothing noticeable
5	Wheel of Fortune	Sep-88	GameTek	Sharedata	Nothing noticeable
5	Wheel of Fortune Family Edition	Mar-90	GameTek	Sharedata	Nothing noticeable
5	Wheel of Fortune: Featuring Vanna White	Jan-92	GameTek	Sharedata	Nothing noticeable
5	Wheel of Fortune Junior Edition	Oct-89	GameTek	Sharedata	Nothing noticeable
5	Whomp 'Em	Mar-91	Jaleco	Jaleco	Racist, but nothing else really
5	Willow	Dec-89	Capcom	Capcom	more or less bog standard RPG
5	Win, Lose, or Draw	Mar-90	Hi Tech Expressions	Hi Tech Expressions	Nothing noticeable
5	Winter Games	Sep-87	Acclaim Entertainment	Atelier Double	Nothing noticeable
5	Wizards & Warriors III:	Mar-92	Acclaim Entertainment	Rare; Zippo Games	Nothing noticeable

	Kuros: Visions of Power (NA)Wizards & Warriors III (EU)		nt		
5	Wolverine	Oct-91	LJN	Software Creations	Nothing noticeable
5	World Games	Mar-89	Milton Bradley Company	Epyx	Nothing noticeable
5	Wurm: Journey to the Center of the Earth	Nov-91	Asmik	Cyclone System	Nothing noticeable
5	WWF WrestleMania	Jan-89	Acclaim Entertainment	Rare	Nothing noticeable
5	Asterix	Unreleased	Infogrames	Bit Managers	not released in america
5	Aussie Rules Footy	Unreleased	Laser Beam Entertainment (AU)	Beam Software	not released in america
5	Banana Prince	Unreleased	Takara	KID	not release NA
5	Bandai Golf: Challenge Pebble Beach	Feb-89	Bandai	TOSE	bad golf game of little note
Rank	Title[3][4]	NA[3][4][5]	Publisher(s) [3][4][5]	Developer(s)	
UNKN OWN	Tom and Jerry	Dec-91	Hi Tech Expressions		NOT ENOUGH INFORMATION
UNKN OWN	The Untouchables	Jan-91	Ocean Software		NOT ENOUGH INFORMATION
UNKN	Wacky Races	May-92	Atlus	Eidos	NOT ENOUGH INFORMATION

OWN					
UNKN OWN	Wayne Gretzky Hockey	Jan-91	THQ	Bethesda Softworks	NOT ENOUGH INFORMATION
UNKN OWN	Wayne's World	Nov-93	THQ	Radical Entertainment	NOT ENOUGH INFORMATION
UNKN OWN	Werewolf: The Last Warrior	Nov-90	Data East	Data East; Sakata SAS	NOT ENOUGH INFORMATION
UNKN OWN	Widget	Nov-92	Atlus	Graphic Research	NOT ENOUGH INFORMATION
UNKN OWN	World Champ	Apr-91	Romstar		DOESN'T EVEN HAVE A WIKI PAGE
UNKN OWN	The Young Indiana Jones Chronicles	Dec-92	Jaleco	Jaleco	First or one of the earliest TV based game or something?