BS1 Final Report

Education game
For
Preschool children

Group Members

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Semester 2, Academic Year 2014

18/05/2015

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Statement of Contribution

PhatyawatAsarasri (5422770362)	50%
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1. Introduction

Preschool children are 3-5 years old. This age need education because their brains are in improvement step. Their brains need stimulation. They should do a test for training their thinking skill and have better concentration. In present, education from school may be not enough. They should study not only from school. They can learn everywhere and anytime. That is the reason why education game for preschool children created. We can see this game in intelligence pen. It has 2 parts pen and paper. Pen can say the word when tough the paper. Paper has questions and pictures. This game has many papers. The rule is using the pen point on picture or question in the paper. Pen will speak words of the question or speak a name of the picture that we point.

This is a good product but it is expensive and hard to carry. It is expensive because it has many resources especially the pen. The pen is electronic pen. This game use many paper because it must have many question. One paper can keep only one question. If you want to play in other place, you must bring pile of paper and big pen. If you forgot either pen or paper, you can't play it.

We want to fix that problem by our application. We will implement our application in android smartphone and tablet. It will cheaper than intelligence pen because it just application in smart phone. It doesn't have a pen and papers. You can play anyplace just keep tablet with you.

Our application is a quiz game. It has question and multiple choices. In the question will ask about color andshape. Our Application will change level by itself. If children can get correct answers continually more than 5 questions, question will change to hard level. It means change to harder question but if children choose wrong answers question it will back to normal level of question. In the question if children get correct answer then it has sound appear beep that is correct answer .For example, question show Picture of Rectangle so children must choose picture of answer that is rectangle if they choose answer that is rectangle(correct answer) application will beep right sound . In case if children choose wrong answer application will beep sound bad.While playing our application will have a music and show time that have 30 sec countdown gradual.In the end while children play the game, we will show a results page which tell them what the results that you get is..ex; Try Again,Ok,Great etc.

2. Background

Present, human create many toy for children. They want children enjoy and improve their skill. Children need different toy depend on their age. Preschool child is 3-5 years old. They just want toy which focus in color and shape. It call physical toy. It designs to make child pay attention on it. Some product has a sound. In this age, they just want cartoon toy or shape. This toy doesn't improve child skill enough because they just know "what is this shape?" "What name of this color ?".We have research that intellectual development of children aged 4-5 years. They can count number 1-3 and memorize the correct number 1-30, know colors name and matching colors, understand of the size and the time such as day minute and they play toys longer because have better concentrate.

Now, it has toy which can make improvement on child thinking and popular in new generation parent. It call intelligent pen. This toy includes electronic pen and paper. Paper may be picture when pen point on picture, pen will read that word. It can improve language skill for child. They will listen what the pen said and repeat it. They will remember how to pronounce that word. It is good beginning for practice. Pen has other type. Paper has question and 4 choices. Questions have difficulty level for child. Pen is pointer. It will say correct when select correct answer. It has weakness. It is hard to carry. If you forget pen or paper, it doesn't work. Technology is one way to solve this problem. If we can import it in android smartphone or tablet, it will easy to carry them.

Android is a mobile operating system (OS) based on the Linux kernel and currently developed by Google.Android using java to generate. We will import our application on this OS.

Android Studio is a program for create Android application only.

ADT(Android Developer Tools) is a tool in Android Studio. This tool a bundle of Android Studio. This tool will help us to generate our application

Basically, it is the place where the application software is crafted. We will use this program to create application because we have experience on Java Knowledge which This program is easy to use and convenient and can create android application project. Quiz game must have space to keep question and choices. We will make our application look interested by little animation. We use Adobe Flash Professional CS6 in this part. A Flash animation or Flash cartoon is an animated film which is created by Adobe Flash or similar animation software and often distributed in the SWF file format but we convert type of file to mp4 because in android studio SWF type cannot work on it. Animation cartoon will make children interest on our application.

3. Objectives

The aim of this project is create the education game which cheap enough and portable. Important role of this game is interested and enjoyed by children. In order to achieve the project aim, the following objectives must be met:

1. Understand children what they should improve.
2. Understand what are children interests.
3. To obtain more Java Knowledge
4. Study more android application development.
5. To design flash animation cartoon.
6. Children enjoy with our game.

4.UserOutputs and Expected Benefits

4.1 Outputs

Main feather:

- Start page
- Has little animation
- Quiz with multiple choice
- Have a sound
- Random choice and question
- Auto generate difficult
- Conclusion page

4.2 Benefits

Preschool development is important for success across an entire life. 85% of brain will develop before 5 ages so we create educational game application for improve mainly their concentrate ,thinkingskill anddiscrimination. In our educational game are the potentials of game for learning can benefits such as learning and having fun, taking the challenge and achieve better score and being able to express the feelings. For the parent who doesn't want to pay for expensive toys so our education game is a great alternative affordable and useful.

5. Literature Review

Kizzu:- In Application have 120 easy vocabulary and illustrated actual image with vibrant sound exciting and fun. When touch the figure then it play with a soundtrack of the picture its can turn on and off this function. We have some example vocabulary and sound from this app.

Figure 1: Start page

Figure 2: Some basic vocabulary in Kizzu app.

Monkey Preschool Lunchbox:- Application have 7 different games that teach kids about colors ,letters, counting shapes, sizes matching and differences. It has animated monkey helps kids along as play the games. Within the application the interface designed for preschoolers for no

confusing menus or navigation. We get idea about have signature animate cartoon on application interface.

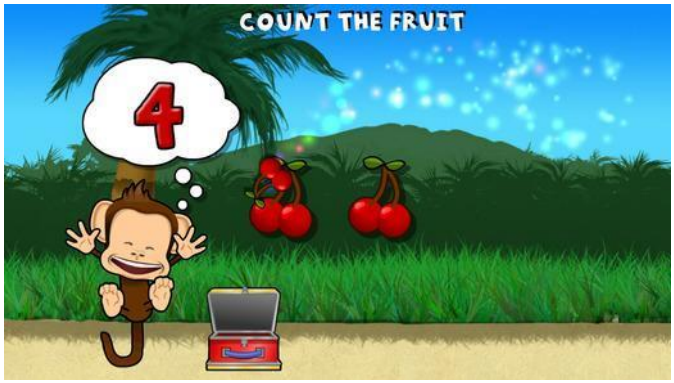
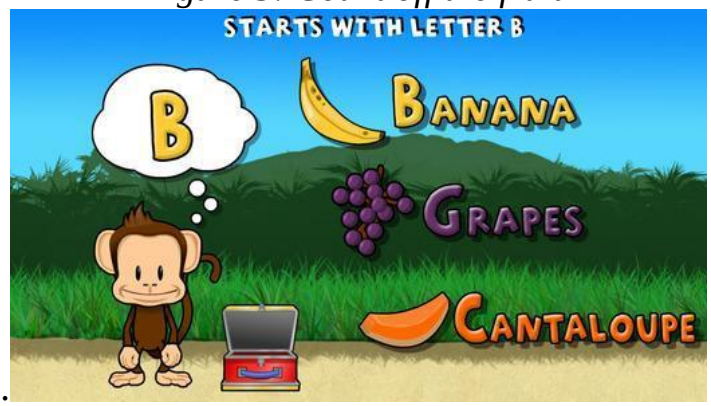


Figure 3: Count off the fruit



.

Figure 4: Pick the fruit that starts with that letter.

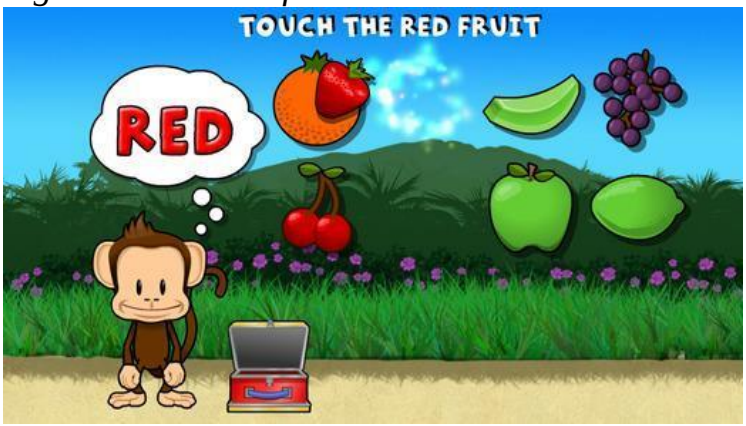


Figure 5: Pick the fruits that has red color.

Super intelligence - educational quiz for preschool kids:- It's quiz game and have 10 questions sets. While playing it has sound speak the question and questions are very interesting .

Figure 6: Choose game set of questions.(Main page)

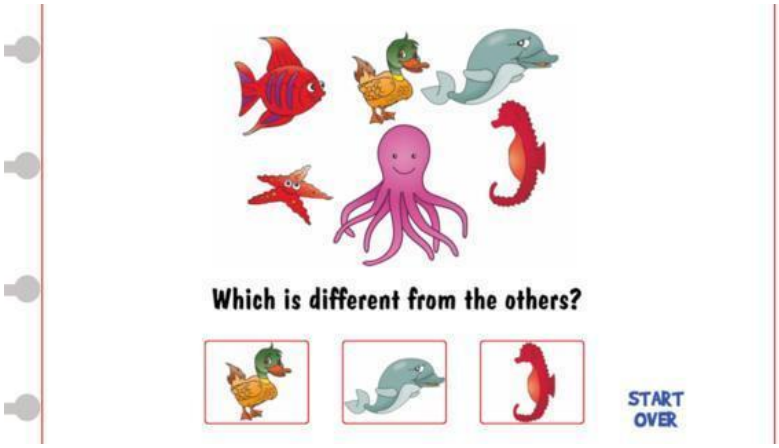


Figure 7: Which is different the others?(Some example question.)

6. Methodology

6.1 Approach

First step: Create title page.

Figure 8: Application interface

Second step: Design how the game could be play.

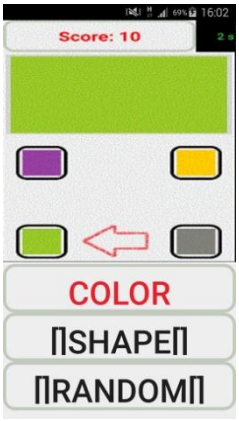


Figure 9: How to interface

Third step: Create quiz game page. Set countdown system for count the correct answer. Level of question will be harder, if children can do correct answer continually and will lower when they do wrong answer.

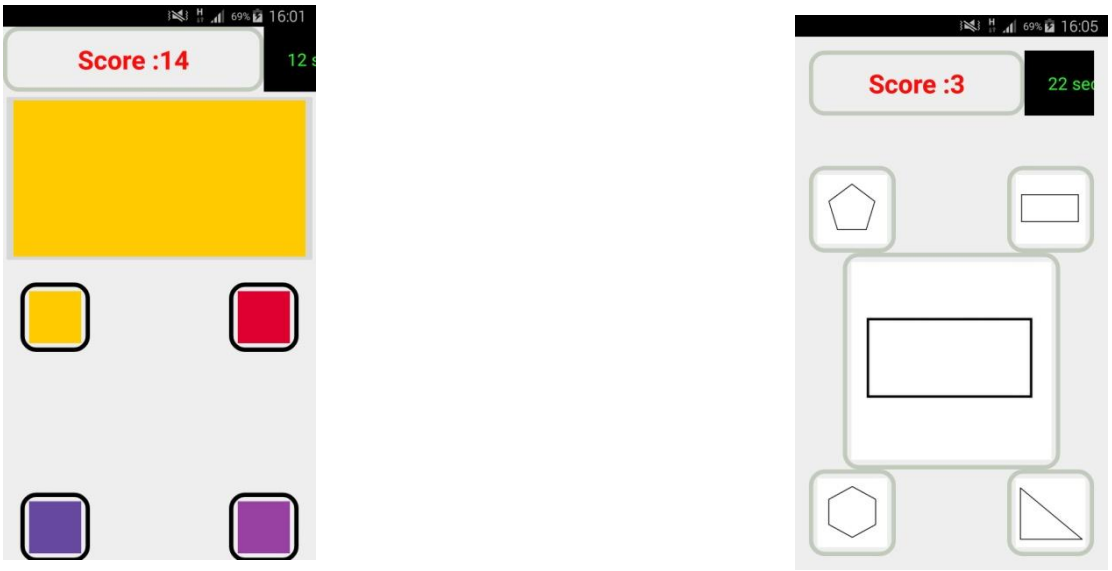


Figure 10: normal game interface

Fourh: Create result page. In this page will show amount of correct answer and little animation

Figure 11: normal game interface

6.2 Tools and Techniques

6.2.1 Tools

Android Studio is a program for create Android application only.

ADT(Android Developer Tools) is a tool in Android Studio. This tool a bundle of Android Studio. This tool will help us to generate our application

A Flash animation or Flash cartoon is an animated film which is created by Adobe Flash Professional CS6 or similar animation software and often distributed in the SWF file format.

6.2.2 Techniques

- Java programming skill
- Flash animation skill
- ADT skill

We use the function in ADT to create UI and function in application. This app will call data to random the questions and choices**.** Flash animation is easy animation program. We will use it for create interface in application. Almost children pay attention on moving cartoon.

7. Technical Description

Title page is the first page. It appears before start application. This page has one material. Itis videoview. Videoview use to store video player. We. Video in this page is animation which created by Flash Animation program. We drew picture in this program. We set action frame by frame. When we save this animation, it is swf file. We can't play it in android application. We must change it in to mp4 files before play it in videoview

```
public class MainActivity extends Activity
{
    MediaPlayer mpT,mpst;    VideoView video;
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.start);
        mpT = MediaPlayer.create(MainActivity.this, R.raw.ebittitle);
        mpT.start();

        video = (VideoView) findViewById(R.id.v);
        Uri video1 = Uri.parse("android.resource://" + getPackageName() + "/" + R.raw.doodleout);
        video.setVideoURI(video1);
        video.start();
        video.setOnPreparedListener((mp) -> { mp.setLooping(true); });
        DisplayMetrics metrics = new DisplayMetrics(); getWindowManager().getDefaultDisplay().getMetrics(metrics);
        android.widget.LinearLayout.LayoutParams params = (android.widget.LinearLayout.LayoutParams) video.getLayoutParams();
        params.width =  metrics.widthPixels;
        params.height = metrics.heightPixels;
        params.leftMargin = 0;
        video.setLayoutParams(params);

        Button start = (Button) findViewById(R.id.Ready);
        start.setOnClickListener((v) -> {   mpst = MediaPlayer.create(MainActivity.this, R.raw.ebitstartt);
                mpst.start();
                mpT.stop();
                video.stopPlayback();
                Intent inf = new Intent(MainActivity.this, How.class);
                startActivity(inf);
                finish();
            }); }}
```

Figure 12: Videoview

How to play page just teach player how to play this game. This animation was made by animation list function. This function will slide picture follow the sequence. We save picture in drawable folder and created xml file for store this picture in function animation list. Picture must small ,gif file and name it frame_(sequence). Duration is speed of animation lower number more speed. The button under how to play video link to quiz page.

It is menu page too. It use to choose the type of question in this game. This game has 3 type questions color ,shape and random. Random will swap color and shape question while player play game.

```
<?xml version="1.0" encoding="utf-8"?>
<animation-list xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/selected" android:oneshot="false">
    <item android:drawable="@raw/frame0" android:duration="500" />
    <item android:drawable="@raw/frame1" android:duration="500" />
    <item android:drawable="@raw/frame2" android:duration="500" />
    <item android:drawable="@raw/frame3" android:duration="500" />
    <item android:drawable="@raw/frame4" android:duration="500" />
    <item android:drawable="@raw/frame5" android:duration="500" />
    <item android:drawable="@raw/frame6" android:duration="500" />
    <item android:drawable="@raw/frame7" android:duration="500" />
    <item android:drawable="@raw/frame8" android:duration="500" />
    <item android:drawable="@raw/frame9" android:duration="500" />
    <item android:drawable="@raw/frame10" android:duration="500" />
    <item android:drawable="@raw/frame11" android:duration="500" />

</animation-list>
```

figure 13: Animation for teaching player

Quiz page has three types color, shape and random.

Color page asks to find same color. Application will random a color code from array. They are choices of question. For question, application will random question from them. It makes one choice that has a same color as question. If they can get correct answer, player will get 1 score. Score shoes at scoreview above the question. Beside scoreview is countdown. Player has 30 seconds to get score.

```
String[] colorCode = {"#9ac929"/*Green*/
        , "#4848a1"/*Blue*/, "#6748a1"/*Violet*/, "#9941a3"/*Purple*/
        , "#d3419e"/*Pink*/, "#df002f"/*Red*/
        , "#ff7e00"/*Orange*/, "#ffcc00"/*Yellow*/, "#83827a"/*Gray*/, "#854301"/*Brown*/};
```

figure 14: set time and count score

```
protected void onCreate(Bundle savedInstanceState) {
    mpS = MediaPlayer.create(Shape.this, R.raw.ebitshape);
    mpS.start();
    super.onCreate(savedInstanceState);
    setContentView(R.layout.shapeq);

    Bundle val = getIntent().getExtras();
    if(val != null){
        score = val.getInt("score");
        time = val.getInt("time");
    }

    TextView sc = (TextView) findViewById(R.id.textView6);
    sc.setText(String.format("Score :%d", score));

    new CountDownTimer(time * 1000, 1000) {

        public void onTick(long millisUntilFinished) {
            TextView countdown = (TextView) findViewById(R.id.textView3);

            time--;

            countdown.setText(String.format("%d sec", time));
        }
     public void onFinish() {
            Intent f = new Intent(Shape.this, Result.class);

            f.putExtra("score",score);
            startActivity(f);
            finish();
        }
    }.start();
```

Figure 15:countdown and count score

Shape page likes a color but it random file pictures from array. Array collects path for get file picture from drawable folder.

```
int[] photos = {R.drawable.img_1, R.drawable.img_2, R.drawable.img_3, R.drawable.img_4
              , R.drawable.img_5, R.drawable.img_6, R.drawable.img_7, R.drawable.img_8
              , R.drawable.img_9, R.drawable.img_10, R.drawable.img_11, R.drawable.img_12
              , R.drawable.img_0};
int[] choices = {0, 0, 0, 0};
int[] imageButtonId = {R.id.imageButton2, R.id.imageButton3, R.id.imageButton4, R.id.imageButton5};
```

Figure 16:Array for storing file picture

Random type will random between color page and shape page.

Each buttons has value 0-3. It has 2 method inside random and checkcorrectanswer. Random method uses for random resource from array and put it in choices and question. Question comes from random choices value. For example, ButtonA is 0. ButtonB is 1. ButtonC is 2. ButtonD is 3. Application random 0 for question. It means question has same value as buttonA. If buttonA is red, question will red too. Checkcorrectanswer method is method for check correct answer to give score and link to hardmode. It checks correct answer by comparing between question and choice which player picks it up. From previous example, Question has same value with buttonA. Application checks correct answer with this value. If question value equal to choice value, player will get correct answer. After you can get correct answer, Application will give player a score.

```
public void random() {

    int[] data = randomIntArray(imageButtonId.length, 0, colorCode.length - 1);
    for (int i = 0; i < data.length; i++) {
        int color = Color.parseColor(colorCode[data[i]]);
        imageColor[i] = Color.parseColor(colorCode[data[i]]);
        iv[i].setImageDrawable(new ColorDrawable(color));
    }

    correctAnswer = randInt(0, 3);
    ImageButton quest = (ImageButton) findViewById(R.id.imageButton1);
    quest.setImageDrawable(new ColorDrawable(imageColor[correctAnswer]));

}
```

Figure 17:Random choices and question

```
public void checkCorrectAnswer(int corr, int ans) {
    Log.d("MyApp", "score");
        if (corr == ans) {
            score++;
            harder++;
            TextView sc = (TextView) findViewById(R.id.textView6);
            sc.setText(String.format("Score :%d", score));

            if (harder == 5) {
                Intent e = new Intent(Shape.this, HardShape.class);
                e.putExtra("score", score);
                e.putExtra("time", time);
                startActivity(e);
                finish();

            }
            random();
            mp = MediaPlayer.create(Shape.this, R.raw.crrr);
            mp.start();

        } else {
            long pattern[] = {0, 400};
            harder = 0;
            random();
            mpp = MediaPlayer.create(Shape.this, R.raw.fss);
            mpp.start();

            Vibrator v = (Vibrator) getSystemService(Context.VIBRATOR_SERVICE);
            v.vibrate(pattern, -1);
        }
    }

}
```

Figure 18:Checkcorrect answer method

Hard mode has 2 types color and shape question. This page will appear, if

player can get 5 correct answer continually. Hard mode of color and shape are different. Color quiz have 9 choices. Shape quiz has fast rotation choices and questions.

Color quiz just add button and array for keep value. In normal, we have 0-3 , but hard mode has 0-8.

```
for (int i = 0; i < imageButtonId.length; i++)
    iv[i] = (ImageButton) findViewById(imageButtonId[i]);

ImageButton buttonRandomA = (ImageButton) findViewById(R.id.imageButton2);
random();
buttonRandomA.setOnClickListener((v) -> {
        count++;
        answer = 0;
        checkCorrectAnswer(correctAnswer, answer);
});
ImageButton buttonRandomB = (ImageButton) findViewById(R.id.imageButton3);
random();
buttonRandomB.setOnClickListener((v) -> {
        count++;
        answer = 1;
        checkCorrectAnswer(correctAnswer, answer);
});
ImageButton buttonRandomC = (ImageButton) findViewById(R.id.imageButton4);
random();
buttonRandomC.setOnClickListener((v) -> {
        count++;
        answer = 2;
        checkCorrectAnswer(correctAnswer, answer);
});
ImageButton buttonRandomD = (ImageButton) findViewById(R.id.imageButton5);
random();
buttonRandomD.setOnClickListener((v) -> {
        count++;
        answer = 3;
        checkCorrectAnswer(correctAnswer, answer);
});
```

Figure19: Normal mode's button

Shape quiz is rotation by creating xml file and set animation in it. Less duration make picture moving fast.

```xml
<?xml version="1.0" encoding="utf-8"?>
<rotate
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:fromDegrees="0"
    android:toDegrees="360"
    android:pivotX="50%"
    android:pivotY="50%"
    android:repeatCount="infinite"
    android:duration="70" />
```

Figure 20:Rotation method

Result page will show score from score view. Score come from end of quiz. Score will go in the loop and show doodle. Doodle character follow the score. For example, 'Ok' doodle will appear when you can get 10 score. Player can go back to play our application by play again button. It link to menu button.

```java
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    Bundle val = getIntent().getExtras();
    if (val != null) {
        score = val.getInt("score");
    }

    GameOver();

}

public void GameOver() {
    if (score == 0 || score == 1) {
        Intent inf = new Intent(Result.this, TryAgain.class);
        inf.putExtra("score", score);
        startActivity(inf);
        finish();

    } else if (score <= 14) {
        Intent inf = new Intent(Result.this, Great.class);
        inf.putExtra("score", score);
        startActivity(inf);
        finish();

    } else if (score >= 20) {
        Intent inf = new Intent(Result.this, Excellent.class);
        inf.putExtra("score", score);
        startActivity(inf);
        finish();

    }
}
```

Figure 21: loop for videoresults

These are some finish work Flash animate that we design on Adobe Flash Professional CS6. We want every cartoon have colorful and different of colors. Our cartoon concept is imagination cartoon not animals because children feel excite if they see our characters cartoons that they didn't see before. In our application will see animate cartoon on home page and result pages.

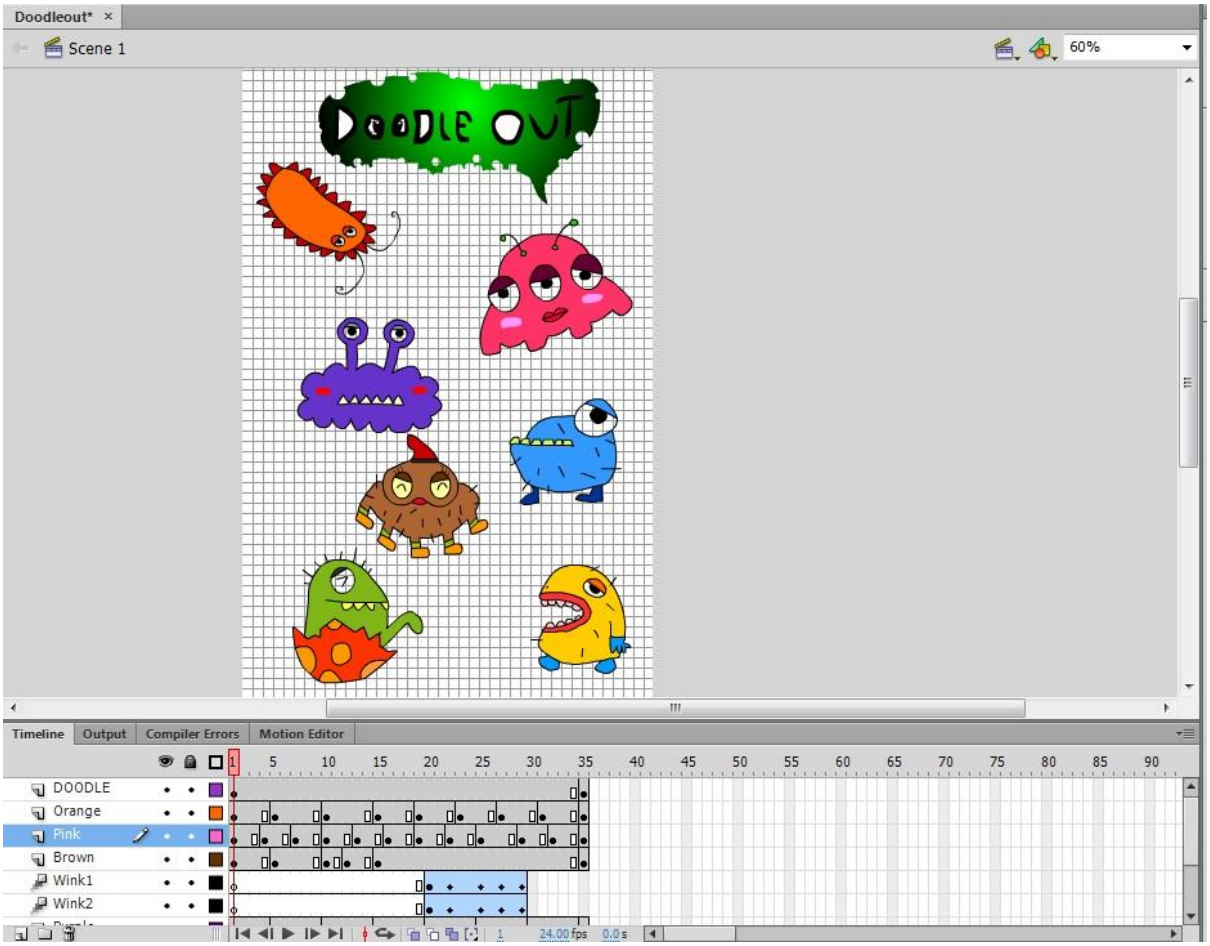


Figure22: *Design animate cartoon appear on home page.*

Here is some design to create result pages.

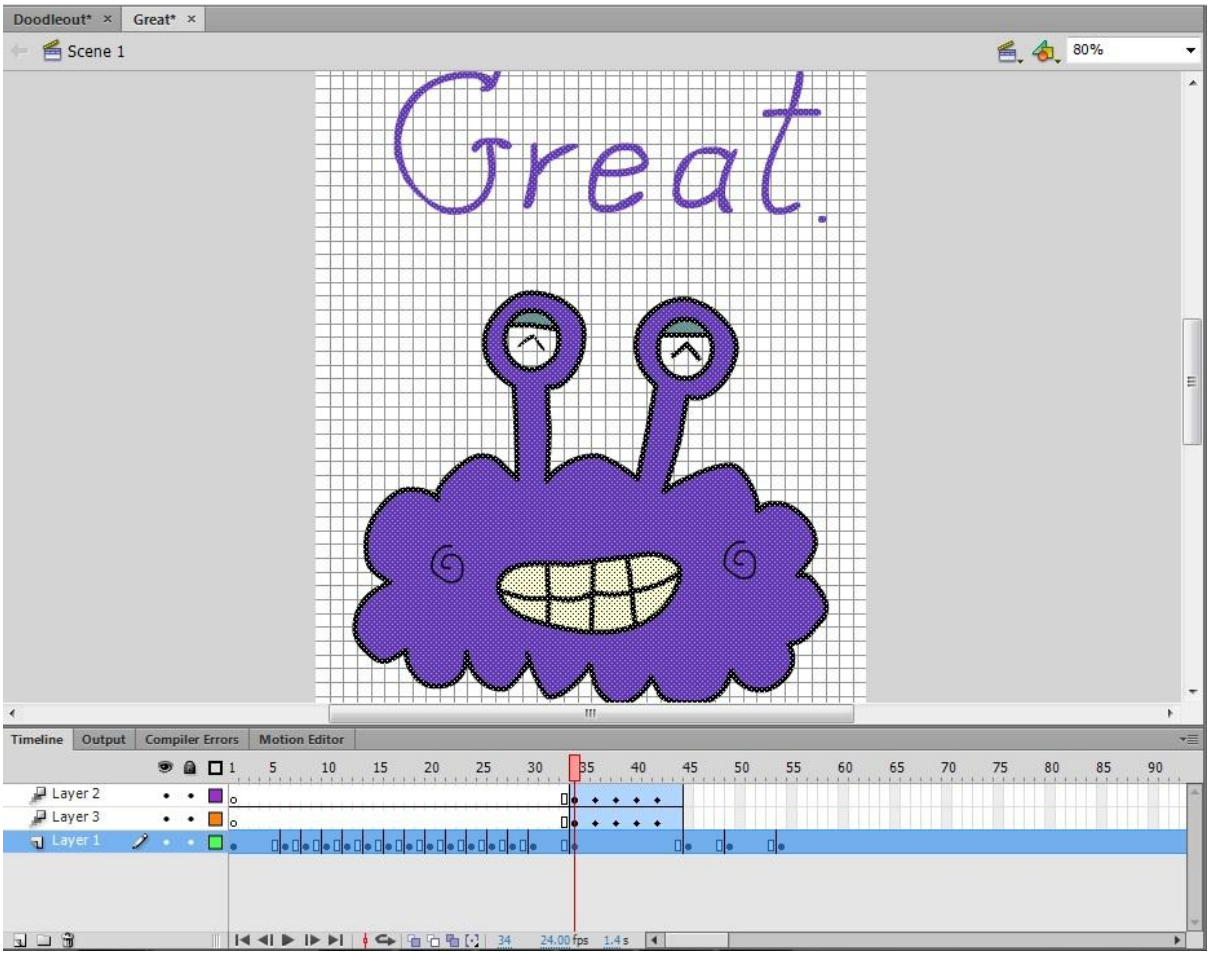


*Figure*23 :*One big cartoon on great result page*

8.Problem

Result video may be run more than one video in same time.

9.Project Schedule

This Table will represent the task that we will finish in semester 1 and 2

Status	Deadline	Duration	Person	Description	Task
100%	29 Sep 14	2 weeks	Phatyawat& Setthawut	Draft Proposal	1
100%	20 Nov 14	3 weeks	Phatyawat& Setthawut	Project Proposal	2
100%	4 Dec 14	1 week	Phatyawat& Setthawut	Prepare and Practice presentation	3
100%	20 Dec 14	2 weeks	Phatyawat& Setthawut	Design and create animate cartoon by using flash animation	4
100%	8 Jan 2015	4 weeks	Phatyawat& Setthawut	Study how to implement the game on smartphone	5
40%	1March 2015	8 weeks	Phatyawat& Setthawut	Coding application	6
80%	3 March 2015	2 weeks	Phatyawat& Setthawut	Test the game	7
100%	18March 2015	3 weeks	Phatyawat& Setthawut	Make final project report	8

References

Kizzu - 100 words for Babies &Toddlers,Retrieved 29 September 2014 from https://itunes.apple.com/th/app/100-words-for-babies-toddlers/id534485868?mt=8

Monkey Preschool Lunchbox,Retrieved 29 September 2014 from https://itunes.apple.com/us/app/monkey-preschool-lunchbox/id328205875?mt=8

Super intelligence - educational quiz for preschool kids,Retrieved 29 September 2014 from https://itunes.apple.com/tm/app/super-intelligence-educational/id649380680?mt=8