Team 23 Project Plan

Customer Loyalty Program for Small Businesses

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Members:

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1 - Problem/need statement

We propose creating a mobile customer loyalty application to increase business for small businesses. Such an application will encourage customers to patronize local businesses by offering them reward incentives on goods and services they already purchase. It will aim to replace existing reward incentives such as punch cards and coupons by providing a more

convenient system for both the consumer and business.

Our primary customer will be iapps24, a smart-phone application development company based in Des Moines who have sought Iowa State University students to begin development on this application.

2 - Concept Sketch

Signs up

Selects punch cards

Mobile punch card app

Use app as punch card

Punches app after purchase

Verify punch card is complete

Signs up, to be part of loyalty program

When punch card is complete, you can bring it to the merchant to redeem reward, and app provide you with a punch card with better rewards!

Once verified, merchant gives user the reward
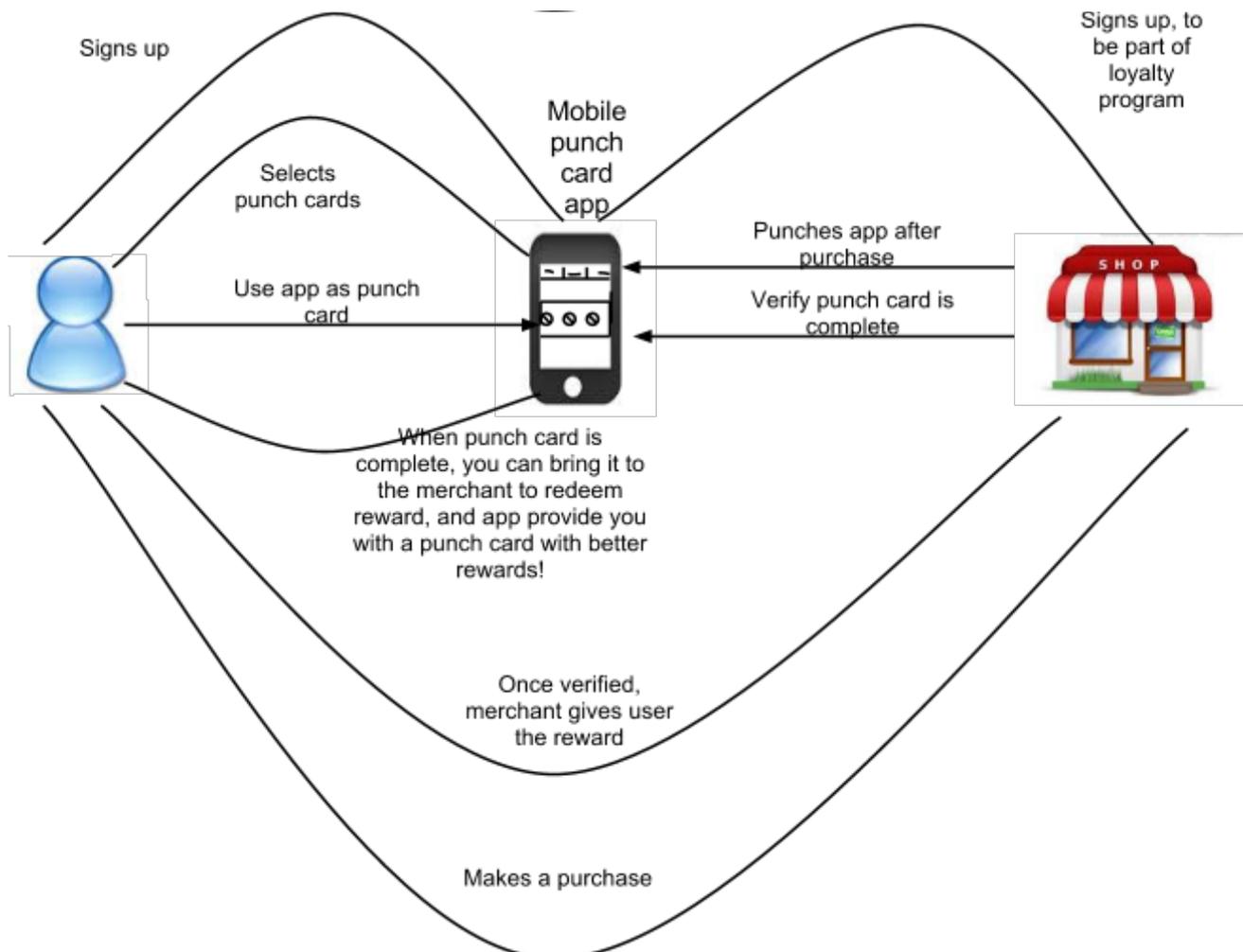
Makes a purchase

Figure 2.1. Shows how the user and the merchant can interact with our application

2.1 Use Cases

Use Case	Primary Actor(s)	Precondition	Summary	Outcome
UC-1 Create account	Customers and merchants	Users have to download the app	Customers/ Merchants enter a username, password, and select a role that they want for a new account to be created	New account is created and it's going to be added to the system
UC-2 Login/ logout	Customers and merchants	Must be a member	Customers/ Merchants enter their username and password	System will redirect user according to their role.
UC-3 Create loyalty card	Merchants	Must be logged in.	Merchants can manage/create loyalty card.	New loyalty card is created/edited into system.
UC-4 Expire loyalty card	Merchants	Must be logged in.	Merchants can expire a loyalty card if they choose to.	Loyalty card is no longer valid.
UC-5 Verify punches	Merchants	Customer must have downloaded the loyalty card for that merchant.	The punch will be verified.	If it is successfully verified, user's card will get updated with punch.
UC-6 Verify reward	Merchants	Customer must have collected all required number of punches.	Merchant will be able to verify the user has collected all the punches.	Once verified, user will get the reward

UC-7 Search businesses	Customer	none	Users can search for restaurants based on the name, by location, by gps.	The system will return a list of businesses based on the search criteria.
UC-8 Selects a card	Customer	Must be logged in	User can select loyalty cards they want from specific businesses.	Loyalty card will be selected.
UC-9 Download card	Customer	Customers must have selected a card.	Customer wants to download the specific loyalty card they selected.	Card is downloaded and stored into the system.
UC-10 Redeem punch	Customer	Customer has to have purchased a product	Customers getting a punch after purchasing a product.	Punch is updated into card and updated in the system.
UC-11 Redeem reward	Customer	Customers must have a completed punch card	Customer has completed punch card.	Customer may let store verify, if successful, they will be given the reward. Reward redemption will be stored in the system
UC-12 Store history	Database	none	Redeemed loyalty card is stored into the system database	The system can now return the history of a loyalty card if requested.
UC-13 Merchant query history	Merchant	Must be a merchant user.	Merchants can view history of redeemed loyalty cards for their business needs	System will return the requested loyalty cards.

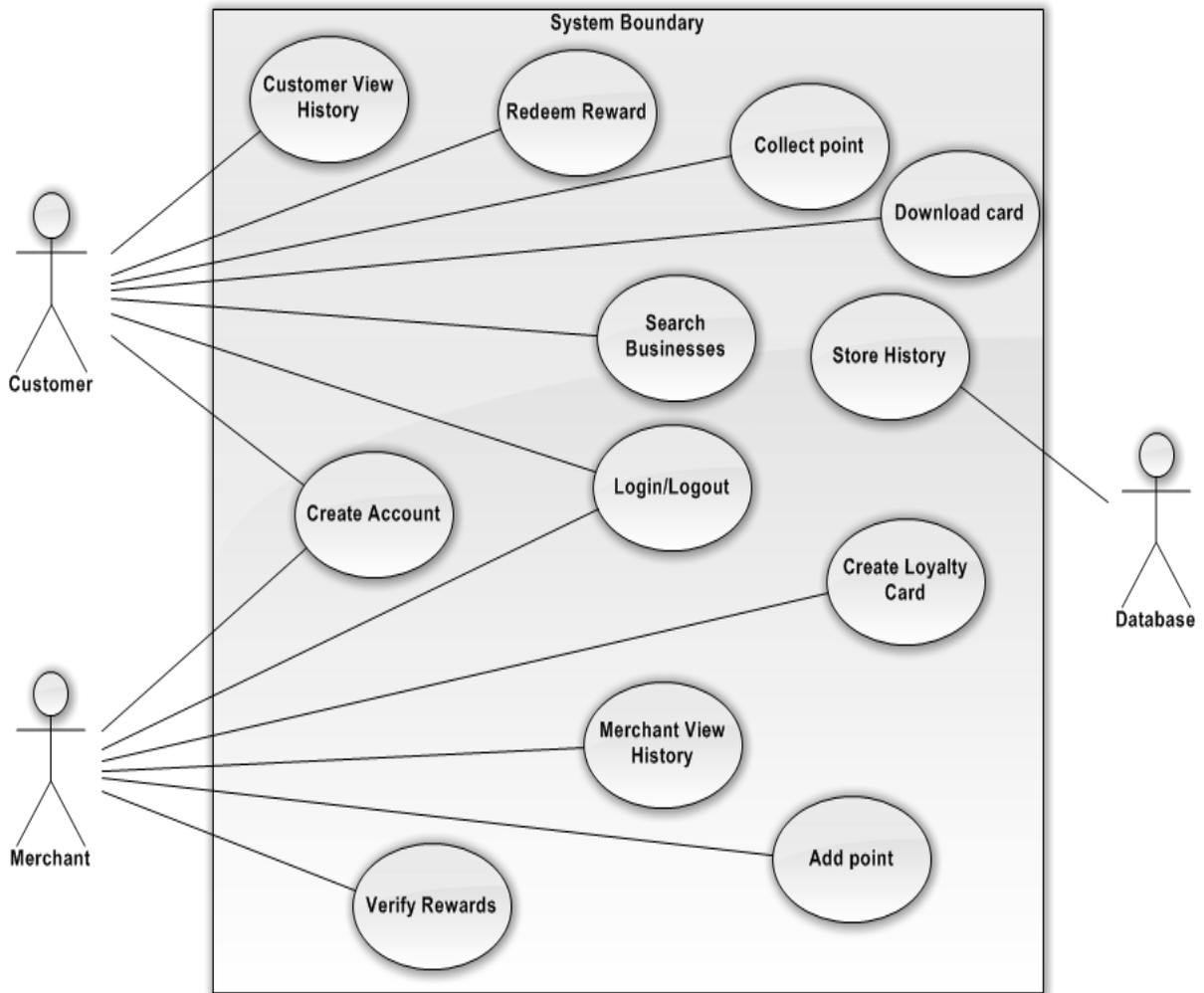| UC-14 Customer query history	Customer	Must be a Customer	Customer can view his/her own history of loyalty cards.	System will return the requested loyalty cards.

Figure 2.2 This is a use case diagram of actors Customer and Merchant
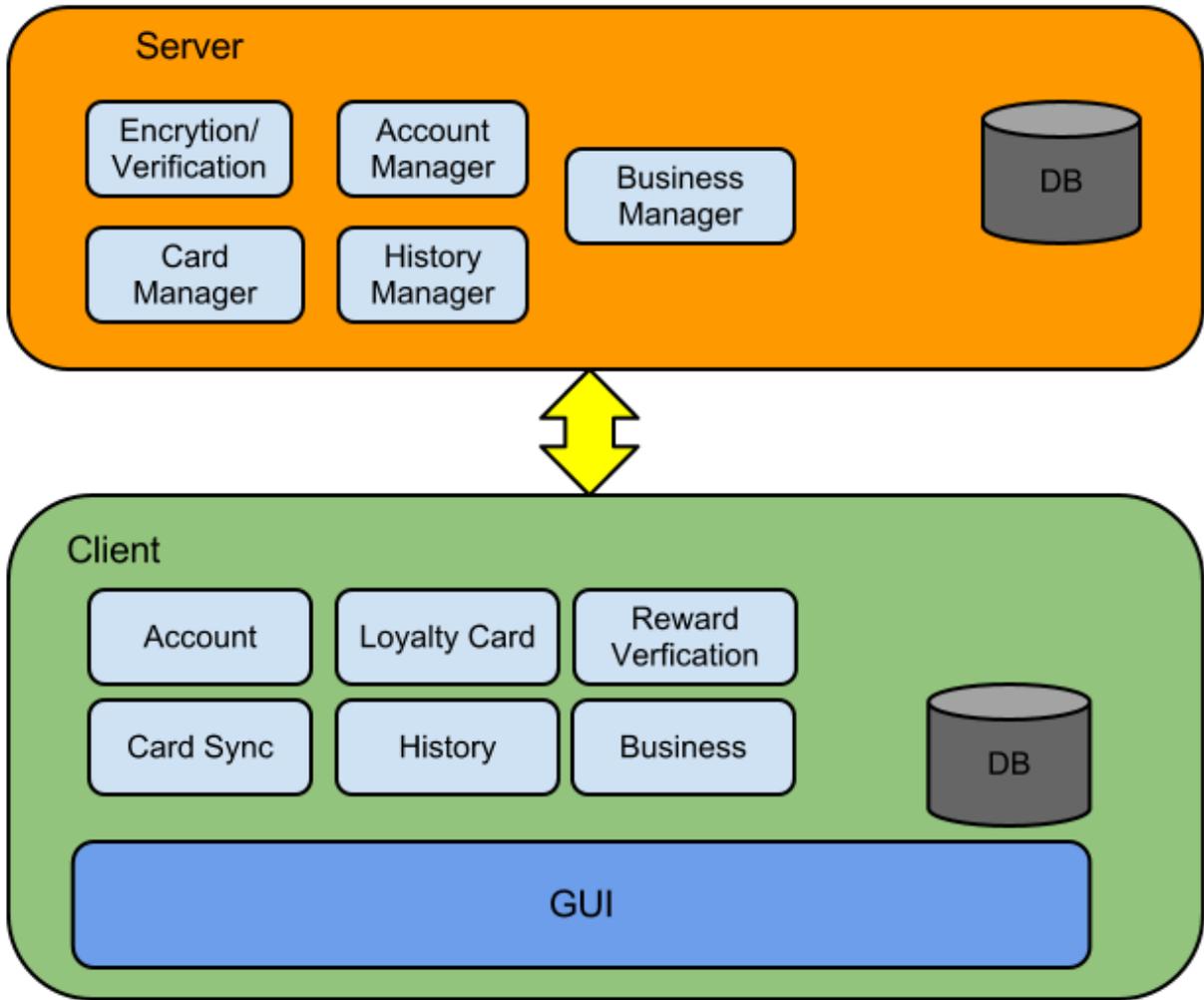
3 - System block diagram

Figure 3.1. System Block Diagram

4 - System description

We are looking to create mobile customer loyalty application. The application will allow for merchants to create reward based incentives for their business. The rewards will be based upon a traditional punch card system, but stored electronically in the user's phone. The merchants will also be able to expire rewards and set expiration dates at any time. (Each reward card will have a disclaimer for what happens if the reward is not available at the time of redemption). Merchants will be able to verify punches and reward redemptions at the time of purchase.

Customers will be able to search the app for available punch cards at local businesses by GPS and name based searching. When a customer finds a punch card they plan on using, they can download it directly to their phone. The punch card will have information on what type of purchase will qualify for a punch. When a customer earns the required number of punches, they will be able to collect a reward.

History of punch cards will be stored on a server database. Merchants will be able to view information about the number of punch cards redeemed at their store, but not about the individuals who redeemed them. Customers can view their personal history of redeemed punch cards.

5 - Operating environment

The system will run on Android and iOS mobile devices. The mobile devices will utilize a local SQLite database to store information about a user's current loyalty cards. There will also be a MySQL database on a server that will store information about businesses, completed card history, and loyalty card templates. Merchants will be able to create loyalty card templates from their mobile device and upload them to the server. Customers will be able to download loyalty cards to their phone and store the information in their local database. Once downloaded, the customer can collect punches on qualifying purchases. After a predetermined number of punches, the customer earns a reward.

6 - User interface description

The User Interface for the system will be displayed on a mobile device with a touch screen display. The user will be presented with menu items and icons to navigate the system, including a tabbed interface to switch between user profile, card information, and business searching.

7 - Functional requirements

- The system shall allow the user to login and logout.
- The system shall allow the user to create an account
- The system shall allow merchants to create loyalty cards
- The system shall allow merchants to expire existing loyalty cards
- The system shall allow merchants to verify customer punches
- The system shall allow merchants to verify customer rewards
- The system shall allow customers to search for local businesses
- The system shall allow customers to select loyalty cards
- The system shall allow customers to download loyalty cards
- The system shall allow customers to redeem punches
- The system shall allow customers to redeem rewards
- The system shall allow the database to store a history of completed punch cards
- The system shall allow the merchant to view card history for their business
- The system shall allow the customer to view personal card history for completed rewards

8 - Non-functional requirements

- The system shall be developed using the Appcelerator SDK
- The system shall use an encrypted SQLite database for local storage to prevent other applications from interacting with a user's card data
- The system shall utilize hashing verification for punch a reward verification

9 - Market Survey

Our mobile rewards platforms rests on the cusp of two of the largest and most rapidly expanding industries- online advertising and the mobile application space. Analyst firm research2guidance estimates that the mobile application space will become a "15.65 billion [US Dollar] business in 2013." The New York Times reports that in 2009 "worldwide spending on mobile advertising … amount[s] to … 1.4 billion [US Dollars]." Together the market is worth nearly 18 billion US Dollars. The current state of the mobile phone market reflects that Apple, Android and Windows phone account for 69% of the market. However, with Blackberry use in sharp decline and windows phone undergoing steep increase in user-ship, it is clear that the top market contenders will be Apple, Android, and Windows phone. Our cross platform application and will inherently run on Android and Apple phones. The potential for a new and revolutionary product in this market space is staggering.
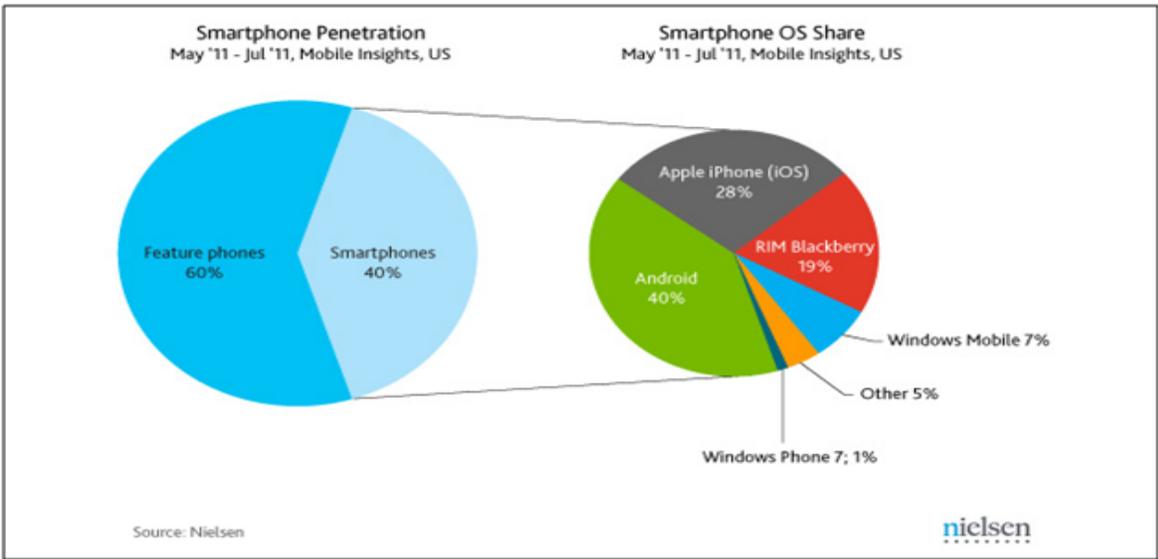

Figure 9.1. This graph demonstrates the market capitalization of the various mobile operating systems. [9] Notice smartphones have 40% of the cell phone market and continues to growth.
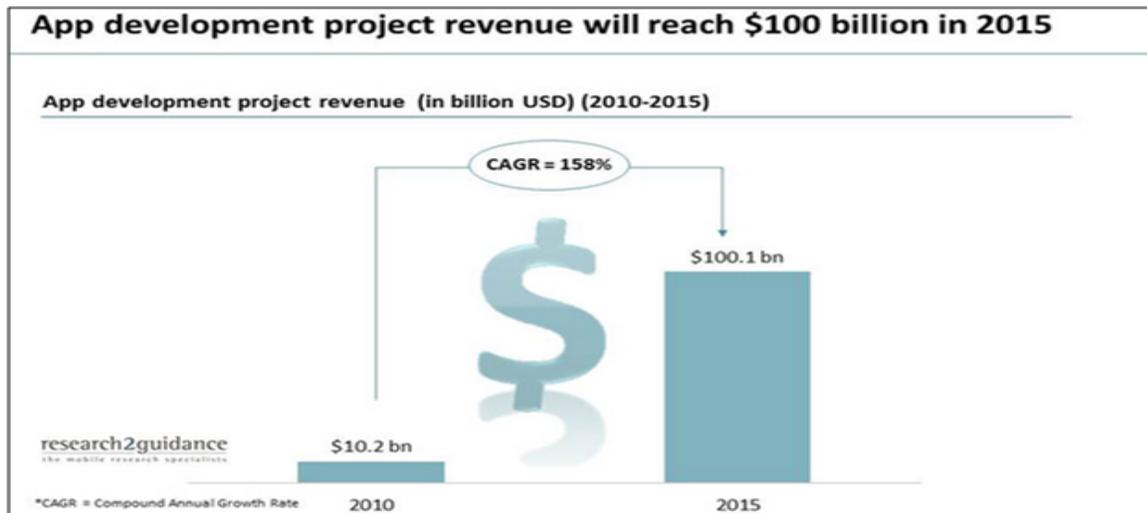
i) Mobile Application Space

Figure 9.2. This figure illustrates the research2guidance's prediction of the enormous growth in revenue of mobile apps from 2012 to 2015 where it will reach 100.1 billion usd.[7]

Analyst firm research2guidance recently published a study of the mobile application space. The study indicates that the mobile application market will grow from a $1.94 billion US Dollar business in 2009 to a $15.65 billion business in 2013. This growth rate of nearly 807% and is a clear indicator of the current and future strength of this market.Research2guidance also indicates that the smartphone user base to grow from 100 million to 1 billion in that same time frame; this is a 1000% growth rate. This growth rate is an indication of a transition from the laptop or desktop computer to a smaller and more portable medium. Companies will have no choices but to follow this trend, increasing their exposure in the mobile advertising arena especially when we consider that "currently, only 10% of the Fortune 2000 companies are engaging their customer base with a mobile application." (source: BRG)One can examine a clear and definitive need for an advertising platform catering to companies transitioning to the mobile space.

ii) Mobile Advertising Market

The New York Times reports that in 2009 "worldwide spending on mobile advertising … amount[s] to … 1.4 billion [US Dollars]." The number in 2010 was "$1.6 Billion generated in 2010."(Source: IT research firm Gartner)However, research2guidance also indicates that the smartphone user base will grow from 100 million to 1 billion in that same from 2009 to 2013; this is a 1000% growth rate and as the number of internet connected user increases this will drive mobile advertising revenue into double digit gain, year after

10 - Deliverables

These are artifacts that will we will need to turn in.
- Project Plan 1st Revision
- Project Plan 2nd Revision
- Design Document 1st Revision
- Design Document Final Revision
- Project Plan Final Revision
- Presentation
- Customer Loyalty Application for IOS/Android

11 - Work plan

This section will discuss how the work is broken up into smaller modules. It will also discuss the schedule in which the work is done.

11.1 Work Breakdown
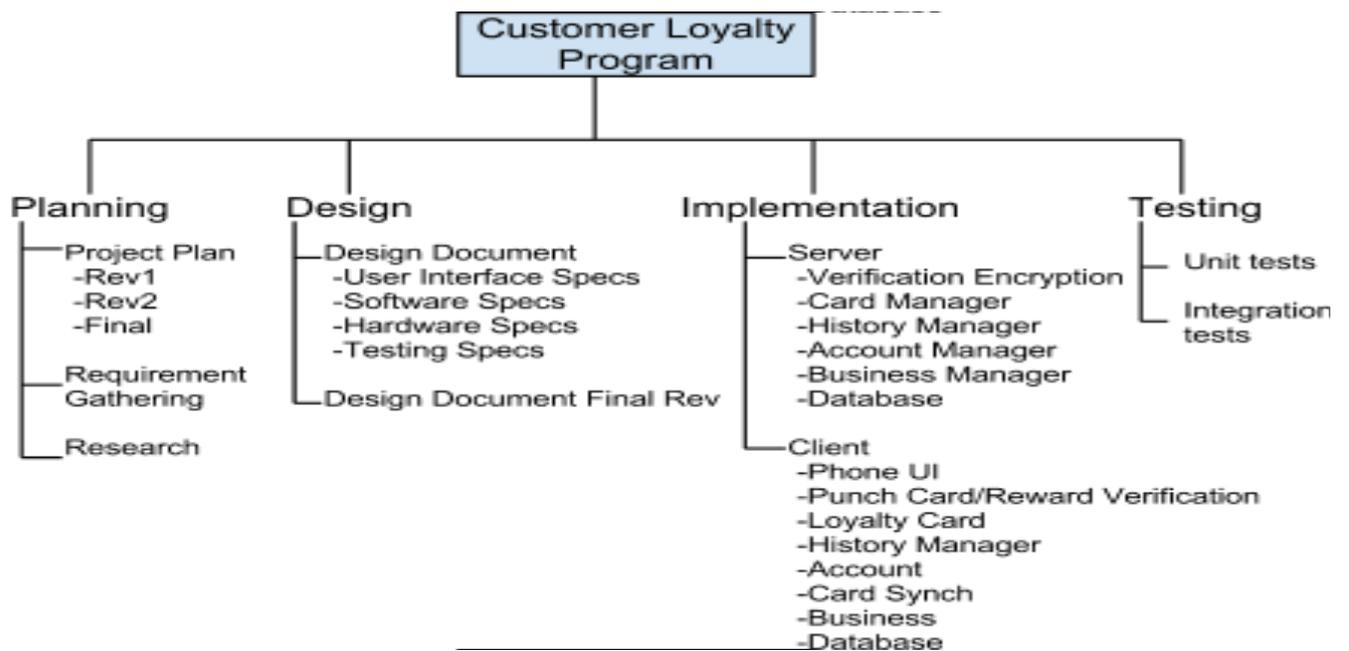
Figure 11.1 Shows our work breakdown structure.

11.2 Task Breakdown

Task	Summary	Time Frame	Task Order	Duration
Project Plan Rev1		9/14 - 9/28		
Project Plan Rev2		9/29 - 11/9		
Project Plan Final		11/10 - 11/29		
Requirement Gathering		9/14 - 9/28		
Research	Learn technologies required to complete project	Continuing Process		
Design Document		9/29 - 10/27		

Design Document Final Rev		10/28 - 11/29		
Implementation Server Side				
Database	Design and creation of database	10/15/12 - 11/04/12	1	3 weeks
Verification Encryption	Handles the redemption of punches	11/26/12 - 12/16/12	4	3 weeks
Card Manager	Manages and card requests	11/26/12 - 12/16/12	3	3 weeks
HIstory Manager	Handles storing and retrieving previous completed cards	11/05/12 - 11/25/12	2	3 weeks
Account Manager	Handles anything that involves accounts	11/05/12 - 11/25/12	2	3 weeks
Business Manager	Handles anything that involves businesses.	11/05/12 - 11/25/12	2	3 weeks
Client Side				
Phone UI	Entire UI	10/15/12 - 3/15/13	1	15 weeks
Punch Card/Reward Verification	Module handles verification of punches	12/17/12 - 01/06/13	4	3 weeks
Loyalty Card		01/07/13 - 01/27/13	5	3 weeks
History Viewer	Lets users view previous cards	01/28/13 - 02/17/13	7	3 weeks
Account	Handles the login/logout of user and creation of accounts.	11/05/12 - 11/25/12	2	3 weeks
Business	Handles the searching of businesses	12/17/12 - 1/6/13	6	3 weeks

Database	Stores data such as previous cards.	10/15/12 - 11/04/12	1	3 weeks
Card Synch	Keeps card data synced with server	1/28/13 - 2/17/13	6	3 weeks
Testing				
Unit Testing	Each Module will be tested	Unit testing included during implementation		
System Testing	As Modules are integrated, they will be tested as a system. This could mean modifying any module.	3/16 - 4/20	7	19 weeks

11.3 Project Schedule

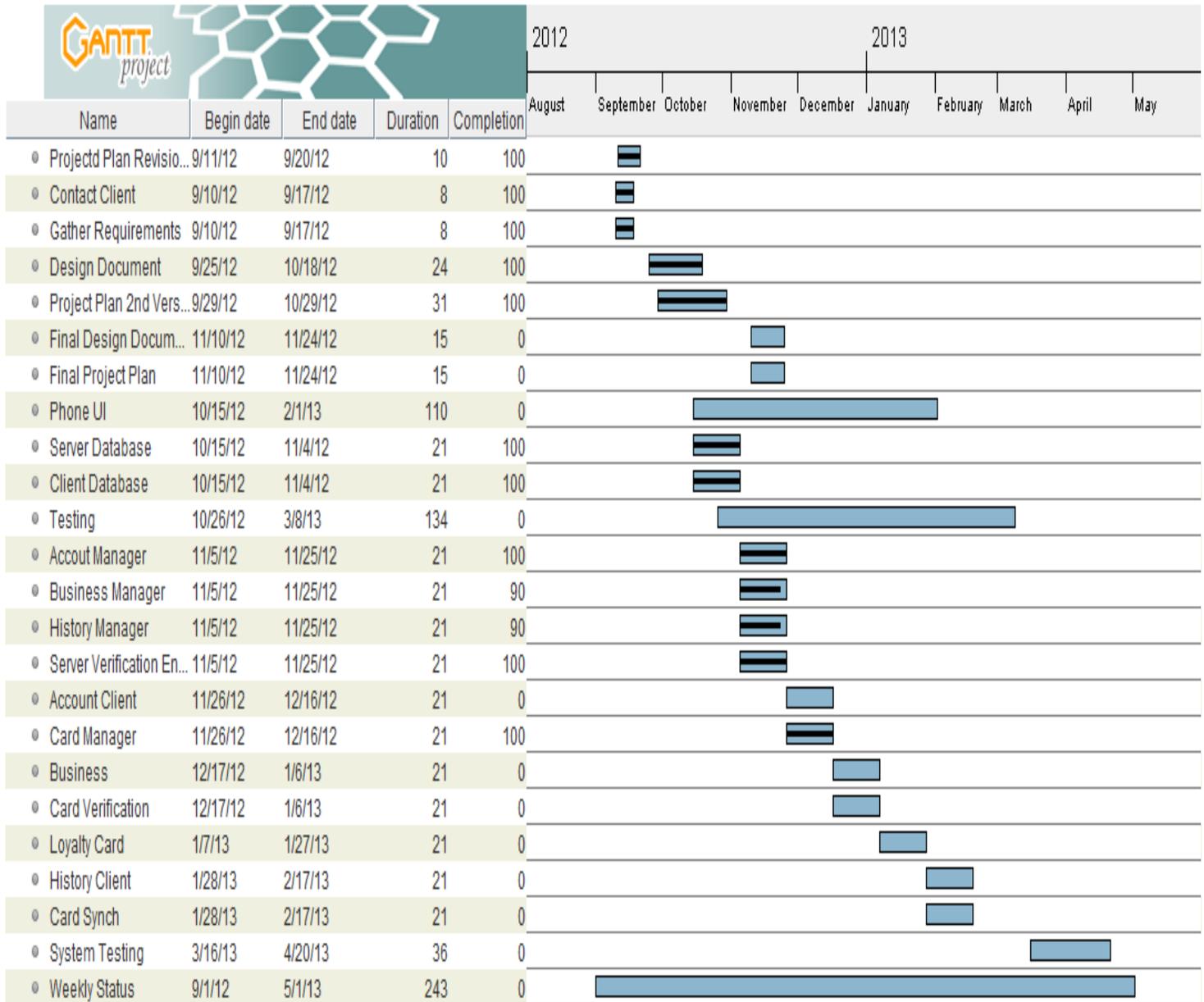| Name	Begin date	End date	Duration	Completion
Projectd Plan Revisio...	9/11/12	9/20/12	10	100
Contact Client	9/10/12	9/17/12	8	100
Gather Requirements	9/10/12	9/17/12	8	100
Design Document	9/25/12	10/18/12	24	100
Project Plan 2nd Vers...	9/29/12	10/29/12	31	100
Final Design Docum...	11/10/12	11/24/12	15	0
Final Project Plan	11/10/12	11/24/12	15	0
Phone UI	10/15/12	2/1/13	110	0
Server Database	10/15/12	11/4/12	21	100
Client Database	10/15/12	11/4/12	21	100
Testing	10/26/12	3/8/13	134	0
Accout Manager	11/5/12	11/25/12	21	100
Business Manager	11/5/12	11/25/12	21	90
History Manager	11/5/12	11/25/12	21	90
Server Verification En...	11/5/12	11/25/12	21	100
Account Client	11/26/12	12/16/12	21	0
Card Manager	11/26/12	12/16/12	21	100
Business	12/17/12	1/6/13	21	0
Card Verification	12/17/12	1/6/13	21	0
Loyalty Card	1/7/13	1/27/13	21	0
History Client	1/28/13	2/17/13	21	0
Card Synch	1/28/13	2/17/13	21	0
System Testing	3/16/13	4/20/13	36	0
Weekly Status	9/1/12	5/1/13	243	0

Figure 11.1 Project Schedule - Please note: Shaded black means percentage done. Also, some modules are done before the scheduled starting date,meaning we are ahead of schedule. We will be pulling in modules as needed if they are finished early.

11.4 Project Team Information

Project manager: Christopher Walters
He is in charge of setting up weekly meeting with the advisor and the client. He also managing communication between client, advisor, and team members.

Project planner: William Tran
He is in charge of weekly report, team weekly meeting, and divided up tasks among team members.

Website master: Van Nguyen
She is in charge of creating, designing, and update team website.

Developer: Van Nguyen, Christopher Walters, and William Tran
All of us are in charge of creating the project plan, design documents, gathering requirements, and implementing the application.

11.5 Communication Management

Team Communication:

Communication Method	Time	Summary
Weekly meeting	Sunday @ 4:30-5:30, Wednesday @ 7-8	Meet on sunday to go over our to do list and distribute works among team members. Meet on Wednesday for works progression update and add more works.
Email	Anytime	Use email for questions or rescheduling purpose

Advisor and Team Communication:

Communication Method	Time	Summary
Weekly meeting	Wednesday @1-2	Meet on Wednesday to provide the advisor our work progress and future plan.
Email	Anytime	Use email for questions

Client, Advisor, and Team Communication:

Communication Method	Time	Summary
Weekly meeting		Meet once a week to provide the client our work progress, future plan, and ask client questions or answer their questions.
Email	Anytime	Use email for questions

11.6 Risks and Risk Management

Risk	Mitigation
R1. Losing a team member	We will contact our advisor.
R2. Limited experience of Appcelerator	We will begin learning the Appcelerator framework as early as possible
R3. None of us have a mac to do IOS development.	We will use macs on campus for development.
R4. The schedule planned might not be realistic, because of R2.	We will begin implementation as modules are designed.