Brain Health Project

Fall 2016

Chance Seger,

Nate Dodge,

Rosa Florence,

Ethan Miller,

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Summary/Abstract

Motivation:

Create an app that can be used during Butler Artsfest of 2017 for our client.

Problem Statement:

Continue working on a cross-platform mobile application that will be used to display artists and artwork.

Approach:

We created a team of 5 people: Team leader, Lead Software Developer, Software Developer, Communications Liaison, and Web Master. Each person played a role in continuing the project.

Results:

While working on the project, an unfamiliar error in the app/database came up and kept the team from making more progress. In order to have a demo during our presentation we made an iOS app in order to show the basic functionality of what was requested by the client.

Conclusion:

We concluded that the client should outsource the project. We prepared a demo iOS app to show the functionality of what the app did before it broke. We also combined all the information we gained during the semester as a resource for the next app developer. We learned about technologies such as AngularJS, Javascript, Parse, Heroku, Swift, and Xcode.

Chapter 1 - Introduction

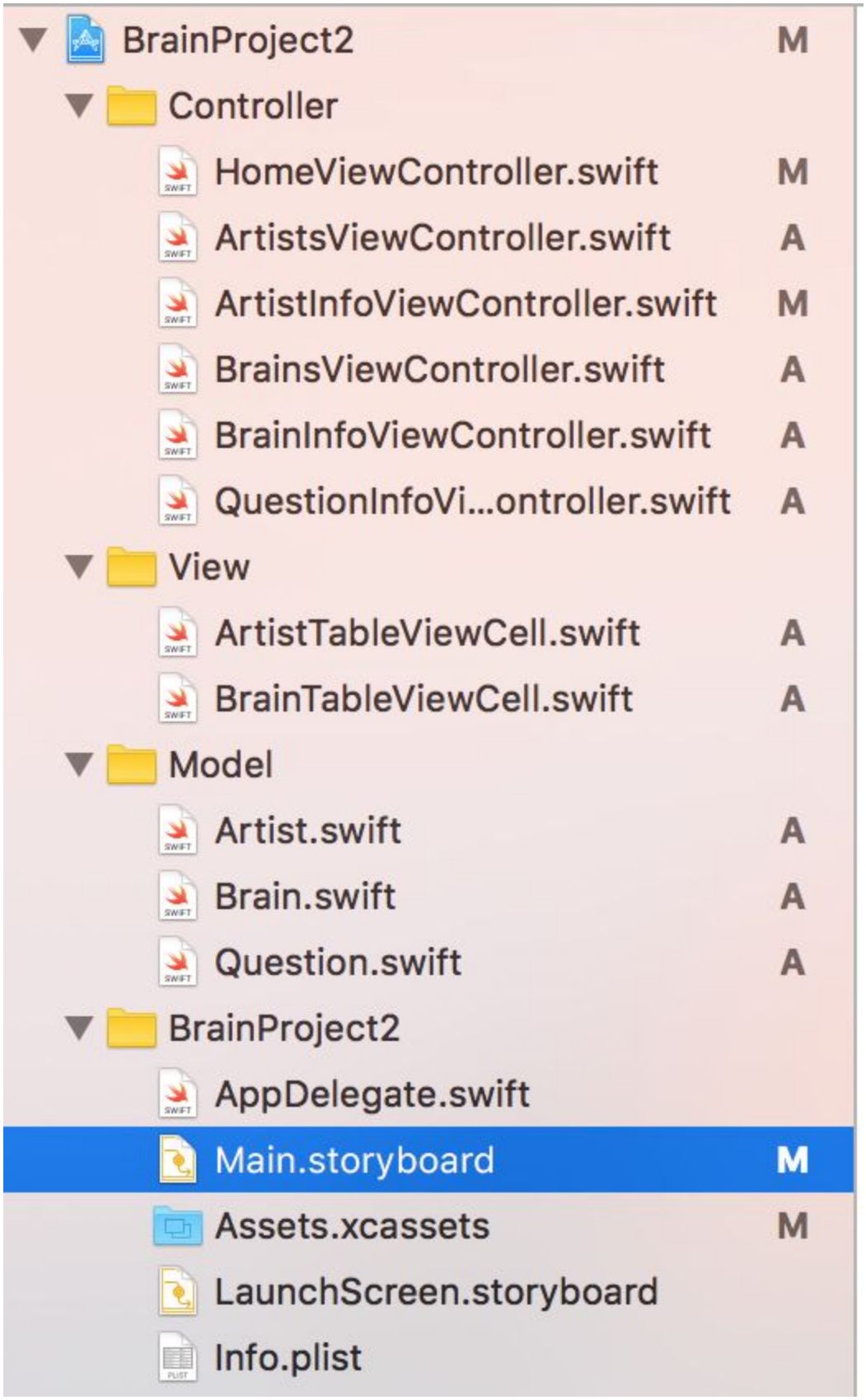
Dr. Jill Bolte Taylor and Butler University approached our team to express the need for an application pertaining to the One Brain Project. Dr. Taylor is a Harvard-trained and published neuroanatomist famous for her TED talk concerning her stroke recovery. Dr. Taylor is now also a spokeswoman for her personal story which has grown into the One Brain Project at Butler University. We were also in contact with Dr. Katherine Pangan, an Associate Professor of Education, and Dr. Susan Kleinman, an affiliate of the Education Department. For our client we were asked to create an application to be used for the 2017 Butler Artsfest in combination with Butler's One Brain Project. The objectives for this project were to create an application with specified requirements that could be implemented by visitors of the One Brain Project allowing them access to information on the brains, artists, and a quiz. To complete the project we created a team of five students who each participated in separate jobs in order to produce the whole. The team consisted of a team leader, Chance Seger, a lead software developer and software developer, Ethan Miller and Micah Brame respectively, a web master, Nate Dodge, and a communications liaison, Rosa Florence. This report includes the specified requirements by the client, descriptions of the architecture and design of the application, implementations for said app by the group, and future work to be done in order for the application to meet the needs of the client.

Chapter 2 - Requirement Specifications

The application was to contain three separate pages for the descriptions of the ten brains, biographies of the artists of the brain sculptures, and then a twenty question quiz. Each brain description included facts about the theme of the brain as well as a picture of the sculpture. Artists were given credit in the biography section which listed the brains they worked on as well as a background story about the artist themselves. The quiz was implemented to determine similarities between the users and notable Butler faculty as selected by the client.

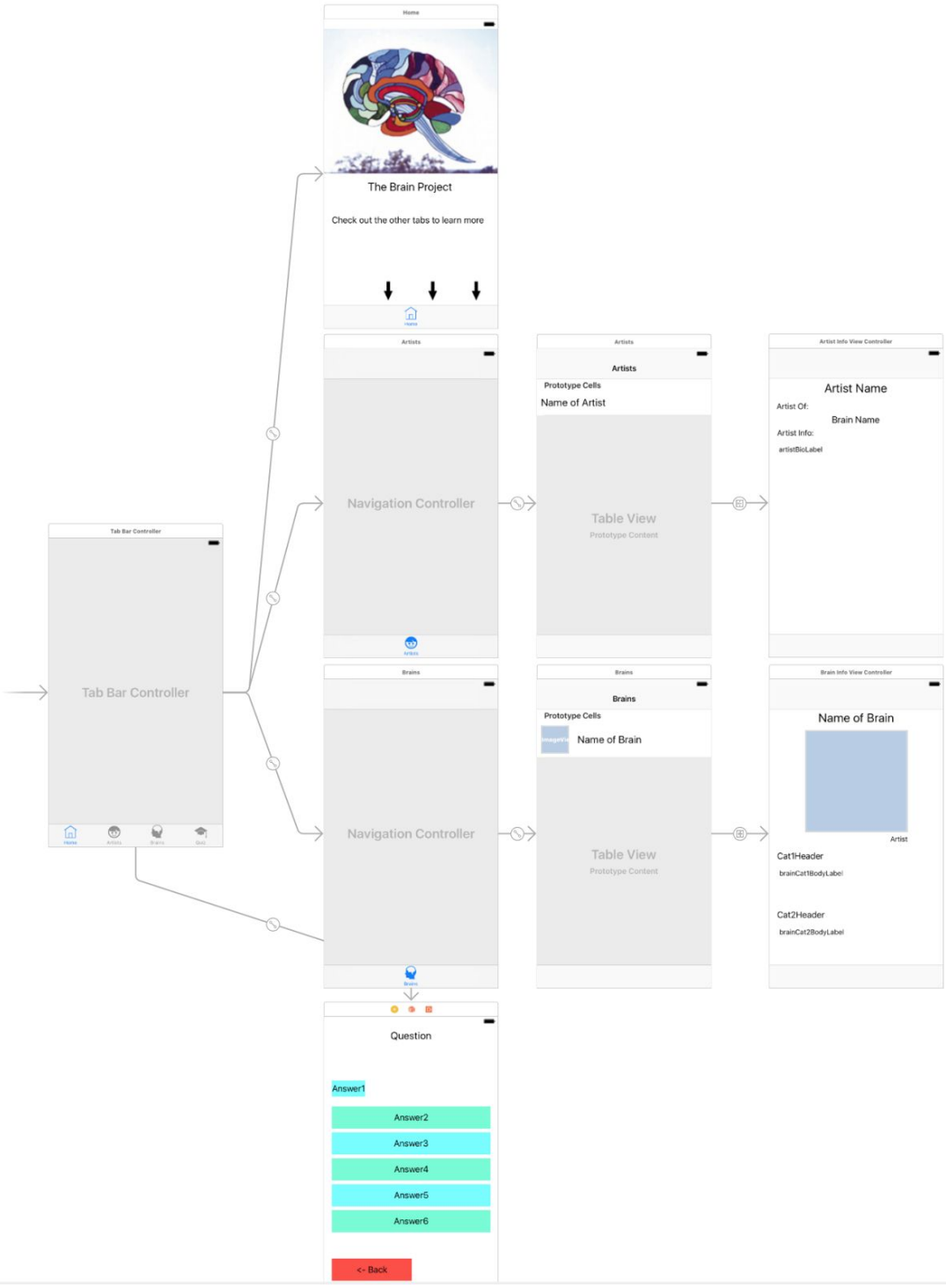
Chapter 3 - Architecture

The architecture of the original Apache Cordova application was unique. It had one controller class with multiple view classes, without a single model class. In our new application for the iPhone we have implemented an MVC architecture for the best convenience of future development. There are three model classes: Artist, Brain, and Question. They outline what an artist, brain, and question should contain for each respective class. There are six controllers. Two for artists, two for brains, one for questions, and one for the home view. For Artists and Brains there is a controller for the initial screen that shows all the artists/brains and then there is a controller for the view of a specific artist/brain. There is only one question view so there is only a single controller for that. Lastly, there are six views. Two views are for artists, two are for brains, one is for the home screen, and the last is for the quiz screen. Each view has a controller that manages what is displayed in the view. The following picture shows the organization of the iOS project.


BrainProject2 M
Controller
HomeViewController.swift M
ArtistsViewController.swift A
ArtistInfoViewController.swift M
BrainsViewController.swift A
BrainInfoViewController.swift A
QuestionInfoVi...ontroller.swift A
View
ArtistTableViewCell.swift A
BrainTableViewCell.swift A
Model
Artist.swift A
Brain.swift A
Question.swift A
BrainProject2
AppDelegate.swift
Main.storyboard M
Assets.xcassets M
LaunchScreen.storyboard
Info.plist

Chapter 4 - Design

The design of both applications are similar with table views and information in detail when the title of the table view is clicked. There are three tabs that take the user to view the artists, brains, or take a quiz. It is designed so they are all displayed in a list and then when clicked on it will take the user to a different screen with more information about the specific artist or brain they clicked on. By hitting the back button on the detailed view the user is taken back to the list of artists or brains they were initially at. The list of brains looks a little better because it displays a picture of the specific brain. When clicked on, the detailed view shows more information as well as a bigger image of the specific brain. The feel is better on the iPhone, since it is native and does not use a web design interface. The Quiz has yet to be implemented so there is not much design after the initial menu design. The following picture shows the flow of the iOS app and the different views.


Home
The Brain Project
Check out the other tabs to learn more
Artists
Navigation Controller
Artists
Artists
Prototype Cells
Name of Artist
Table View
Prototype Content
Artist Info View Controller
Artist Name
Artist Of:
Brain Name
Artist Info:
artistBioLabel
Tab Bar Controller
Tab Bar Controller
Brains
Navigation Controller
Brains
Brains
Prototype Cells
Name of Brain
Table View
Prototype Content
Brain Info View Controller
Name of Brain
Artist
Cat1Header
brainCat1BodyLabel
Cat2Header
brainCat2BodyLabel
Question
Answer1
Answer2
Answer3
Answer4
Answer5
Answer6
<- Back

Chapter 5 - Implementation

We attempted to continue the application using Visual Studio with the Apache Cordova plugin. We updated the database with the information given to us and we updated some of the controller classes, adding functionality to the brain and artist pages. The database updates were done through MLab & Heroku, and the application was modified through Visual Studio.

Going through the process of modifying the application, we spoke with the previous developers to get a good handle on the product, but the framework in which the database was held ended up breaking the application's functionality. We should have, at the beginning, changed the database to something more stable and less dependent on deprecated functions.

At the end of the semester, since the original application broke, we built an iPhone application that delivered many of the same functions as the previous application.

Chapter 6 - Quality Assurance & Testing

Working with the database caused the most errors to arise when testing the app. The database was built with JSON files. When updating the different pages in the app, we had to test different syntax with the JSON files along with the queries to the JSON files. Our process included changing the JSON file and then running the app to see if the pages were updated with the new information. More often than not, the syntax in the JSON file would be incorrect, so we would go back and change the syntax while running the text through a JSON validator. The validator would ensure that our syntax for the JSON file was correct. Then, we would need ensure that our syntax aligned through the query to the syntax in the app's code. Even when that worked, sometimes the code would still not run properly, which we found that the escape characters were an issue as well. Thus, we had to check the syntax against a validator, against the code, and against escape characters in order to ensure the app would run smoothly.

Chapter 7 - Project Organization & Management

Team Leader - Chance Seger
Lead Developer - Ethan Miller
Developer - Micah Brame
Communications Liaison - Rosa Florence
Web Master - Nate Dodge

Our organizational structure helped us to be as efficient as possible throughout the semester. Our team leader kept us on track and constantly checked in with each team member to make sure that each job was being completed in a timely manner. Team meetings were easy to schedule because we would typically meet during class time every Monday and Wednesday of the semester. This removed the struggle of trying to find time outside of class that everyone was free. Our communications liaison was in charge of communicating with the client in order to get details about upcoming meetings as well as information regarding the application. Our team used Slack to communicate outside of class and notify members of work that needed to be done, or meetings that were coming up. The majority of the coding was completed by our two developers with help from the team leader. They used Apache Cordova, a cross-platform framework, to continue working on the mobile application. They also used AngularJS, Javascript, HTML, and CSS. The prototype created for the presentation was made using Xcode 8 and Swift 3. The webmaster was then responsible for documenting the team's work in the form of weekly status reports, website posts, and meeting agendas. On the website, you can find information about our client, the applications, the brains and the artists who painted them, and all of the weekly status reports that are displayed below.

WEEKLY STATUS REPORT (WSR)
9/12/2016

TO: Panos Linos, Chance Seger, Ethan Miller, Rosa Florence, Micah Brame
FROM: Nate Dodge
SUBJECT: Status report for week 9/12/2016

I. RED FLAGS: none

II. ISSUES: Currently working on setting up a meeting with Jill Bolte Taylor

III. ACCOMPLISHMENTS:

9/7/2016
- Ethan and Nate got tickets to attend Jill's event at Clowes Hall on Wednesday the 14th at 7:00pm.

9/7/2016
- Rosa made contact with Dr. Pangan and is working on setting up a meeting.

IV. ACTION ITEMS FOR FOLLOWING WEEK:

- Sort through last semester's code – Ethan & Micah

WEEKLY STATUS REPORT (WSR)
9/19/2016

TO: Panos Linos, Chance Seger, Ethan Miller, Rosa Florence, Micah Brame
FROM: Nate Dodge
SUBJECT: Status report for week 9/19/2016

I. RED FLAGS: none

II. ISSUES: Chance and Micah can't run the program on their Macs.

III. ACCOMPLISHMENTS:

9/14/2016
- Ethan got the program up and running on his computer

9/14/2016
- Nate, Ethan, Micah, and Rosa attended Jill Bolte Taylor's show at Clowes Hall. It was very interesting and informative.

IV. ACTION ITEMS FOR FOLLOWING WEEK:

- Update EPICS page with info about Jill Taylor and more pictures - Nate
- Understand how Angular JS works - Ethan
- Get the application running on a phone to use as a demo - Ethan
- Since the application is not easily compatible with Macs, Chance and Micah need to figure out a way to view and edit it - Chance & Micah
- Investigate Virtual Box on Mac, allows Mac to run Windows - Chance & Micah
- Set up a meeting with Jill Taylor and Dr. Pangan and inform Dr. Linos when that meeting is - Rosa
- Show Dr. Pangan EPICS website and ask if she has any input - Nate
- Contact Jacob Scheib and ask if he is willing to be an advisor for our group - Nate

WEEKLY STATUS REPORT (WSR)
9/25/2016

TO: Panos Linos, Chance Seger, Ethan Miller, Rosa Florence, Micah Brame
FROM: Nate Dodge
SUBJECT: Status report for week 9/25/2016

I. RED FLAGS: none

II. ISSUES: Jacob Scheib cannot come into class this week.

III. ACCOMPLISHMENTS:

9/20/2016
- Nate updated EPICS website with more information about Jill Taylor, the Brain Health app, and the One Butler speaker series.

9/21/2016
- Rosa met with Dr. Pangan and got feedback on the website and what her views are for this project. More information from that meeting can be found on the Brain Health artifacts page.

9/22/2016
- Nate spoke with Jacob Scheib who agreed to serve as a project advisor this semester.

9/23/2016
- Chance, Ethan, and Micah started taking online lessons in Angular JS on CodeAcademy.

9/26/2016
- Team decided to use lab computers in order to use Visual Studio.

IV. ACTION ITEMS FOR FOLLOWING WEEK:

- Update EPICS page with brain trivia - Nate
- Understand how Angular JS works - Ethan & Micah
- Get the application running on a phone to use as a demo - Ethan & Micah
- Sit down with Jacob Scheib to learn a little bit more about what they completed last semester and how the app functions - Team
- Figure out what minigames are going to be on the app - Team
- Set up a meeting with Jill Taylor and Dr. Pangan and inform Dr. Linos when that meeting is - Rosa

WEEKLY STATUS REPORT (WSR)
10/2/2016

TO: Panos Linos, Chance Seger, Ethan Miller, Rosa Florence, Micah Brame
FROM: Nate Dodge
SUBJECT: Status report for week 10/2/2016

I. RED FLAGS: none

II. ISSUES: Dr. Pangan has still not responded to our emails.

III. ACCOMPLISHMENTS:

10/2/2016
- Micah finished the online lessons in Angular JS on CodeAcademy.

10/2/2016
- Ethan started lessons on CodeAcademy.

10/3/2016
- Ethan set up a skype conference with Jacob Scheib on Tuesday.

IV. ACTION ITEMS FOR FOLLOWING WEEK:

- Update EPICS page with brain trivia - Nate
- Get the application running on a phone to use as a demo - Ethan & Micah
- Sit down with Jacob Scheib to learn a little bit more about what they completed last semester and how the app functions - Team
- Figure out what minigames are going to be on the app - Team
- Set up a meeting with Jill Taylor and Dr. Pangan and inform Dr. Linos when that meeting is - Rosa
- Need to create drawings of what each screen will look like on the app - Team

WEEKLY STATUS REPORT (WSR)
10/10/2016

TO: Panos Linos, Chance Seger, Ethan Miller, Rosa Florence, Micah Brame
FROM: Nate Dodge
SUBJECT: Status report for week 10/10/2016

I. RED FLAGS: none

II. ISSUES: none

III. ACCOMPLISHMENTS:

10/5/2016

- Ethan met with Jacob Scheib via video conference and got the credentials for the database. Working on setting it up on 10/11/2016.

10/5/2016

- Received more information from Dr. Pangan. Info is posted in google drive. Planning on meeting with her every Wednesday at 1:00pm.

IV. ACTION ITEMS FOR FOLLOWING WEEK:

- Update EPICS page with brain trivia and link google drive page with the rest of our team info to the page- Nate
- Figure out what minigames are going to be on the app - Chance
- Write a minigame - Micah
- Figure out when we can meet with Dr. Pangan on a more regular and consistent basis - Rosa
- Need to create drawings of what each screen will look like on the app - Team
- Set up the database - Ethan

WEEKLY STATUS REPORT (WSR)
10/16/2016

TO: Panos Linos, Chance Seger, Ethan Miller, Rosa Florence, Micah Brame
FROM: Nate Dodge
SUBJECT: Status report for week 10/16/2016

I. RED FLAGS: none

II. ISSUES: none

III. ACCOMPLISHMENTS:

10/15/2016

- Ethan connected the database to the app and spent more time over break learning about Angular JS.

IV. ACTION ITEMS FOR FOLLOWING WEEK:

- Update EPICS page with brain trivia - Nate
- Figure out what minigames are going to be on the app - Chance
- Write a minigame - Micah
- We need a lot more information from Dr. Pangan - Rosa/Team
- Need to create drawings of what each screen will look like on the app - Team
- Connect app to an iBeacon and add artist information to app- Ethan

WEEKLY STATUS REPORT (WSR)
10/23/2016

TO: Panos Linos, Chance Seger, Ethan Miller, Rosa Florence, Micah Brame
FROM: Nate Dodge
SUBJECT: Status report for week 10/23/2016

I. RED FLAGS: none

II. ISSUES: none

III. ACCOMPLISHMENTS:

10/21/2016

- We can now modify the database so that we can start editing and adding information in the app.

10/22/2016

- Rosa finished writing the descriptions of all the artists.

IV. ACTION ITEMS FOR FOLLOWING WEEK:

- Update EPICS page with brain trivia - Nate
- Figure out what minigames are going to be on the app - Chance
- Write a minigame - Micah
- Need to create drawings of what each screen will look like on the app - Team
- Connect app to an iBeacon and add artist information to app - Ethan
- Add brain pictures and descriptions and add artist information - Ethan

WEEKLY STATUS REPORT (WSR)
10/30/2016

TO: Panos Linos, Chance Seger, Ethan Miller, Rosa Florence, Micah Brame
FROM: Nate Dodge
SUBJECT: Status report for week 10/30/2016

I. RED FLAGS: none

II. ISSUES: none

III. ACCOMPLISHMENTS:

10/29/2016

- Brain and Artist information has all been added to the application.

10/30/2016

- 10 quiz questions were added to the app.

IV. ACTION ITEMS FOR FOLLOWING WEEK:

- Figure out what minigames are going to be on the app - Chance
- Write a minigame - Micah
- Need to create drawings of what each screen will look like on the app - Team
- Connect app to an iBeacon and add artist information to app - Ethan

WEEKLY STATUS REPORT (WSR)
11/6/2016

TO: Panos Linos, Chance Seger, Ethan Miller, Rosa Florence, Micah Brame
FROM: Nate Dodge
SUBJECT: Status report for week 11/6/2016

I. RED FLAGS: none

II. ISSUES: none

III. ACCOMPLISHMENTS:

11/5/2016

- ETHAN GOT MARRIED!!!!!!!

IV. ACTION ITEMS FOR FOLLOWING WEEK:

- Connect app to an iBeacon and add artist information to app - Ethan & Micah
- Update EPICS page with screenshots of the app interface - Nate
- Figure out what minigames are going to be on the app - Chance
- Get more information about the color my brain game - Rosa

WEEKLY STATUS REPORT (WSR)
11/14/2016

TO: Panos Linos, Chance Seger, Ethan Miller, Rosa Florence, Micah Brame
FROM: Nate Dodge
SUBJECT: Status report for week 11/14/2016

I. RED FLAGS: none

II. ISSUES: none

III. ACCOMPLISHMENTS:

11/12/2016

- Micah created a new database in MySQL and migrated the info.

IV. ACTION ITEMS FOR FOLLOWING WEEK:

- Implement MySQL - Ethan & Micah
- Connect app to an iBeacon and add artist information to app - Ethan
- Update EPICS page with screenshots of the app interface - Nate
- Figure out what minigames are going to be on the app - Chance
- Get more info about color my brain app - Rosa

WEEKLY STATUS REPORT (WSR)
11/28/2016

TO: Panos Linos, Chance Seger, Ethan Miller, Rosa Florence, Micah Brame
FROM: Nate Dodge
SUBJECT: Status report for week 11/28/2016

I. RED FLAGS: none

II. ISSUES: none

III. ACCOMPLISHMENTS:

11/24/2016
- Thanksgiving Break!

IV. ACTION ITEMS FOR FOLLOWING WEEK:

- Get app back up and running - Ethan & Chance
- Implement MySQL - Ethan & Micah
- Connect app to an iBeacon and add artist information to app - Ethan
- Update EPICS page with screenshots of the app interface - Nate
- Figure out what minigames are going to be on the app - Chance
- Get more info about color my brain app - Rosa

WEEKLY STATUS REPORT (WSR)
12/4/2016

TO: Panos Linos, Chance Seger, Ethan Miller, Rosa Florence, Micah Brame
FROM: Nate Dodge
SUBJECT: Status report for week 12/4/2016

I. RED FLAGS: none

II. ISSUES: none

III. ACCOMPLISHMENTS:

11/29/2016
- Designated work out to each team member for the dossier.

12/1/2016
- Chance made a demo iPhone application.

IV. ACTION ITEMS FOR FOLLOWING WEEK:

- Continue to improve the iPhone demo - Chance & Ethan
- Work on dossier and final presentation - Team
- Send feedback form to client - Rosa

Chapter 8 - Future Work

The apache cordova application that we have at the end of this semester does not function with the database and there are no errors found in the project making it useless. In the last two weeks we have put together an iPhone application prototype since that is the quickest application we have resources to build. This application does not connect to a database, instead the data is hardcoded inside the application. This allows users to use the application without being connected to the internet. This also allows the product to be independent from a database that could potentially cost the owner money per month.

The future developer of the application will have to decide whether they want to try to create two native applications (apple & android) or try a third party software to create one application for both operating systems. They will also have to decide whether they want to use a database or continue to keep the information in the app itself. The only piece of software we have to offer the future team is our iPhone application built with XCode. Once the future developer creates an application they will be responsible to place the application(s) onto the app stores and support the application as it becomes popular around the festival.