

GameSuite


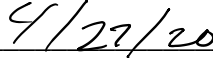

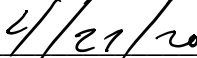


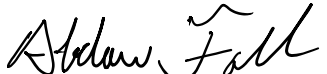
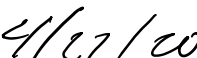
by

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Submitted to
the Faculty of the School of Information Technology
in Partial Fulfillment of the Requirements for
the Degree of Bachelor of Science
in Information Technology

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University of Cincinnati
College of
Education, Criminal Justice, and Human Services

April 27, 2020



GameSuite

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TABLE OF CONTENTS

List of Illustrations	ii
TABLES	ii
FIGURES	ii
ABSTRACT	1
Introduction	2
Introduction	2
Problem	2
Solution	3
Project Description	3
Discussion	4
Project Concept	4
Design Objectives	4
Methodology	6
UserProfile	6
Use Case Diagram	8
Technical Discussion	9
Testing	14
Budget	16
Project Schedule	17
Work Breakdown Structure:	19
Problems Encountered	21
Future Recommendations	21
CONCLUSION	23
Lessons Learned	23
Developed Skills	24
Back Matter	25
REFERENCES	25
Appendix A. Poster	26

List of Illustrations

TABLES

<u>No.</u>		<u>Page</u>
Table 1.	Budget.....	17
Table 2.	Work Breakdown Structure.....	19-20

FIGURES

<u>No.</u>		<u>Page</u>
Figure 1.	User Profile.....	7-8
Figure 2.	Use Case Diagram.....	8
Figure 3.	Application Architecture.....	9
Figure 4.	Application Architecture.....	9
Figure 5.	GameSuite Desktop Homepage.....	10
Figure 6.	GameSuite Mobile Homepage.....	10
Figure 7.	GameSuite iPad Leaderboards.....	11
Figure 8.	GameSuite Desktop Football Game.....	11
Figure 9.	GameSuite Desktop Wheel Spin.....	12
Figure 10.	GameSuite Desktop Basketball Game.....	12
Figure 11.	GameSuite Desktop Admin Page.....	13
Figure 12.	Test Case Log Table.....	16
Figure 13.	Fall Semester 2019 Gantt Chart.....	18
Figure 14.	Spring Semester 2020 Gantt Chart.....	18

ABSTRACT

According to Forbes, the sports industry is expected to reach an all-time high value of \$73.5 billion by the end of 2019. The University of Cincinnati Athletic Department was looking to engage more with their fanbase by learning *what events are their fans attending? Is this fan following UC's social media accounts? When should they send a retargeting campaign to season ticket holders?* A system designed to answer these questions typically costs thousands of dollars and is usually cumbersome to incorporate into the user's daily workflow. Introducing GameSuite, the simple solution to a complex problem. GameSuite is a web-based application with a collection of games that users can play once per day to compete for a chance at a high score to be awarded a prize. User authentication is performed through Twitter API and the user's name, email and location are collected for marketing material.

Introduction

Introduction

The University of Cincinnati Athletics Department (UCAD) was going through a big rebranding phase. They were looking to engage more with their fanbase by learning *what events are our fans attending? Is this fan following UC's social media accounts?* College athletics is having no issue with losing viewership of televised games but is greatly struggling to maintain attendance at college sporting events. CBS Sports stated that “College football attendance is at its lowest point in 22 years. Despite the addition of seven FBS programs since 2013, overall national attendance has declined more than 1,427,000 since an all-time high of 38,135,118 fans 5 years ago” (Dodd, 2019). Many stadiums have been decreasing seating capacity and increasing luxuries such as suites, phone and Wi-Fi services. To try and retain fans and engage with new audiences we created an application where the university’s athletic department connects directly with fans and where users can play games while competing for prizes.

Problem

According to SproutSocial, there are nearly 3.5 billion active social media users, these users are 46% more likely to recommend a brand or company based on their social interaction with the company. The problem UCAD was experiencing is connecting with fans. They were unable to view fan engagement from various social media sources; who is buying tickets, how many fans are coming to the games are following UCAD Twitter accounts, where are their fans located? They were looking for a platform to help answer these questions. A platform to answer all these questions usually cost thousands of dollars per month and do not contain all the necessary features they require.

Solution

Our solution for UCAD is to create a collection of games that require social media sign on with Twitter. These games are free to play and rank the users based on the score they receive in game. Their data is shared via the Twitter API and collected to allow UCAD to see where their fans are geographically located and how often they are tweeting about UC athletics. This data is used to sell tickets, send retargeting and ultimately increase revenue.

Project Description

GameSuite is a responsive web-based application with a collection of games that users can play. User authentication will be performed through Twitter API or with username and password. The user's name, email and location are collected for future marketing material for the University of Cincinnati's Athletic Department (UCAD). This gathered data allows UCAD to see in what city users are located, how often they are tweeting about UC sports and provide the university each user's email address. Users are able to compare their scores on the leaderboard and with the top scores receiving prizes.

Overview

The remainder of this final report outlines in detail how the project was completed. The report includes the following sections: project concept, design objectives, methodology, user profiles, use case, technical discussion, testing, budget, Gantt chart/ WBS, problems encountered, future recommendations, and lessons learned.

Discussion

Project Concept

The purpose of this project was to help the University of Cincinnati's Athletic Department understand and connect better with their fan base. The athletic department wanted to know where their fans on social media are located as well to communicate with them. To help solve this problem the UC Athletic Department looked at what some of the more successful professional sports teams were doing and came up with the idea of developing a web-based gaming platform that will be compatible on mobile.

Design Objectives

The primary objective of this project was to deliver a cross-platform web application that allows users to sign in via social media and play a variety of HTML5 sports games. With users able to sign in with Twitter, their data is shared with us via the Twitter API allowing UCAD to better connect with fans and send marketing ads and promotions. On the back end the athletic department has access to the user's email address, Twitter handle, view hashtags and geo-location. Knowing where users are located is a vital factor in deciding to send the target ads for upcoming events as UCAD will send targeted ads to users in specified regions.

GameSuite was in the process of developing multiple games that the University of Cincinnati fan base can play and compete for a chance to earn prizes ranging from apparel to tickets to games. We planned to roll out at least three games, a football, basketball and soccer game, with the potential of adding more. After a change in leadership at UCAD, we were asked to incorporate a prize wheel in place of the soccer game. Each game will have a scoring system and a leaderboard. The leaderboard will keep track of user scores and will be the deciding factor in awarding prizes and encouraging competitiveness.

In the Winter of 2019, the University of Cincinnati's Athletic Director, Mike Bohn, took a job as the AD of the University of Southern California. When leaving, he also hired a couple members of UC staff with him. This was a very disruptive and impactful change for us as our main point of contact was Brandon Sosna (Chief Financial Officer), a member of the staff that left with Mr. Bohn. Thus far, the transition has not been easy as we looked to meet with new staff who will possibly have new ideas or changes, they would like to make to this project and our goals. Knowing that our goals may change we kept vigorously working as our main goal of helping improve connections between UCAD and their fans did not change.

Eventually the dust settled, UC appointed a new athletic director, John Cunningham. We also established new points of contact within the department to meet with in place Brandon. With the new administration we established planned to test GameSuite on a large scale at the last men's home basketball game at Fifth Third Arena. This goal had to be abandoned when COVID-19 broke out and the all events as well as the university were shutdown.

In addition to our initial rollout and testing plan we had a few other goals which had to be abandoned. We had initially had plans to host this on a different service under UCAD's permission but with the changes in the department we abandoned this one as well. We also planned to rollout a soccer game but under new directive we were asked to develop a wheel prize game which we put in place of the soccer game. Even with all the chaos brought about by the change in the athletic director and from the COVID-19 pandemic, we knew we had to push on and try and make our application as initially planned.

Methodology

We had three specified design requirements given to us from the UCAD, create a set of HTML5 interactive games able to be played on mobile devices, offer users to sign in via social media and incorporate a leaderboard. These requirements helped guide us and give us clarity and structure on what UCAD was expecting. Being students at the university and supporters of the university's sports teams has been instrumental in helping us develop a unique set of games that will appeal to UC fans. With the goal of connecting the university's fans the requirement of having a social media sign in has been instrumental in fulfilling that goal. Our final requirement of a leaderboard helped us in achieving our goal of making the game competitive. The leaderboard allows users to see how they stack-up compared to other users and encourages them to improve if they would like to receive some cool prizes.

The athletic department has different procedures than many other organizations or departments in the university. With marketing, recruiting and sports always in season, it becomes difficult to meet with crucial members of the athletic staff. Our only specified procedure was to meet with them in person once a month and even that had become difficult with it being the heart of football season and the turnover in the athletic department. Mainly we have been communicating with our point of contact via text and emailing a couple other technical assets. We could better achieve our goals if we had a stronger/ more specific set of procedures. Nevertheless, we have been able to achieve our goals by communicate multiple times a week with our technical assets within the athletic department and the new leadership.

UserProfile

Figure 1: User Profile, illustrates the user profile for the GameSuite application. It lays out potential users of the application, related experience and similar applications that the user

may have interacted with, the tasks the user is expected to complete when interacting with GameSuite, the expected use of GameSuite per user, and key interface design requirements GameSuite will implement in order to optimize the user experience.

USER PROFILE - GAMESUITE



Application

GameSuite

Potential Users

- High School and College Students, Recent Graduates and Young Adults interested in UC Sports
- University of Cincinnati Athletic Department

Software, Interface, and Related Experience

GameSuite will be geared towards University of Cincinnati athletics fans. Users should have experience using desktops, web browsers and a basic understanding of different sporting events.

Experience with Similar Applications

GameSuite users may have experience with the below similar applications:

- ESPN Arcade Games
- HTML5Games.com
- CrazyGames.com
- Buffer
- Sprout Social
- Sendible

Having played sports or understanding computer games will prove beneficial when first attempting to play games on GameSuite. Having a Twitter account will provide similarity as it is required to login via Twitter.

Task Experience

- Using a desktop or laptop device to navigate to a web browser
- Login to GameSuite via Twitter, if you do not have an account you must create one before entering the site
- Upon first sign in you will be prompted to fill the “My Account” section
- Pick a game, have fun and potentially earn prizes

Frequency of Use

GameSuite can be frequented as much as a user would like. You can only earn points once a day but are eligible to continue playing for your own leisure. Users are encouraged to play more frequently and rewarded for doing so as there are prizes for the highest scores.

Key Interface Design Requirements that the Profile Suggests

- Fluid, simple, easy to navigate UI
- Visually enhance quick tips/ how to tab showing you the basic controls for each game
- Engaging layout of a multitude of games



Figure 1. User Profile

Use Case Diagram

The following diagram, Figure 2: Use Case Diagram, displays the use case for GameSuite. The diagram depicts all users of GameSuite along with the corresponding features each user will have access to when interacting with the application.

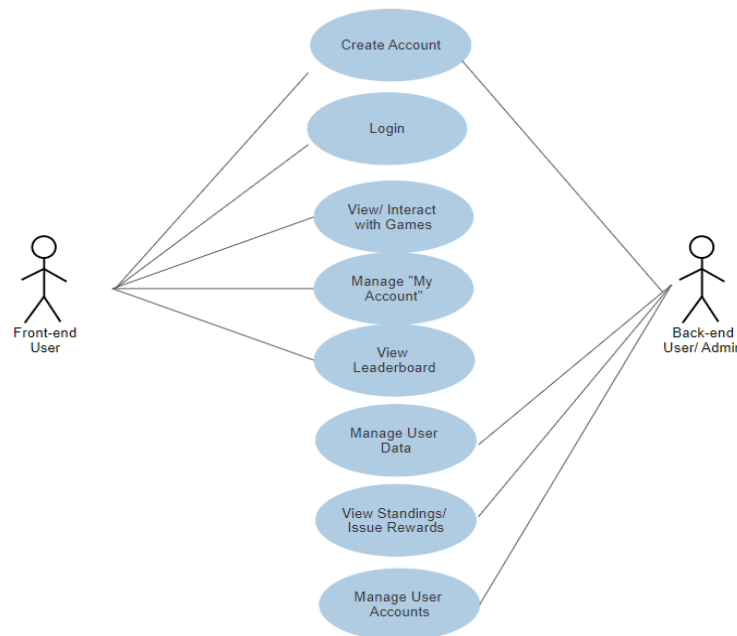


Figure 2. Use Case Diagram

Technical Discussion

The following diagrams, Figure 3: Application Architecture and Figure 4: Database Architecture, display a broad scope of the GameSuite databases. The diagrams depict how the architecture is inter-connected from the user auth, front end, back end and API.

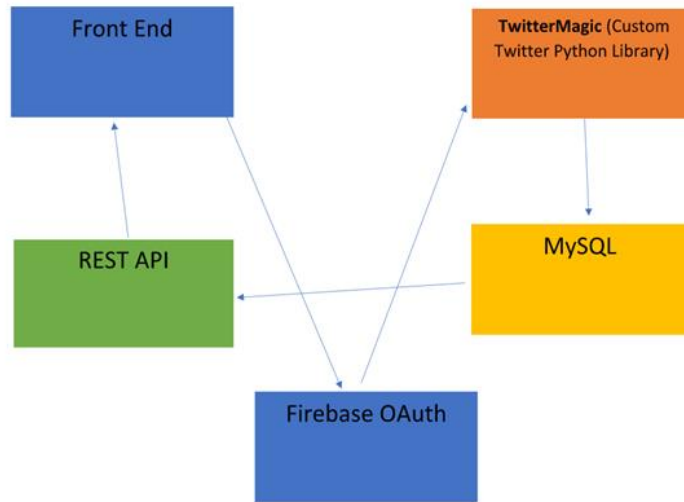


Figure 3. Application Architecture

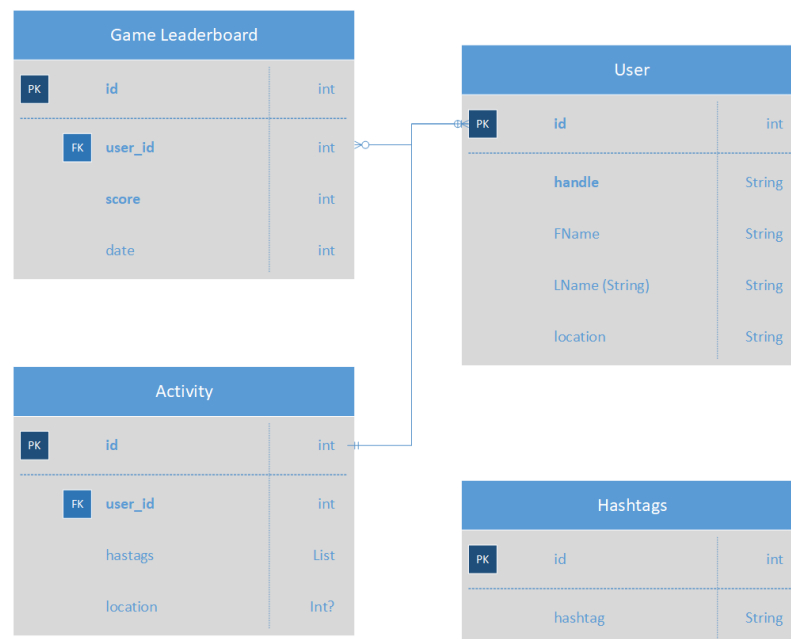


Figure 4. Database Architecture

The following images, Figure 5: GameSuite Desktop Homepage and Figure 6: GameSuite Mobile Homepage, give a visualization of what users will see when they log into the application. Users will have the option to play any of our games, which currently include Kickoff Return, Three Point and Wheel Spin. In addition to playing games users will have the ability to access their account information, visit the leaderboard or log out.

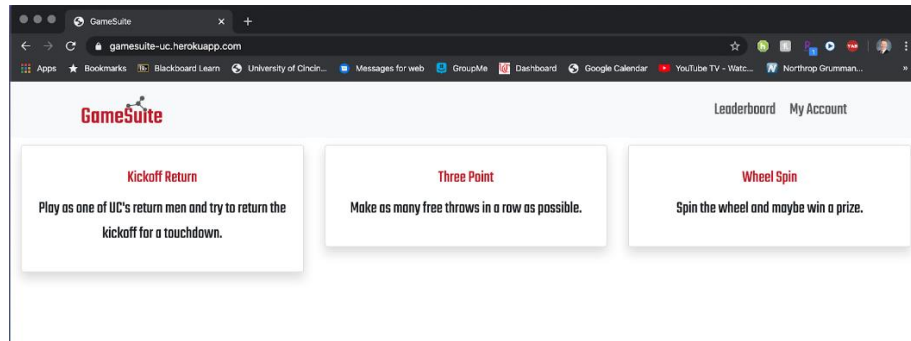


Figure 5. GameSuite Desktop Homepage

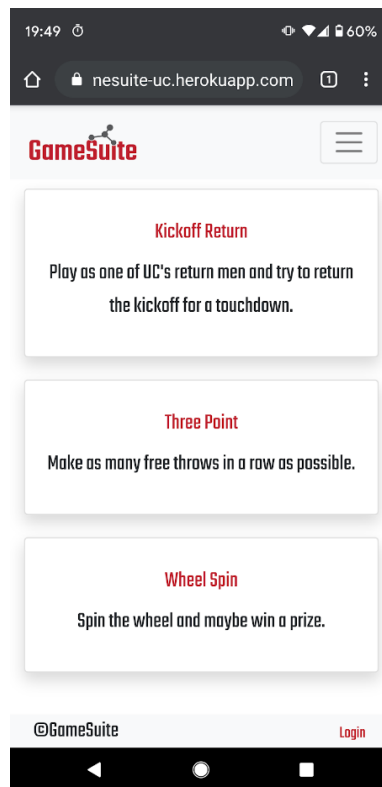
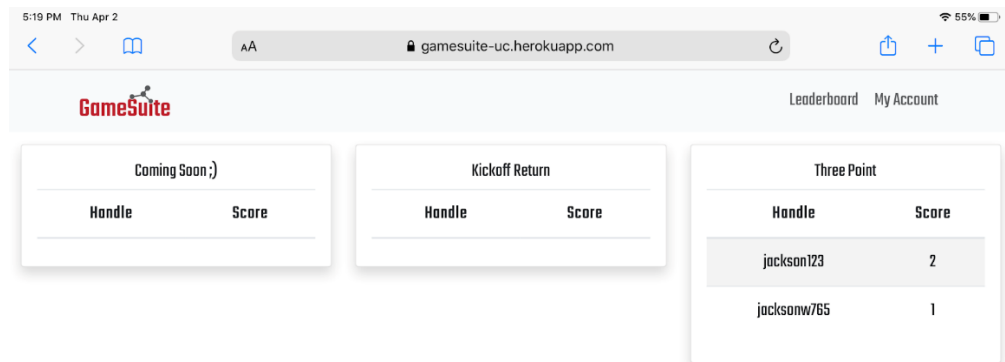


Figure 6. GameSuite Mobile Homepage

The following images, Figure 7: GameSuite iPad Leaderboards and Figure 8: GameSuite Desktop Football Game, allows users to see how their scores on all our games match-up with other users. The leaderboard screen acts as a quick view to show the most recent scores on who is the top at any given time. In the football game users will evade tacklers in attempt to reach the endzone.



Handle	Score
jackson123	2
jacksonw765	1

Figure 7. GameSuite iPad Leaderboards

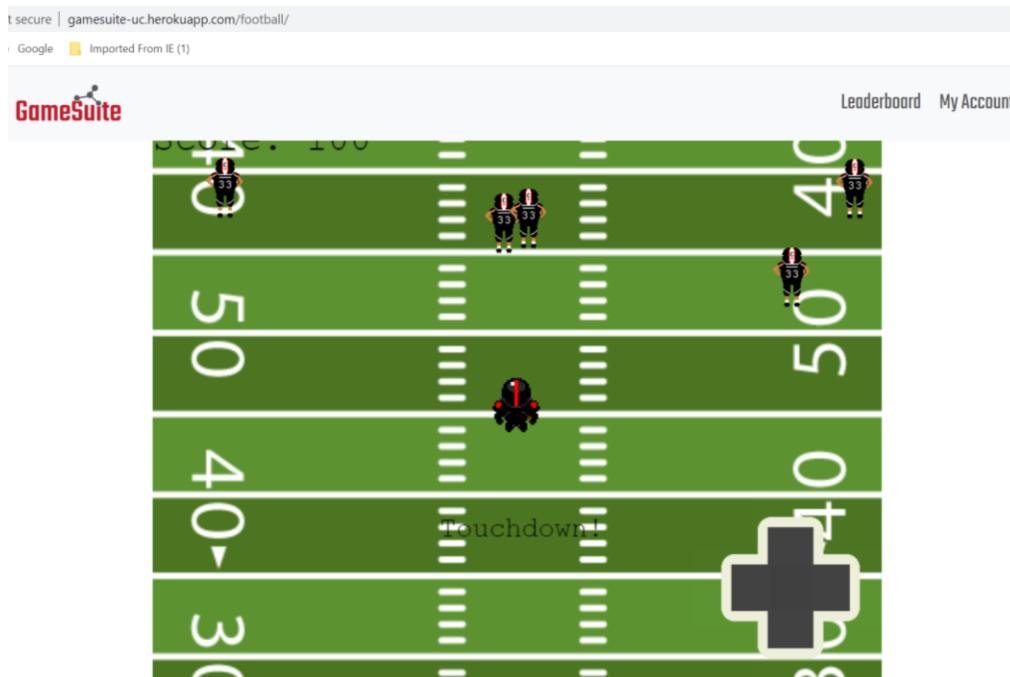


Figure 8. GameSuite Desktop Football Game

The following images, Figure 9: Gamesuite Desktop Wheel Spin and Figure 10: GameSuite Desktop Basketball Game, are two of the game's users will have the ability to play for a chance at prizes or a high score. The wheel spin allows users to spin the wheel three times a day in an attempt to land on the bearcat with the chance at earning a prize. In the basketball game users will shoot free throws for a chance at a high score on the leaderboards.

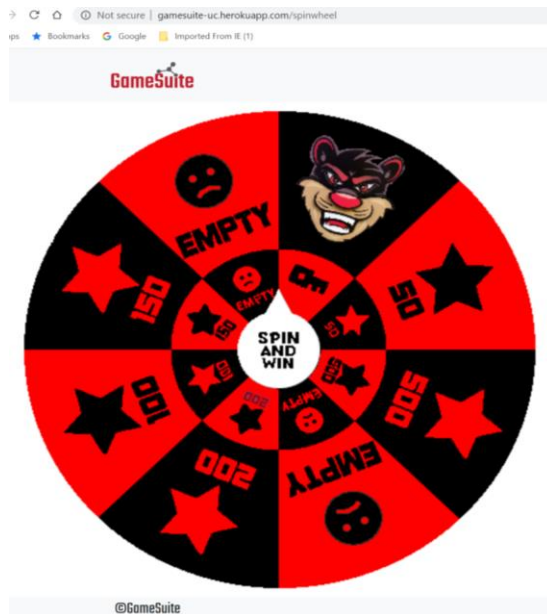


Figure 9. GameSuite Desktop Wheel Spin Figure 10. GameSuite Desktop Basketball Game

The following image, Figure 11: GameSuite Desktop Admin Page, will allow UCAD to view detailed information on user interaction. UCAD will have the ability to view user authentication methods, cities where users log in from, most frequented hashtags, user information and upcoming events.

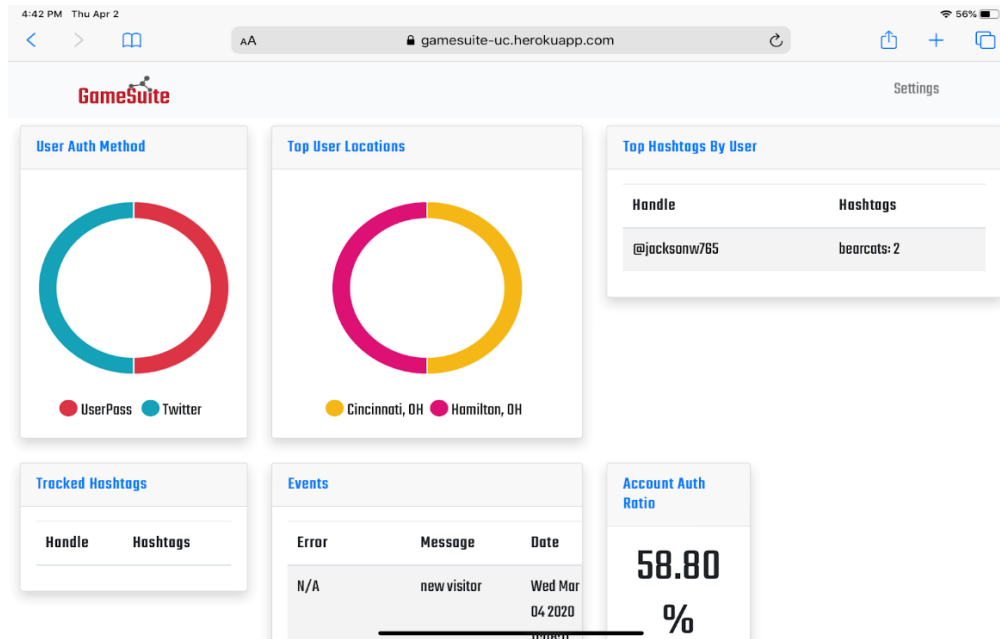


Figure 11. Gamesuite Desktop Admin Page

In the web application GameSuite, we worked to include a number of security and network protocols. When dealing with customer data and any passwords, it's important to keep that information encrypted. Since our application is a website implementing HTTPS was our first priority. We utilized a service called Google fire base which allows us to do OAuth authentication with various social media sites. This is a great service that is also free to use because we did not have much to spend on development costs. We utilized HTML, CSS and JavaScript to display the webpages along with Django as our back in server. To deploy our application, we went with Heroku because they have a free tier available for students. We also chose to use a Postgres SQL server because of the seamless integration with python.

Testing

Overview/Methodology

We used a collection of all testing methods. First, we used integration testing to verify that all existing features are working before and after a collection of code. We used system or “smoke” testing that is designed to test all the major features of the website. Finally, we have “beta” testing which is us sending a release to the university for them to review and test the code.

Testing workflow:

1. The Test Lead will work with the Developer in creating Test Cases.
2. The Developer will run the Tests as he/she builds the features in the Dev environment, to help capture issues during design/coding time.
3. Once a Developer releases the code that pertains to a feature, that Developer marks the relevant Tests as “Moved to QA”.
4. The Test Lead or another Developer will run the Tests in the QA environment.
5. If the QA Test fails, the tester will create a ticket and inform the team.

It is important to have a “separation of concerns” with QA Testing. To ensure the application is working properly we have a second set of eyes test the web application as well as ensure everything looks correct. Developers have a tendency to overlook minute flaws while focusing on the big picture. To ensure nothing is missed we will have the Test Lead/ Product Manager also test the application in QA before pushing to Prod.

Scope of Testing

a. All features of the web application are covered under testing, on both the user and admin side. There are three main sections we will be testing, gameplay, score reporting/ high score and the admin console.

Objectives

a. The goal of testing was to determine which elements of the web application are running as predicted and which ones are working incorrectly. In the testing phase, each section of the app is tested individually for optimal testing.

b. Ensure user authentication with Twitter, and Firebase is working properly

Logging Test and Procedures

a. We had a logging class in python that reports back to the user on events that fail. If an event is to fail, a report is generated and will output in python what went wrong. If something is to fail, it does so in isolation and will not impact future fails.

b. Each team member was required to perform some Dev and QA Testing each week with the goal of getting every Test executed. We did not assign required times for each person to perform QA Testing, as we wanted to leave it up to each person to decide what time worked best for them once the Dev testing had been completed and pushed.

c. Source code is here: <https://github.com/jacksonw765/gamesuite>

d. The test passes if the test case works as expected. The test fails if it does not meet the expectations of the test case or is in Dev.

The following diagram, Figure 12: Test Case Log Table, displays some of our test cases, pass/fail and status for GameSuite.

ID	Test Case	Status	Pass/ Fail
1	Create new account successful adds user to FireBase and Backend	Moved to Prod	Pass
2	User is able to Log-in with correct credentials	Moved to Prod	Pass
3	Password Reset button sends a link to specified account	Moved to Prod	Pass
4	"My Account" should show picture, name, twitter handle and a sign out button	Moved to Prod	Pass
5	"Leaderboard" shows twitter handle and most recent scores	Moved to Prod	Pass
6	Sign-out, successfully logs user out of GameSuite	Moved to Prod	Pass
7	Delete user button deletes user account from GameSuite	In Dev	Fail
8	Deleting user account removes user data from FireBase and Backend	In Dev	Fail
9	In-game movement corresponds to selected keyboard arrow for computer web app	Moved to Prod	Pass
10	In-game movement corresponds to selected joystick direction for mobile web app	In Dev	Pass
11	Mobile web application scales and displays correctly	In Dev	Fail
12	Leaderboard updates in real time with user scores	Pushed to QA	Pass

Figure 12. Test Case Log Table

What We Learned

- a. Feature requirements and system designs are extremely important. We had to redo a few features because of changing requirements in administration.
- b. We had hoped to do a full public beta test at a UC game in March to see how GameSuite responds to a large-scale audience but that was cancelled after the cancellation of all university sports due to COVID-19.
- c. Based on recommendation from the new AD we added a couple of features to GameSuite enabling it work better on mobile devices.

Budget

Table 1: Budget outlines the budget for this project. The expenses are separated into two categories: materials and labor. In order to keep the hardware costs down, the backend is hosted using Heroku free tier. All frameworks and development tools used to create the application are

free and open source. The simulated labor cost totaled \$21,600 under the assumption that each team member would earn \$20 per hour. The actual labor cost of GameSuite is \$0 since this project is being completed to procure our Bachelor of Science in Information Technology at the University of Cincinnati.

CATEGORY	ITEM	DESCRIPTION	PROJECTED COST	ACTUAL COST
Materials	Hardware	Servers and devices used to develop, test, deploy and run the application.	\$0	TBD
	Software	Frameworks and tools used to develop the application.	\$0	\$0
Labor	Actual Wages	The actual wages that will be distributed for development of GameSuite.	\$0	\$0
	Projected Wage Costs*	The predicted wages that would be distributed if the project was funded by UCAD. (We are assuming 3 developers making \$20/ hour).	\$21,600	TBD
TOTALS			\$0	TBD
<i>*Simulated Wage Costs are not included in the cost totals.</i>				

Table 1. Budget

Project Schedule

Figure 13: Fall Semester 2019 Gantt Chart, Figure 14: Spring Semester 2020 Gantt Chart and Table 2: Work Breakdown Structure outline the projected schedule for completion of this project

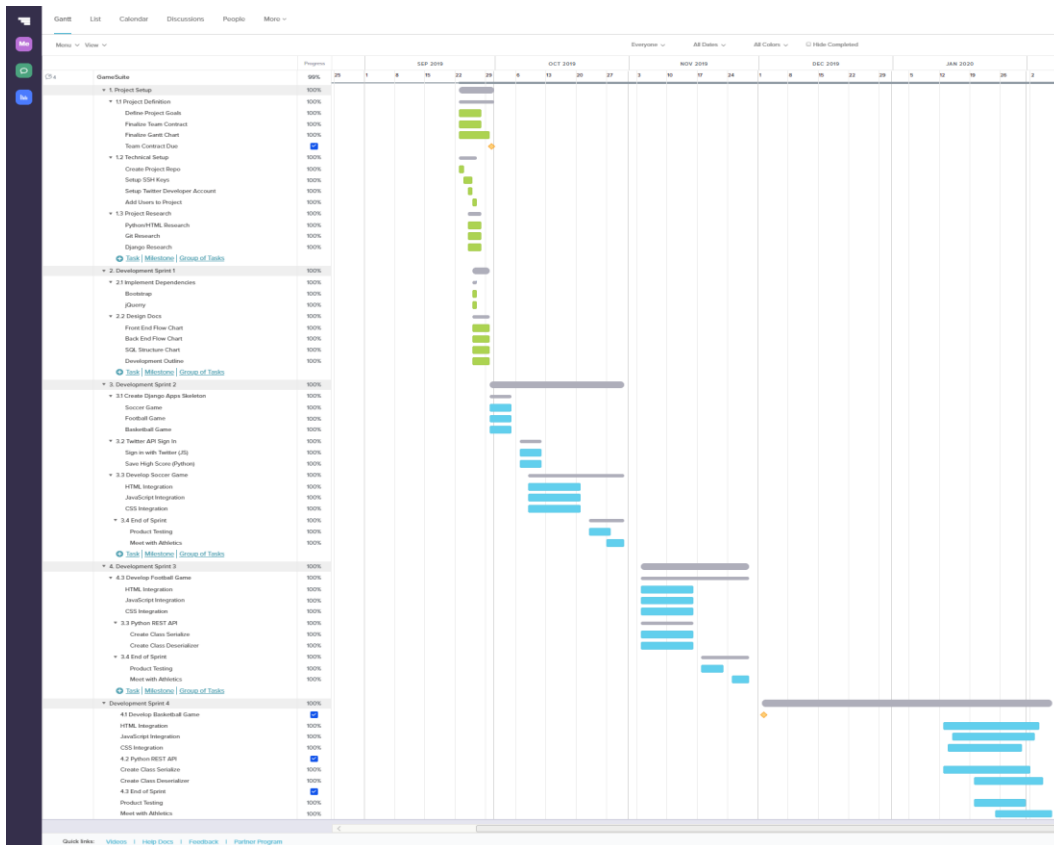


Figure 13. Fall Semester 2019 Gantt Chart

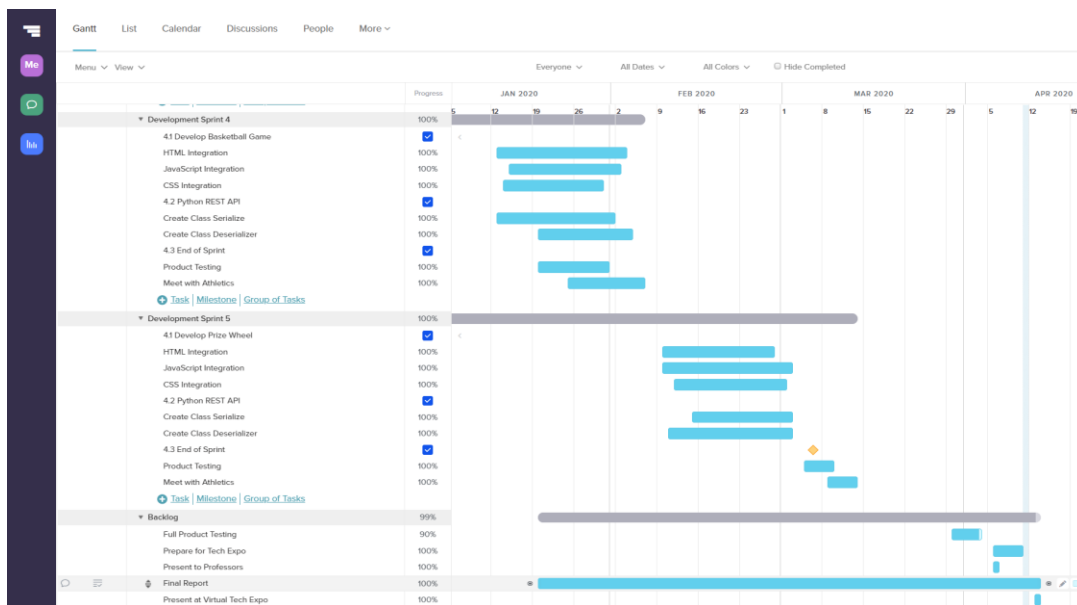


Figure 14. Spring Semester 2020 Gantt Chart

Work Breakdown Structure:

WBS #	Name / Title	Duration (Days)	Start Date	End Date
1	GameSuite	200	9/23/2019	4/10/2020
1.1	1. Project Setup	7	9/23/2019	9/30/2019
1.1.1	1.1 Project Definition	7	9/23/2019	9/30/2019
1.1.1.1	Define Project Goals	4	9/23/2019	9/27/2019
1.1.1.2	Finalize Team Contract	4	9/23/2019	9/27/2019
1.1.1.3	Finalize Gantt Chart	6	9/23/2019	9/29/2019
1.1.1.4	Team Contract Due	1	9/30/2019	9/30/2019
1.1.2	1.2 Technical Setup	3	9/23/2019	9/26/2019
1.1.2.1	Create Project Repo	1	9/23/2019	9/23/2019
1.1.2.2	Setup SSH Keys	1	9/24/2019	9/25/2019
1.1.2.3	Setup Twitter Developer Account	1	9/25/2019	9/25/2019
1.1.2.4	Add Users to Project	1	9/26/2019	9/26/2019
1.1.3	1.3 Project Research	2	9/25/2019	9/27/2019
1.1.3.1	Python/HTML Research	2	9/25/2019	9/27/2019
1.1.3.2	Git Research	2	9/25/2019	9/27/2019
1.1.3.3	Django Research	2	9/25/2019	9/27/2019
1.2	2. Development Sprint 1	3	9/26/2019	9/29/2019
1.2.1	2.1 Implement Dependencies	1	9/26/2019	9/26/2019
1.2.1.1	Bootstrap	1	9/26/2019	9/26/2019
1.2.1.2	jQuery	1	9/26/2019	9/26/2019
1.2.2	2.2 Design Docs	3	9/26/2019	9/29/2019
1.2.2.1	Front End Flow Chart	3	9/26/2019	9/29/2019
1.2.2.2	Back End Flow Chart	3	9/26/2019	9/29/2019
1.2.2.3	SQL Structure Chart	3	9/26/2019	9/29/2019
1.2.2.4	Development Outline	3	9/26/2019	9/29/2019
1.3	3. Development Sprint 2	30	9/30/2019	10/30/2019
1.3.1	3.1 Create Django Apps Skeleton	4	9/30/2019	10/4/2019
1.3.1.1	Soccer Game	4	9/30/2019	10/4/2019
1.3.1.2	Football Game	4	9/30/2019	10/4/2019
1.3.1.3	Basketball Game	4	9/30/2019	10/4/2019
1.3.2	3.2 Twitter API Sign In	4	10/7/2019	10/11/2019
1.3.2.1	Sign in with Twitter (JS)	4	10/7/2019	10/11/2019
1.3.2.2	Save High Score (Python)	4	10/7/2019	10/11/2019
1.3.3	3.3 Develop Soccer Game	21	10/9/2019	10/30/2019
1.3.3.1	HTML Integration	11	10/9/2019	10/20/2019
1.3.3.2	JavaScript Integration	11	10/9/2019	10/20/2019
1.3.3.3	CSS Integration	11	10/9/2019	10/20/2019
1.3.3.4	3.4 End of Sprint	7	10/23/2019	10/30/2019

1.3.3.4.1	Product Testing	4	10/23/2019	10/27/2019
1.3.3.4.2	Meet with Athletics	3	10/27/2019	10/30/2019
1.4	4. Development Sprint 3	24	11/4/2019	11/28/2019
1.4.1	4.3 Develop Football Game	24	11/4/2019	11/28/2019
1.4.1.1	HTML Integration	11	11/4/2019	11/15/2019
1.4.1.2	JavaScript Integration	11	11/4/2019	11/15/2019
1.4.1.3	CSS Integration	11	11/4/2019	11/15/2019
1.4.1.4	3.3 Python REST API	11	11/4/2019	11/15/2019
1.4.1.4.1	Create Class Serialize	11	11/4/2019	11/15/2019
1.4.1.4.2	Create Class Deserializer	11	11/4/2019	11/15/2019
1.4.1.5	3.4 End of Sprint	10	11/18/2019	11/28/2019
1.4.1.5.1	Product Testing	4	11/18/2019	11/22/2019
1.4.1.5.2	Meet with Athletics	3	11/25/2019	11/28/2019
1.5	Development Sprint 4	66	12/2/2019	2/6/2020
1.5.1	4.1 Develop Basketball Game	0	12/2/2019	12/2/2019
1.5.2	HTML Integration	21	1/13/2020	2/3/2020
1.5.3	JavaScript Integration	18	1/15/2020	2/2/2020
1.5.4	CSS Integration	16	1/14/2020	1/30/2020
1.5.5	4.2 Python REST API	22	1/13/2020	2/4/2020
1.5.6	Create Class Serialize	19	1/13/2020	2/1/2020
1.5.7	Create Class Deserializer	15	1/20/2020	2/4/2020
1.5.8	4.3 End of Sprint	10	2/7/2020	2/17/2020
1.5.9	Product Testing	11	1/20/2020	1/31/2020
1.5.10	Meet with Athletics	12	1/25/2020	2/6/2020
1.6	Development Sprint 5	102	12/2/2019	3/13/2020
1.6.1	4.1 Develop Prize Wheel	102	12/2/2019	3/13/2020
1.6.2	HTML Integration	18	2/10/2020	2/28/2020
1.6.3	JavaScript Integration	21	2/10/2020	3/2/2020
1.6.4	CSS Integration	18	2/12/2020	3/1/2020
1.6.5	4.2 Python REST API	27	2/15/2020	3/13/2020
1.6.6	Create Class Serialize	16	2/15/2020	3/2/2020
1.6.7	Create Class Deserializer	20	2/11/2020	3/2/2020
1.6.8	4.3 End of Sprint	10	3/6/2020	3/16/2020
1.6.9	Product Testing	4	3/5/2020	3/9/2020
1.6.10	Meet with Athletics	4	3/9/2020	3/13/2020
1.7	Backlog	11	3/30/2020	4/10/2020
1.7.1	Full Product Testing	4	3/30/2020	4/3/2020
1.7.2	Prepare for Tech Expo	4	4/6/2020	4/10/2020
1.7.3	Present to Professors	1	4/6/2020	4/6/2020
1.7.4	Final Report	85	1/20/2020	4/13/2020
1.7.5	Present at Virtual Tech Expo	1	4/14/2020	4/14/2020

Table 2. Work Breakdown Structure

Problems Encountered

Colin - Senior Design had its challenges. Some of the problems I encountered were not knowing some of the languages we are using and trying to learn on the fly and expand my knowledge all while attempting to get a product working. Communication with the team is good but it's been a challenge to effectively communicate with UC Athletics due to a big move. There were some bugs that we ran into that took time to get fixed. Also not having a lot of information on or experience using Phaser 3.

Matt - This project had many peaks and valleys but overall, we were quite successful. We had to overcome communication difficulties, a change in our point of contact within the university's athletic department and a week of uncertainty whilst UCAD had a change in leadership. Like everyone else we faced a lot of hardships from the COVID-19 pandemic. The pandemic cancelled remainder of the NCAA basketball season where we had planned to test our application in conjunction with UCAD. With all university sports cancelled until further notice there is much uncertainty as to when we will see the success that GameSuite can bring.

Jackson - Very similar to what Colin and Matt have already stated is that we had a lot of problems with the athletics department transition. Another problem I encountered was time management. Some of the selected features for various sprints were harder to develop than once thought however we incorporated all the selected features to this point.

Future Recommendations

If we had the chance to do it all over again there would only be a handful of things we would change. Obviously, we would have loved for the athletic director and his staff to have remained with us as they were heavily involved in the project. Additionally, things would have been a lot easier without the COVID-19 pandemic. Putting those two factors aside, one thing we

would have changed would be to start heavily developing early to try and have the framework and at least one game completed by Winter break. Another thing we would have changed is to try and establish additional points of contact within the athletic department. One final thing we would change is that we would have taken more risk, asked more questions of to the athletic department, potential users and the professors. The more input or advice/ opinion you have on a project, the better.

If this project were extended, we would have tried to do another full-scale test of GameSuite at a university athletic event. We also would have tried and to perfect a few pieces of the game we think could use some improvement, having more detailed backgrounds/ graphics that pertain to UC athletics. Finally, we would try to go out and obtain users by reaching out to our friends, putting information on social media and having UC athletics doing the same.

Along the way we have done users testing and asked for input from students and colleagues. They have provided us with suggestions to add a prize wheel feature which we have listened to and developed into the application. Test users have pointed out when we had display issues on the mobile application versus the web application. We have also received feedback from previous students whom have graduated. These students provided general advice pertaining to senior design and were a good resource.

Working closely with UCAD we plan to continue furthering the development of GameSuite. We want to see this project through to its implementation into the University of Cincinnati's Athletic Department as their main conversion tool. This was one of our goals from the start and we aren't letting any obstacle stop us. We will overcome COVID-19 just like we overcame the change in leadership.

CONCLUSION

Lessons Learned

Colin - During the last year in Senior Design, I learned a lot. Some of the lessons I had learned are not to waste time. Time flies and deadlines will come up quick. I learned that I need to stay on top of things and make sure to be continuously working on the project and the individual tasks on hand. I learned that slacking will only put you behind and require a lot of unnecessary work to catch back up and to take it seriously from Day 1 in the Fall.

Matt - Over the last year I have realized that some things are out of your control and having an emergency action plan and the ability to adapt quickly is of the utmost importance. It is key to try and plan for possible outcomes and to work ahead, rather than scramble at the last minute because you've procrastinated. Like every project you must manage your time properly and not be afraid to ask for help. To make this project a success we had to work together and increase communication amongst our team and our shareholders. We were so close with the previous stakeholders but even with the change our project had to continue on. We had to be understanding that our project was not going to be of the utmost importance of the new AD. I have learned a lot from the Fall from developing skills, bureaucratic skills, how to adapt to unforeseen changes and crisis and much more.

Jackson - During the previous year, I had learned many things. I grew my knowledge of HTML, JavaScript and CSS. I learned to not procrastinate as things tend to balloon into bigger problems than expected. I learned that it can be very difficult to schedule meetings with athletics from time to time. Since the Fall I have learned how to obtain a public facing static IP and how to have it hosted.

Developed Skills

Colin - Senior Design was challenging and involved learning new skills and expanding on old ones. I developed and expanded on some technical skills such as knowledge in Python, JS, Phaser, and others. I developed other skills such as how to communicate well, how to use different IDE's, and expand my knowledge on Github. I know how to work with an outside company and the difficulties that can come with it. Overall, I think that I expanded my knowledge well over the last year.

Matt- This course provided many unique experiences for me and gave me the opportunity to build off past skills developed in the classroom and in the workforce. I have gained a vast set of project management skills and communication skills, whilst also growing my HTML and JavaScript skills. I was introduced and became accustomed to using Github and learned a great deal about API's. I have enjoyed this project and the opportunity to work together with the team and UCAD.

Jackson - Over the past year, I developed and learned many things. Working with UC Athletics has been very challenging. With the turnover in the athletics department, things were difficult to get feedback. I have also grown my HTML and JavaScript skills.

Back Matter

REFERENCES

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Appendix A. Poster

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About

GameSuite allows athletic departments to gather leads, monitor Twitter trends and engage with fans.

Problem

University of Cincinnati Athletics (UCAD) is having trouble measuring fan engagement, fan location and generating ticket sales.

Tech Used

- Django
- SQL
- JavaScript
- Twitter API
- Firebase
- Phaser

GameSuite provides a collection of games with social sign-on that are free to play while offering prizes to the top contestants. Data is securely shared via APIs to UCAD to track geo location, Twitter hashtags and other data to promote ticket sales.

Solution

