Buildr

Sprint 1: Planning Document

Team 21: Jialu Gu, Shafer Hess, Emily Ou, Derek Shu, Mangkorn Yuan

Sprint Overview

In our first sprint we will begin to lay the framework for our application. We want to create the underlying backend and database that will store and maintain our users, models, and shared information. First we will setup our final backend server using Node.js and linking communications with an Amazon Web Services database. When we have our main backend operations operational we will then begin to structure our database and implement basic communications functions for accessing data.

While we prepare the database, we also will begin to develop the basic framework of the UI/UX experience in Unity. This involves creating the different views that we will require in the final application and the implementation of basic UI elements to allow us to test navigation.

SCRUM Master: Shafer Hess

Meetings: Tues, Thurs 5:30

Risks and Challenges

Some of the challenges that we will face are performance and battery life (due to the app being run on mobile phones). Unity is primarily a video game engine, and although the software is mobile-friendly, not taking care of the amount of 3d models and textures we use can eat up performance really quick and as a consequence eat up battery life, not to mention heating up the phone significantly. While developing the app, we will have to pay a huge amount of attention towards optimization so that the app can be as light as possible in terms of size and performance requirements.

Furthermore, other challenges we will face include familiarizing ourselves with the frameworks and services we will be using throughout the course of the project. We suspect that this will take a large part of our time for our first sprint as we slowly get more comfortable with how to successfully integrate our core parts together into a cohesive unit.

Current Sprint Detail

User Story 1:
"I would like my password to be stored in a secure manner so that should the data be compromised, it isn't just plain password text handed over to the hackers"

Task Table:

Task Number	Description	Time	Task Owner
1	Research and choose an appropriate password encryption algorithm	4	Shafer
2	Implement encryption algorithm	3	Shafer
3	Add encryption to database	3	Shafer
4	Unit Test - create new user and check that password stored is encrypted properly	2	Shafer

Acceptance Criteria:
- Given that the encryption is implemented properly, a user should be able to create a username and password and have the password stored as an encrypted string associated with their name
- Given that the encryption is implemented properly, when a developer views a user profile in the database, the only visible password should be the encrypted password which will be compared when a user attempts a login.
- Once the encryption process is fully implemented, all developers should be aware that the password stored in the database is the encrypted version of the user's password and not even the developers will know the real password

User Story 2:
"As a developer, I would like to use a database hosted in the cloud services so that usability is intuitive and simple"

Task Table:

Task Number	Description	Time	Task Owner
1	Setup database in Amazon Web Services	4	Derek
2	Familiarize with the AWS console and control panel	4	Derek
3	Unit Test - Test connections to and from the database	3	Shafer

Acceptance Criteria:
- Given that the database is setup properly, all developers in the group should have access to modify the contents in the database.
- Given that the database is setup properly, all the developers should be familiar with how the AWS console and control panel operates.
- Given that the database is setup properly, user data should be able to be sent to the database and back without corruption.

User Story 3:
"As a user, I would like to be able to register for my Buildr account so that I can participate"

Task Table:

Task Number	Description	Time	Task Owner
1	Create a signup page to insert a new user into the system	3	Emily
2	Verify User info during account creation (email, password, username)	4	Derek
3	Add initial User metadata to database table	2	Derek
4	Unit Test - correct inputs such as a valid email and meets password criteria	2	Emily

Acceptance Criteria:
- Given that the user signup process is functional, the user will be added to the list of all current users in the database.
- Given that the user signup process is functional, the user metadata can successfully added to the database table .
- Given that the user signup process is functional, the user can securely enter their information and save it in the Buildr database.
- Given that the user signup process is functional, as a developer, we should be able to test the inputs of the user and validate if the login is appropriate to continue.

User Story 4:
"As a user, I would like to be able to login to my Buildr account so that I can interact with the app and other users."

Task Table:

Task Number	Description	Time	Task Owner
1	Create a login screen	2	Emily
2	Integrate an authentication process	4	Emily
3	Unit Test - check for correct inputs such as unknown emails or incorrect passwords, attempts limited, error message	2	Emily

Acceptance Criteria:
- Given that the user login and authentication is functional, the user can easily access the login page for Buildr and enter their user credentials.
- Given that the authentication process is implemented, the user's login will be authenticated based on their username/password.
- Given that the unit test has been implemented to test for incorrect input, then the user will be able to receive feedback.

User Story 5:
"As a user, I would like to be able to reset my password if I forget it so that I can use the app without making a new account."

Task Table:

Task Number	Description	Time	Task Owner
1	Create password reset screen/interface in the app	2	Emily
2	Send verification for reset to user's associated email address	2	Derek
3	Create interface where the user types in their new desired password to reset it	2	Emily
4	Salt and Hash the new password	4	Derek
5	Modify password of the User in the database	2	Derek
6	Unit Test - Notify user by email of the password change (for security reasons)	2	Derek

Acceptance Criteria:
- Given that the password reset is functional, the user will receive a verification to their associated email address.
- Given that the password reset is functional, the user will be able to type in their new desired password to reset it.
- Given that the password reset is functional, the user's new password will be salted and hashed for their privacy and protection.
- Given that the password reset is functional, the user's new password will be modified and updated in the database.
- Given that the password reset is functional, the user will receive an email notification of the password changes for their own privacy and protection.

User Story 6:
"As a user, I would like to be able to change my password in case I need to change passwords for security reasons"

Task Table:

Task Number	Description	Time	Task Owner
1	Create password change screen/interface	3	Mangkorn
2	Create interface where the user types in their new desired password to reset it	3	Mangkorn
3	Salt and Hash the new password	4	Derek
4	Modify password of the User in the database	2	Derek
5	Unit Test - Notify user by email of the password change (for security reasons)	2	Derek

Acceptance Criteria:
- Given that the password reset interface is implemented properly, users will be able to update the password that is associated with their username in our database
- GIven that the password reset interface is functional, developers will be able to view updated user passwords in the database
- Given that the password reset interface is functional, users should receive an email when their password is successfully updated in the Buildr database
- Given that the password reset interface is functional, developers will see the passwords in the database as encrypted and not the actual password entered by a user.

User Story 7:
"As a user, I would like the application to be battery friendly on my phone so I don't have to worry about draining too much battery while using the app"

Task Table:

Task Number	Description	Time	Task Owner
1	Optimize texture files	1	Mangkorn
2	Use Low-Poly 3D models	2	Mangkorn
3	Optimize Unity Lighting Settings	2	Mangkorn
4	Unit Test - perform battery length tests on different builds of the app on different devices	3	Shafer

Acceptance Criteria:
- Given that the features of the app have been optimized, the developers should be able to measure an increase in battery performance as new builds of the app are produced
- Given that the features of the app have been optimized, the application should have a combined texture file size less than 50 megabytes.
- Given that the features of the app have been optimized, the lighting settings chosen by the developers should produce zero frame drops or screen tearing

User Story 8:
"As a user, I would like to be able to have an easy-to-use UI on the Buildr app so that I can use the app without much confusion."

Task Table:

Task Number	Description	Time	Task Owner
1	Design UI	2	Mangkorn
2	Implement UI in Unity	3	Mangkorn
3	Unit Test - Let Users test the UI (using the *panel list**)	1	Mangkorn

Acceptance Criteria:
- Given that the UI is complete and fully functional, users should be able to navigate the UI through all the panels (as specified by the developer) without being stuck or having to ask the developer for help
  - *panel list: A list (written copy) of all the UI panels/pages in order by which the users will be asked to navigate through each of them using the app
  - In addition, users will also be asked of how they feel with the overall design along with how "easy" browsing the UI is

User Story 9:
"As a user, I would like to build creations like Lego blocks using 3D models provided by the app."

Task Table:

Task Number	Description	Time	Task Owner
1	Implement camera control	1	Jialu Gu
2	Implement adding block	2	Jialu Gu
3	Implement deleting block	1	Jialu Gu

Acceptance Criteria:
- Given the camera control is functional, swapping on the screen can rotate the view.
- Given the adding block works properly, click on the creation will add a block on it. If the block intersects with others, it will not be added.
- Give the deleting works properly, if the delete option is selected, click on a block will delete it.

User Story 10:
"As a user, I would like to save and load my creations on the local disk"

Task Table:

Task Number	Description	Time	Task Owner
1	Define the serializable struct of the creation	0.5	Jialu Gu
2	Read/write of the creation	2.5	Jialu Gu
3	Save and load UI design	1	Jialu Gu
4	Unit test	0.5	Jilau Gu

Acceptance Criteria:
- Given the serializable struct is implemented correctly, the struct can be serialized to a json string
- Given the reading/writing of the creation is implemented, the creation can be parsed to the serializable struct and be saved and load as json strings.
- Given the save and load UI is completed, the developers can save and load creations by clicking buttons.

Remaining Product Backlog

Functional

<u>As a user,</u>

- ~~"I would like to be able to register for my Buildr account so that I can participate"~~
- ~~"I would like to be able to login to my Buildr account so that I can interact with the app and other users."~~
- ~~"I would like to be able to reset my password if I forget it so that I can use the app without making a new account."~~
- "I would like to be able to change my associated email in case I want to create a new email account"
- ~~"I would like to be able to change my password in case I need to change passwords for security reasons"~~
- "I would like to be able to have 2FA protection in case my password was compromised" (if time allows)
- "I would like to be able to customize my avatar so that I can give my account some character"
- "I would like to be able to customize the notifications from the app so that I can choose only specific types of events to notify me about"
- "I would like to be able to change my display name so that it gives my account more character/personality"
- ~~"I would like to be able to have an easy-to-use UI on the Buildr app so that I can use the app without much confusion."~~
- "I would like to be able to change the language of the app so that I can view descriptions of buildings in a language I understand better" (if time allows)
- "I would like to have access to a tutorial so that I can learn my way around the app when I first download it"
- "I would like to be able to view the change log for updates to the app so I can see what features have been added or removed for each build"
- "I would like to be able to have full control and transparency over my privacy settings and data collection so I know exactly what data is being collected and what data I'm providing"

- "I would like to be able to choose if the app can update over mobile data, wifi, automatically, or manually so I have control over when or if the app updates"
- "I would like to be able to view the history of buildings on campus."
- ~~"I would like to build creations like Lego blocks using 3D models provided by the app."~~
- "I would like to be able to rotate and scale the 3D models provided by the app."
- "I would like to be able to undo and redo when building my creation."
- "I would like to be able to be able to see my creations in an AR environment"
- ~~"I would like to save and load my creations on the local disk"~~
- "I would like to be able to search for specific locations inside of the app in case I really want to go see a specific point of interest"
- "I would like to be able to access my AR creations offline so that I can modify my work without an internet connection"
- "I would like to have preset guide routes I can follow in case I don't really know good locations to visit"
- "I would like to have directional information on screen so I know where to go when navigating to a point of interest"
- "I would like my modifications and modifications from other users to show up in the real-time public AR world" (if time allows)
- "I would like to be able to communicate with other users on the application"
- "I would like to be able to upvote/like creations from other people, so that I can show that I support their work"
- "I would like to be able to friend other users on the platform so that I can follow their creations" (if time allows)
- "I would like to be able to remove other users from friends in the app so that I can delete friends that I no longer wish to be friends with"
- "I would like to be able to see other users currently nearby and viewing the AR world so I feel like I'm truly interacting with people inside another world"
- "I would like to be able to enable or disable being publically visible in the AR world in case I want to hide from others in the AR world"
- "I would like to be able to report inappropriate content made by other users so that the content will be reviewed and possibly removed"

As an administrator,

- "I would like to be able to censor inappropriate words in the comments and replace them with stars"
- "I would like to be able to delete other user creations in the application (if inappropriate)"
- "I would like to be able to modify text descriptions of the buildings inside the app to either add, edit, or delete information"
- "I would like to be able to ban other users from the platform to get rid of troublemaking users"
- "I would like to be able to timeout other users from the platform to give a warning to troublemaking users"

Non-Functional

<u>As a user,</u>
- ~~"I would like the application to be battery friendly on my phone so I don't have to worry about draining too much battery while using the app"~~
- "I would like to be able to login quickly so I'm not waiting excessively long on the login screen"
- "I would like to be able to load the AR world quickly"
- ~~"I would like my password to be stored in a secure manner so that should the data be compromised, it isn't just plain password text handed over to the hackers"~~

<u>As a developer,</u>
- ~~"As a developer, I would like to use a database hosted in the cloud services so that usability is intuitive and simple"~~
- "As a developer, I would like to have a server architecture that allows us to easily scale the amount of users active in our app so that we can include as many users as possible."
- "As a developer, I would like to have the ability to easily include users from other universities."