

Product Report
ScavengeRUs
Software Engineering 1

Executive Summary

Throughout this semester, my team and I have worked on tier 1 of the ScavengeRUs web application. The scope of this tier asked us to spin up a project and get it linked to a database as well as hosted on a web hosting service. We were also tasked with allowing users to log into the system using a unique user access code. From here we had to implement a way to scan and decode QR codes where each of which would link to a specific task from a specific game tied to each user. These were the main goals of tier 1 but there were other smaller requirements such as changing user display name, errors displayed to the user upon incorrect input, and emails being sent upon completion of a game.

With this in mind, where did we get in tier 1? We were able to get our project hosted through Azure's web application hosting service and we used Azure's SQL database to host and manage our user information as well as game/task information. We used an XZing Blazor extension to handle reading in QR codes and decode them to a string that we could use to cross check which game and task that QR code is linked to. We created a functional interface for the user to interact with as well as tabbing to make switching between menus more intuitive. We implemented a map using Google Maps API to create and manage updating the map and task markers that are placed upon that map. We also have in place user location updating so as the user moves around their location will be updated on the map. All user data is also being stored in multiple database tables. When a user logs in there will be a profile page where they can see their account details as well as alter those details, including their display name.

The next steps for this project are as follows. Tier 2 expands the type of tasks to include Multiple Choice trivia, Single Word answer Trivia, and combinations of these trivia formats with QR codes. Additionally, the task list does not only have to be a fixed list but also incremental, meaning a user must complete tasks in an order, and random, meaning each user's access code will randomize the ordered list of the tasks. This tier will also implement an admin account who, at this point in the game, can edit, create, and remove tasks from the game(s). They can alter the display type for the tasks as mentioned previously, they can also set a timeframe for the game to take place. The admin can also see all access codes linked to a game and send notifications to all/individual game attendees.

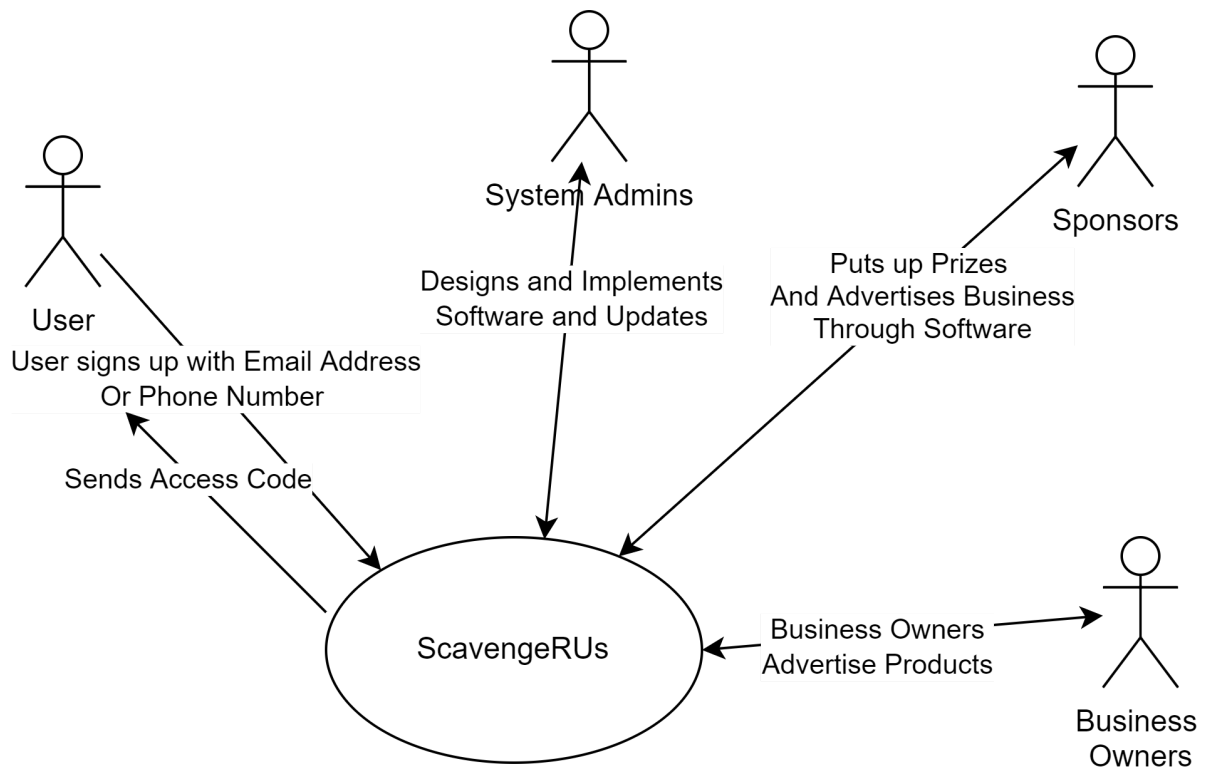
Project Artifacts

- Updated PID document
- Class Diagram
- Web Application Screenshots

Listed Artifacts

Problem Identification and Definition (PID) Document

1. **Project Name** - ScavengeRUs
2. **Name and Contact Information of Project Sponsor(s)**— Mr. William Kinser
3. **Business Objectives**— Allowing businesses to create their own accounts, goals, challenges, and possible prize pools around their business would increase foot traffic and revenue
4. **Vision Statement**— Our goal is to create a working backbone for ScavengeRUs where all requirements are met and completed in due time.
5. **Scope**—



6. **User roles**—
 - a. User - The individuals who participate in the games

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- b. Business Owner - Tasked with creating QR codes and setting up locations of those codes for games around their business
- c. Sponsor - Able to place prize money on specific games or sponsor specific businesses
- d. System Admin - Approve and manage changes to the software

7. User functionalities—

- Player shall be able to use an access code sent to their email/phone number to verify their account
 - Player shall receive a text message along the lines of “Thank you <player name> for playing ScavengeRUs: Your access code is <insert code here>”
 - access code shall be unique to each player
- Player shall be able to opt-in/out of two-factor authentication
- Player shall receive the URL for the game via email/phone number at the same time they receive the access code
- Each player shall have their game status stored on the server in a database
- Each player shall be identified by a unique username
 - Player username shall default to a random number
 - The player shall be able to edit their display name
- The player shall be involved in one game that is active at all times
- Player shall enter the game URL code as well as a valid access code in order to enter the game
- The player shall be presented with a fixed list of tasks once the access code has been verified
- The player shall see a completion mark (checkmark) beside each task upon scanning the QR code for that task
- The player shall see a variable-length set of tasks for each challenge
- The player shall see a GPS location and label assigned to each task
- The player shall see each QR code as the QR code image as well as a decoded version
- The player shall scan a QR code correlated to a specific task in order to complete it
 - This shall happen from inside a popup when the player chooses to scan a QR code
 - The player shall also be able to type in the decoded version of the QR code in case scanning does not register
- The player shall see an error message if an invalid QR code is scanned or invalid decoding is input
- The player shall see the completed indicator if the QR code scan or decode input is valid
- The player shall receive a congratulations message/certificate to their email and in a popup once all tasks are completed
- Once the game has concluded, the player shall receive an email with their results and ranking

8. Any special issues or considerations—

- a. Player shall never be required to break the law.

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- b. Player shall never be endangered in the process of scanning a QR code.
 - i. System Administrators shall never place QR codes in places that may be dangerous for players.
 - ii. Sponsors and ScavengeRUs company are not liable for players getting injured while doing a ScavengeRUs hunt.
- c. Player information shall never be sold or sent to other data services for processing.
- d. Player shall only have their location tracked if they accept the terms and conditions.

9. Glossary of Terms—

- a. QR code (Quick Response code) - a block formed image that when scanned generally contains a link or set of instructions
- b. Task - a QR code to scan.
- c. Campus - East Tennessee State University's Campus.
- d. Device - most likely a phone or tablet.
- e. Server - an offsite computer where the application will run from and the data will be stored for players
- f. Two-factor authentication - using email/phone number/authentication app to verify who the player is on top of logging in via username and password
- g. Database - part of the server where data is stored about each player and other users
- h. URL (Uniform Resource Locator) - the address for the website where the ScavengeRUs game is hosted
- i. GPS (Global Positioning System) - a way of tracking the location of a device located somewhere on Earth
- j. Decode - take an unreadable code, like QR, and create a human-readable version of it

10. Priority list of the user functionalities

- 1. The game shall run on a server-client architecture
 - a. The player shall be able to enter a URL from within a web browser to join the game
- 2. All player information shall be stored on the server
 - a. This shall be done using a database entry for each player
 - b. The player shall also have all of their game status stored on the server
- 3. Each player shall be greeted with a login screen each time they pull up ScavengeRUs
 - a. The login screen shall ask for a username and password for rejoining users
 - b. The login screen shall ask the user for their name, email, date of birth, and phone number as well as set up a username and password for new users
 - i. New users shall also agree to the terms and conditions in order to get their access code
 - ii. A separate popup shall happen during this time to ensure the user acknowledges that their location will be tracked only for the purposes of the game
- 4. ScavengeRUs shall be device neutral allowing users to join via phone, computer, tablet, or other web-enabled devices
- 5. The player shall receive their access code to both their email and phone number provided in setting up their account

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- a. This access code shall be used to verify the user account along with allowing access to the game
 - b. The access code shall be unique for each player
 - c. The access code shall be received in the form of a message such as "Thank you <player name> for playing ScavengeRUs: You access code is <access code here>"
6. The player shall also receive the URL to the game on their provided email at the same time as they receive their access code
7. There shall be a single game active at all times that each player has access to
8. The player shall see a fixed list of tasks to complete for their active game
 - a. There shall also be a completion mark located beside each task that is marked once completed
9. Each task shall have a GPS location and label tied to it
10. Each QR code shall be seen as a scannable image along with a decoded version that the user can type in
11. A valid QR code scan or decoded input shall only then mark the task as complete and check the completion box beside the task
 - a. Each time a task is completed it shall be stored along with the game status and timestamp of completion on the server for the logged-in user
12. An invalid QR code shall display to the user an error message allowing them to scan again or cancel
13. The player shall receive a congratulations message in a popup on the screen if they complete all the tasks for the active game
 - a. The player shall also receive a message/certificate to their email upon completing a game
14. When a game ends each player involved shall receive an email containing their results and ranking for the game
15. The player shall be able to alter their display name
16. Users shall be able to opt-in or out of two-factor authentication

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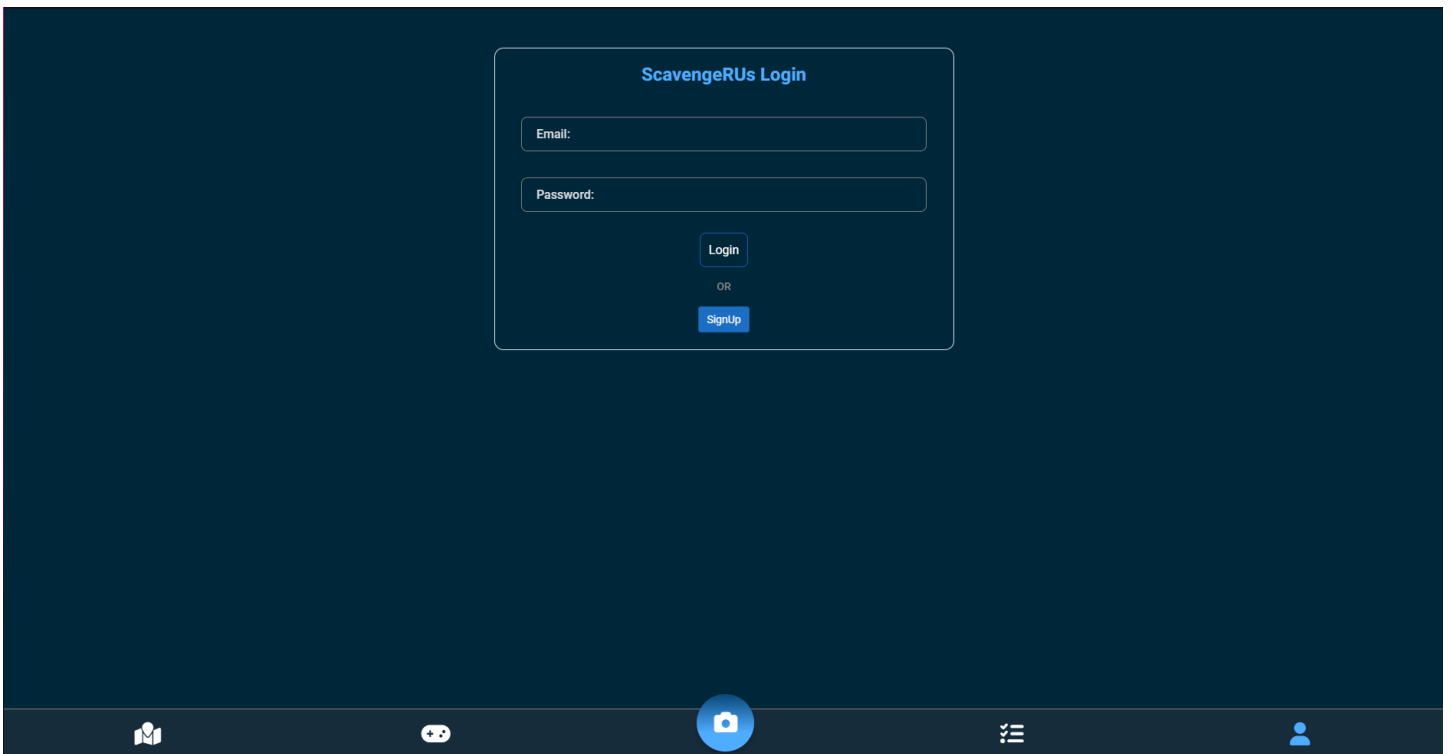
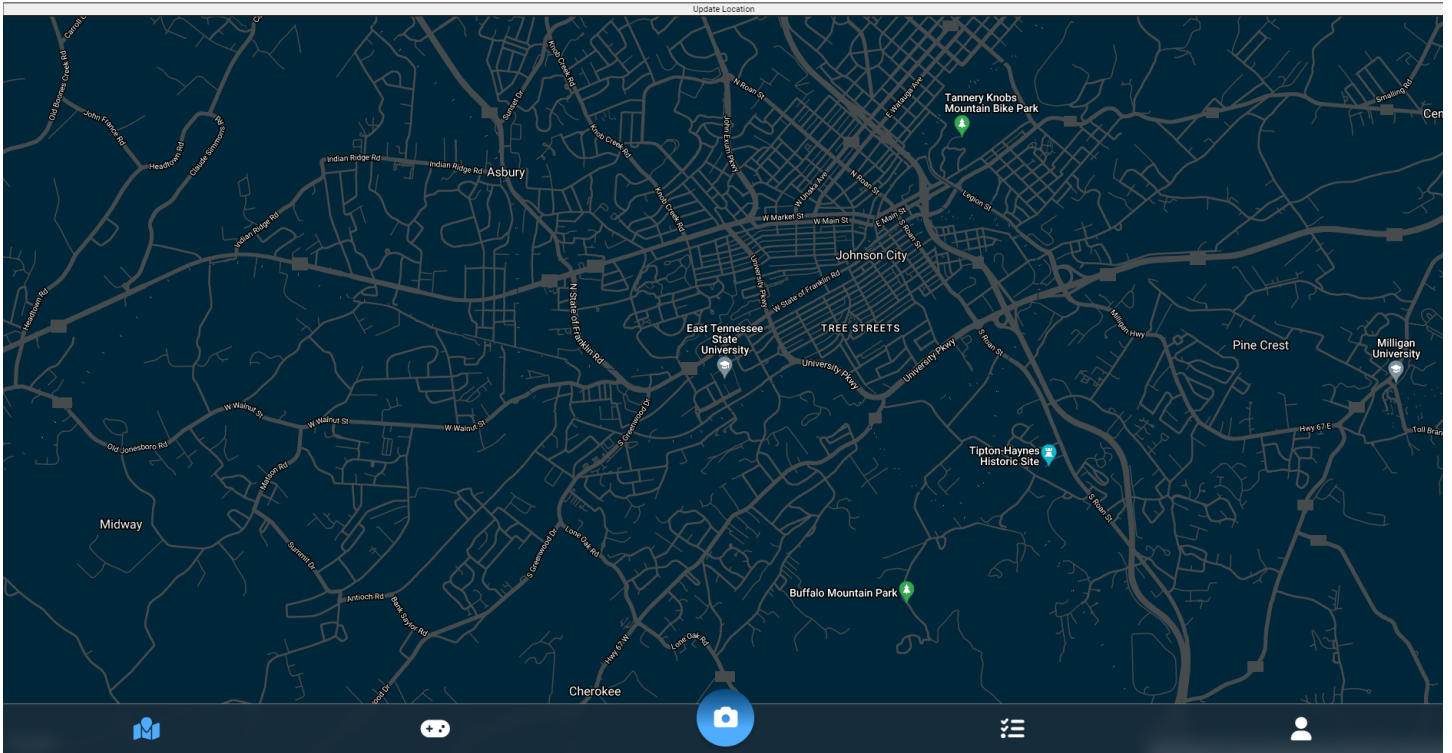
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Class Diagram

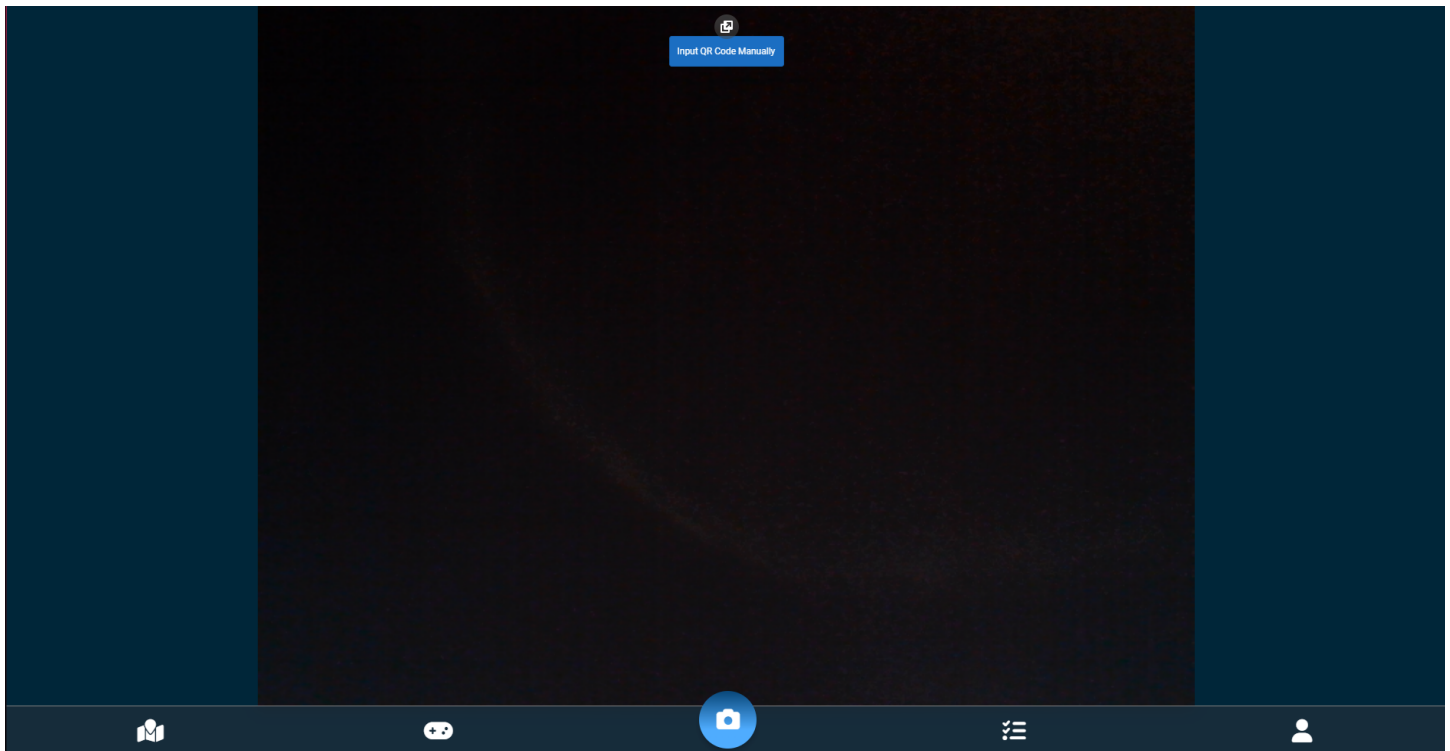
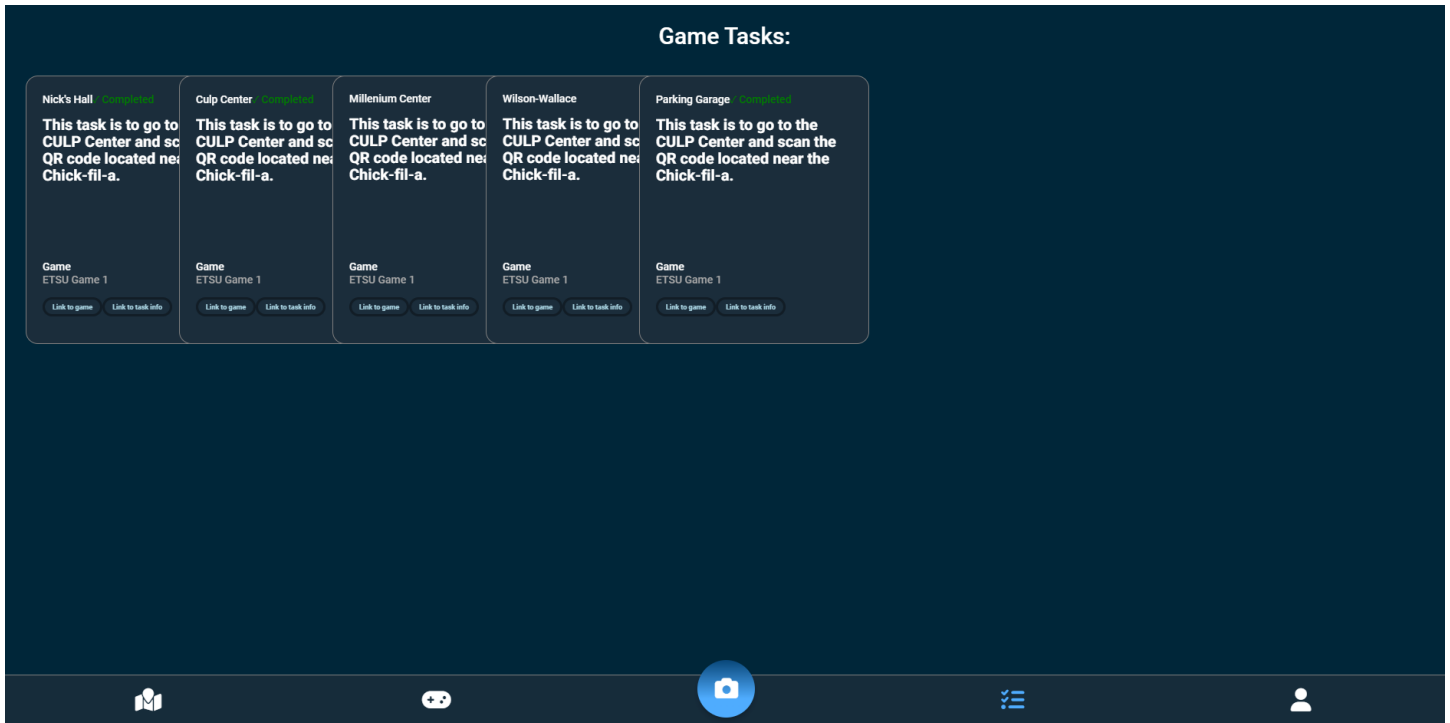


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ScavengeRUS Screenshots




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Caleb Street
test



7 Career Wins



28 Prizes Won

Profile

Security

Account Details

First Name:
Caleb


Last Name:
Street


Email:
[REDACTED]


Phone Number:
[REDACTED]


Display Name:
test


Save Changes











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