Use Cases and Domain Model

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Use Cases

Actor/User Takes a Tour of The College/Charleston

Scope:
Mobile Application

Level:
Tour Charleston and Find Badges at multiple locations

Primary Actor:
Students calls application to initiate tour and find badges

Stakeholders and Interests:
- Tour Charleston

- Student: As a user their interests are in the usability and badge finding capabilities of the application.

- City of Charleston: Wants more tourism and exploration of Charleston, and admitted students' parts of their tuition fees are paid to the City of Charleston in the form of taxes and miscellaneous fees.

- CofC: Intends to ensure that users spend time exploring the campus and learning the importance of the history of the campus and city to strengthen academic dedication; the faculty and staff are in this sentiment as well.

Preconditions:
  - Have to be in Charleston

- Have to have Location Services
- Have to have internet
- Have to have time to go on the tour

Postconditions:
- They get a badge
- They get XP
- They have the location completed badge outline

Main Success Scenario (or Basic Flow) :
1) Choose a route
2) Path to route start is generated
3) Route Starts when start location is reached
4) Information given at route start
5) Directions to next stop
6) Information and XP from stop is given upon arrival
7) Repeat step 5-6 until end of route
8) Route completed, badge given

Extensions:
1) User cancels route: Route ends and returns to home menu
2) User skips a stop: Directions to next stop is given

Special Requirements:
- Get a badge for completion
- Get XP for account
- Provide text for information on location

Technology and Data Variations List:
- Mapbox for the map API plugin
- Different types/OS of phones used for app

Frequency of Occurrence:
- When tourism is most prominent and when new students arrive, traffic will increase on application.
- Year-round usage, primarily for students who live in Charleston/in the Charleston Metro area.

Miscellaneous:
- N/A

Actor/User Visits a Specific Location

Scope:
Mobile Application

Level:
Tour Charleston and Find Badge(s) of a Location/of Locations

Primary Actor:
Students calls application to initiate tour and find badges

Stakeholders and Interests:
Tour Charleston

- Student: As a user their interests are in the usability and badge finding capabilities of the application.

- City of Charleston: Wants more tourism and exploration of Charleston, and admitted students' parts of their tuition fees are paid to the City of Charleston in the form of taxes and miscellaneous fees.

- CofC: Intends to ensure that users spend time exploring the campus and learning the importance of the history of the campus and city to strengthen academic dedication.

Preconditions:
- Have to be in Charleston
- Have to have Location Services
- Have to have internet
- Have to have time to go on the tour

Postconditions:
- They get a badge
- They get XP
- They have the location completed badge outline

Main Success Scenario (or Basic Flow) :
1) Actor chooses a location to explore on the map
2) Travels to said location via given path/is already there
3) Information of location is given
4) XP is given to user

5) Badge for visiting stop is given
6) User can shutdown app usage or continue to other functions

Extensions:
1) User cancels visit to stop
2) User starts a route/tour (akin to 2.1)
3) User exits and closes out of app
   a) User exits app but does not shut it down
      i) Can still run in background

Special Requirements:
- Get a badge for completion
- Get XP for account
- Provide text for information on location

Technology and Data Variations List:
- Mapbox for the map API plugin
- Different types/OS of phones used for app

Frequency of Occurrence:
- When tourism is most prominent and when new students arrive, traffic will increase on application.
- Year-round usage, primarily for students who live in Charleston/in the Charleston Metro area.

Miscellaneous:
- N/A

User Registers for an Account

Scope:
Mobile Application

Level:
Registration

Primary Actor:
New user signs up to access the application and features.

Stakeholders and Interests:

- User: Wants easy registration to quickly access scavenger hunts, badges, and features.
- CofC: Interested in onboarding students for engagement with Charleston's environment and historical knowledge.
- City of Charleston: Supports onboarding as more registered users may mean increased tourism and awareness.

Preconditions:

- User must have a mobile device with internet access.
- Application must be installed.

Postconditions:

- Account is successfully created.
- User is logged into the application.
- User can access available tours, maps, and scavenger hunts.

Main Success Scenario (or Basic Flow):

1. User opens the mobile app.
2. Selects "Register" option.
3. Fills in required information (e.g., name, email, password).
4. Confirms the registration through email/SMS if needed.
5. User is logged into their new account.
6. Application welcomes user and suggests starting a tour.

Extensions:

- User cancels the registration process.
- User inputs invalid data and receives a validation error.

- User has an existing account and logs in instead.

Special Requirements:

- Secure storage of user credentials.
- Email or SMS verification for account activation.

Technology and Data Variations List:

- Application works on iOS and Android devices.
- Users may opt for other login if applicable.

Frequency of Occurrence:

- Frequently when new users (students, tourists) join, especially at the beginning of semesters.
- Higher volume during school events.

Miscellaneous:

- N/A

User Looks for Scavenger Hunt Items

Scope:
Mobile Application

Level:
Finding Items Through Hunts

Primary Actor:
User searching for scavenger hunt items.

Stakeholders and Interests:

- User: Wants to find and collect scavenger hunt items to earn rewards.
- CofC: Encourages student exploration to promote learning through interactive activities.
- City of Charleston: More engagement drives tourism and local spending.

Preconditions:

- User must be registered and logged in.

- User must have an active scavenger hunt assigned.
- Location services and internet must be enabled.

Postconditions:

- Items found are marked as collected.
- Progress is saved.
- XP and potential rewards (like badges) are updated.

Main Success Scenario (or Basic Flow):

1. User opens the scavenger hunt section in the app.
2. Selects an active hunt from the list.
3. Follows the map or clues to a specific location.
4. Collects the virtual item once found.
5. Progress is saved, and the app updates with new XP.
6. User decides whether to continue or stop the hunt.

Extensions:

- User skips an item and returns to it later.
- User abandons the hunt mid-way.
- User encounters an error (like poor GPS signal).

Special Requirements:

- GPS tracking and hints provided to guide the user.
- Progress auto-saved for incomplete hunts.

Technology and Data Variations List:

- Mapbox API used for maps.
- Works on both iOS and Android.

Frequency of Occurrence:

- Frequently during scavenger hunts organized by CofC or the city.

Miscellaneous:

- N/A

User Wants to Share Progress on External Site (IF APPLICABLE/IF FEASIBLE AND AN OBTAINABLE GOAL)

Scope:
Mobile Application

Level:
Sharing Achievements and Progress

Primary Actor:
User shares updates (progress, badges) via external platforms.

Stakeholders and Interests:

- User: Wants to share achievements with friends and social circles.
- Social Media Platforms: Benefit from content and user engagement.
- CofC: Promotes exploration and interaction through word-of-mouth.

Preconditions:

- User has completed a hunt or earned a badge.
- User's account is connected with the relevant social media platform (optional).

Postconditions:

- Progress or badge is shared on the selected external platform.
- Friends and followers see the shared content.

Main Success Scenario (or Basic Flow):

1. User navigates to the achievements or progress page.
2. Selects an option to "Share Progress."
3. Chooses the platform (e.g., Instagram, SMS, Facebook).
4. App generates a shareable link or message.
5. User confirms sharing.

Extensions:

- User decides not to share.
- Error occurs with social media platform connection.

Special Requirements:

- Must generate appropriate preview for social media posts.
- Allow text-based or image-based sharing.

Technology and Data Variations List:

- Support for major platforms (Instagram, Twitter, Facebook, SMS) if applicable/if goal is reached.
- Content preview formatting may differ across platforms.

Frequency of Occurrence:

- Occurs sporadically when users want to share progress.

Miscellaneous:

- N/A

User Looks at Achievements and Tour Badges

Scope:
Mobile Application

Level:
Viewing Progress and Rewards

Primary Actor:
User reviews achievements and collected badges.

Stakeholders and Interests:

- User: Wants to track progress and showcase accomplishments.
- CofC: Encourages ongoing participation through visible rewards.
- City of Charleston: Boosts tourism through gamified activities.

Preconditions:

- User must have earned at least one achievement or badge.
- Application is up-to-date with user data.

Postconditions:

- User views all collected achievements and badges.

- Motivated to continue exploring or playing.

Main Success Scenario (or Basic Flow):

1. User opens the achievements section in the app.
2. Scrolls through collected badges and tour progress.
3. Taps a badge for more details.
4. User can view remaining achievements to be unlocked.

Extensions:

- User attempts to view achievements without internet.
- User filters achievements by category.

Special Requirements:

- Provide clear descriptions for each badge or achievement.

Technology and Data Variations List:

- Works on both iOS and Android devices.

Frequency of Occurrence:

- Frequent for active users who track progress regularly.

Miscellaneous:

- N/A

User Looks at XP and Unlocks an Item

Scope:
Mobile Application

Level:
Progression and Unlocks

Primary Actor:
User checking XP and unlocking digital rewards.

Stakeholders and Interests:

- User: Wants to unlock and use earned items.
- CofC: Promotes exploration by rewarding XP and items.
- City of Charleston: More user activity leads to increased tourism and engagement.

Preconditions:

- User has accumulated sufficient XP.
- Internet and location services are active.

Postconditions:

- XP is updated, and a new item (badge or certificate) is unlocked.
- User can share or use the item outside of the app.

Main Success Scenario (or Basic Flow):

1. User opens the profile or rewards section.
2. Checks current XP level.
3. Unlocks an available item based on XP.
4. Item is added to the user's collection.
5. User has the option to share or save the item externally.

Extensions:

- User tries to unlock an item without enough XP.
- Error occurs during item unlock process.

Special Requirements:

- Some items may require external access (e.g., downloadable certificates).

Technology and Data Variations List:

- Badge unlocks may vary between Android and iOS.

Frequency of Occurrence:

- Regularly as users accumulate XP and unlock rewards.

Miscellaneous:

- N/A

Domain Model

User
userID, name, email, password, location

Account
accountID, accountXP, accountStatus

Registration
emailVerified, phoneVerified, registrationDate

Badge
badgeID, badgeType, earnedDate

XP
xpID, amount, totalXP

Tour
huntID, startLocation, itemsFound, completionStatus

Location
stopID, locationName, description, coordinates

one-to-one

1

1

User completes

0, 1, …

User earns   0, 1, …

1

Consists of many

0, 1, …

User earns

Determines XP

Rewards Badge

0, 1, …