Introduction to Software Engineering

Coursework 1

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1. App name

MyTour4u

2. App Description

The app offers a variety of walking tours in various cities around the world. It presents information about the different attractions of each tour highlighting features of interest. The goal is to create an easy-to-use tour guide for your pocket. For more information, visit:
https://www.inf.ed.ac.uk/teaching/courses/inf2c-se/Coursework/2017/cw1.pdf

3. Stakeholders

User – wanting a system that helps them to find interesting tours and navigate through the city

Creator of the tour- wanting a system that helps creating a personalized list of wanted tours (if the creator is the user) or perhaps receive income if the tour is not free (if the creator is not the user)

People or organizations which own the attractions – wanting a system that helps them attract more people and receive income

People working at the attractions - wanting a system that attracts more people which would possibly increase their salary

The government – wanting a system which promotes tourism

Banks – wanting a system that enables the user to pay by card

GPS providers (for example Google Maps) – wanting a system that makes use of their navigation system

Internet provider – wanting a system that makes use of their internet services

4. System States

1. **Browse tours mode**

   1.1 Home screen with a search engine for searching cities
   1.2 List of tours available

1.3 Presenting information about the chosen tour (description and map showing the attractions)

2. **Following a tour mode**
   2.1 Form for filling in credit card details if the tour is not free of charge
   2.2 Instructions on how to get to the starting point
   2.3 Optional annotation about the current waypoint
   2.4 Optional annotation about the current leg
3. **Author a tour mode**
   3.1 An option to create your own tour on the home screen
   3.2 Form for filling in information about the tour (the city, the name of the tour, charge)
   3.3 Map to select the waypoints
   3.4 Menu of the different waypoints and legs with the option to add annotations

5. Use-cases

5.1 Follow Tour

Use case name: Follow Tour

Primary actor: User

Supporting actors: GPS provider, Internet provider

Summary: User selects a tour and follows it. The goal is to reach the final destination of the tour

Precondition: System displays list of possible tours

Trigger: User selects a tour

Success guarantee: User reaches the final destination

Main Success Scenario:

1. System displays a form for filling in credit card details if the tour is not free of charge
2. System displays the map of the chosen route
3. System presents instructions on how to get to the starting point
4. System notifies the user when the starting point is reached

5. System presents the user with the annotation for the current waypoint, if there is one
6. System presents the user with navigational information of the current leg, if there is one (using the GPS service and the internet connection)
7. System automatically updates the next waypoint of the tour if the current is not the last one
8. System notifies the user when the last waypoint is reached

Extensions:

1a. System fails to authorize credit card purchase

.1 User may re-enter credit card information or may cancel

3a. User is already at the starting point

.1 System notifies the user and goes directly to step 5 of the MSS

6a. GPS fails to localize the user or the internet connection is lost

.1 System only displays the map of the route without showing navigational information or updating waypoints

Stakeholders & Interests:

User – following the route and reaching all of the waypoints

Banks – enabling their customers to pay by card for the tour

GPS provider – offering their service to the user

Internet provider - offering their service to the user

Notes:

1. Waypoint annotation (optional)
   - Text information about the attraction
   - Pictures of the attraction
   - Video and audio of the attraction
2. Leg annotation
   - Navigation
   - Pictures/ text information about interesting sights between two waypoints

5.2 Browse Tours

Use case name: Browse Tours

Primary actor: User

Description: User opens the app. System displays a home screen with a search engine for searching cities. User selects the desired city. System displays a list of the available tours within that city. User browses the list.

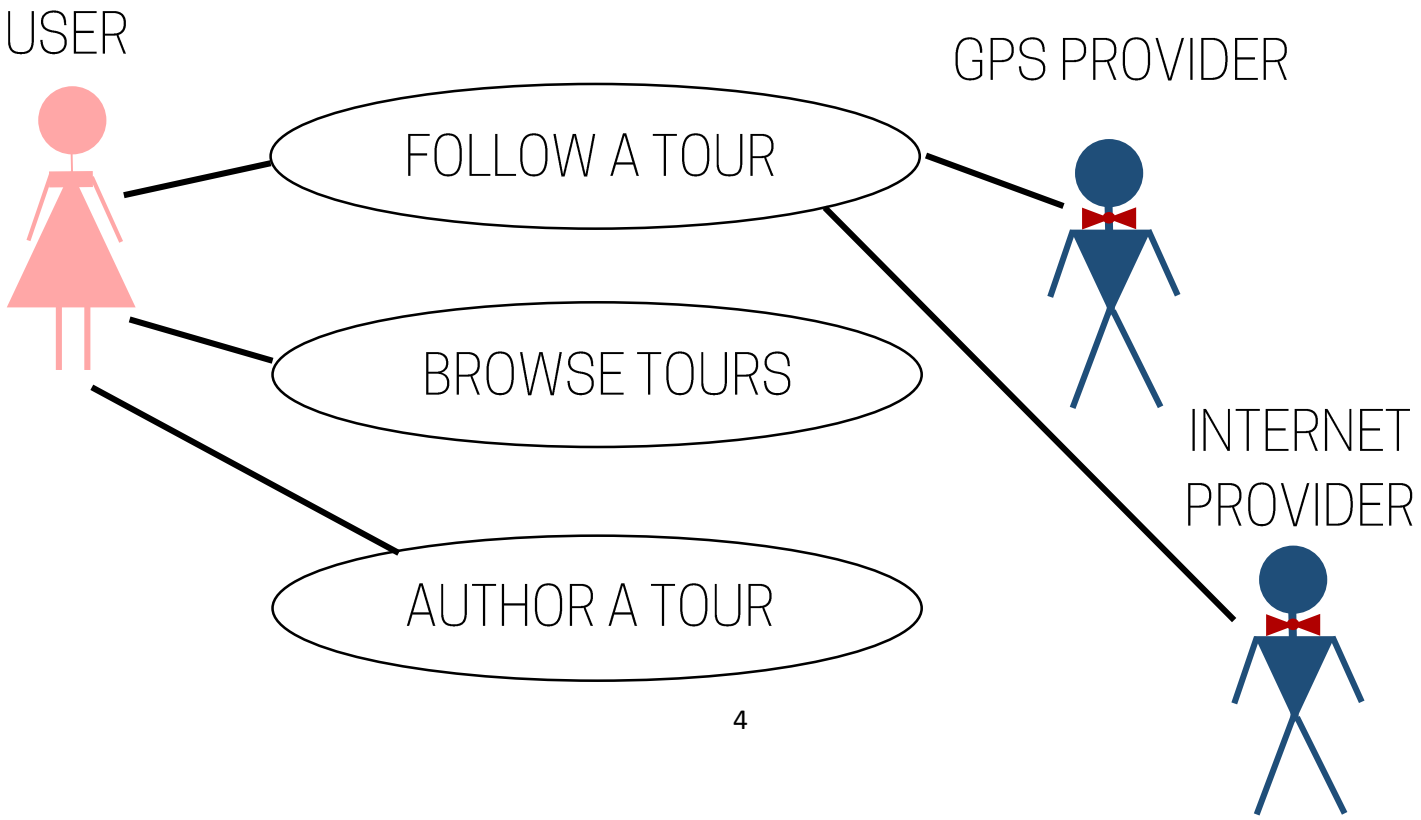
5.3 Author Tour

Use case name: Author Tour

Primary actor: User

Description: User opens the app. System displays a home screen with the option to create a new tour. User fills in the information about the tour (city, name of the tour). System displays a map and asks the user to select the waypoints. User adds optional annotation about the waypoints and the legs. System updates the list of the existing tours with the new tour.

6. Case diagram



7. Non-functional requirements

1. **Performance**

   1.1 Time-related performance
   - The app should open within 5 seconds.
   - For every other operation the app should load within 1 second.

   1.2 Power consumption
   - Sustaining operations on the mobile device without frequent battery recharging. The app should consume no more than 1% of the battery for every 20 mins of use on average.

   1.3 Location sensing accuracy
   - The app should automatically update to the newest version of the map.

   1.4 Mobile roaming costs
   - The app should navigate offline (e.g. the system only displays the map of the route without showing navigational information or updating waypoints) in order to minimize the costs of internet consumption.

2. **Security**
   - The system shall not disclose any personal information about customers and their credit card details.

3. **Usability**

   3.1 Understandability
   - Interface elements (e.g. menus) should be easy to understand.

   3.2 Operability
   - Error messages should explain how to recover from the error.
   - Actions which cannot be undone should ask for confirmation (for example when paying by credit card).

   3.3 Attractiveness
   - The screen layout and colour should be appealing.

4. **Reliability**
   - The system should have a rate of fault occurrence (ROCOF) no more than 0.01 where the time unit is hours (no more than 1 failure for every 100 hours of use).

5. **Availability**
   - The system should be fault-tolerant (around 99.99% of availability or a total of 52.6 minutes of unavailability per year).

The server should store the information about the different cities and tours on a cloud in order to minimize memory consumption.

8. Ambiguities and subtleties

- The information about the attractions may not be up-to-date (some of them might be closed or under construction).
- The information about the routes may not be up-to-date (a road might be closed).
- The offline mode of the app might be good for the user, but is not beneficial to the internet provider.