SOFTWARE ENGINEERING COURSEWORK 1

Blanca Fernandez Salamanca s1611086
Evangelos Dimitriou s1657192

3.1 APP NAME: Tourway

3.2 SUMMARY**:** This app offers the possible walking tours in the city the user is in. It is focused on tourist attraction walks, and has a variety of predefined tours the user may browse and choose from, which are created by chosen tour guides (which the app owner decides.)

For more general information on the nature of the app, please reference https://www.inf.ed.ac.uk/teaching/courses/inf2c-se/Coursework/2017/cw1.pdf

3.3 STAKEHOLDERS:

User wants a flexible tour app that will allow for them to conveniently sight-see a city of their choice, meaning they will be particularly interested in the minimization of tour costs as well as a well-run location tracking system that will allow for a useful and user-friendly real-time tour by allowing for personalised experiences.

Author is interested in creating a successful tour that will be used by as many users as possible, so as to create a good rating in the app and so be recommended to new and old users more often. The author also seeks to have opportunity to improve and change tours, which can be done through the allowance of reviews of tours and a point system which will indicate the author's value to the app and generate the corresponding compensation.

Application Owner wants the app to be as user-friendly as possible so as to attract as many users as possible, and so receive more income. The owner's earnings are proportionate to the author's earnings, and so he would like to have qualified-enough authors that will represent the app well. The owner is also interested in the accuracy and safety of the app, such as making sure the land on the tour is walk-able, so as to not receive complaints and lose income.

City Council is an important stakeholder as tourism is a huge part of a city's income. The city council would benefit from an increased accessibility to the city through the tours provided by the app, meaning more people would be interested in visiting and seeing the city thereby increasing general tourism and income. The people using the app will spend money on taxed items throughout the tour and so the city council will have a higher income due to the VAT as well as on different attractions. The city council will also be able to see which attractions are well-run and deserving of funding and those that are not, through reviews and most frequented places on tours.

Shop owner/Attraction owner can benefit greatly if their shop or attraction becomes a stop on the tour, so depending on its location and service the authors could involve them in the tour and so more people would visit and spend money there. Particularly mentioned-attraction owners, as their main source of income is tourism, will profit. It is also a good way to publicise their business by creating a long-term contract with the app owner that will ensure its future success.

Application Platform whatever platform has the rights to the app could potentially beneficiate from more users and money spent, depending on the success of the app, through commissions on the app's downloads.

3.4 SYSTEM STATES:

1. **Credentials:** When the application launches, the user will be prompted with a login page, asking him to sign in using a unique user name and password. This will allow for any previously saved personal data to be retrieved from the server and synchronize with the device.

2. **Main Menu:** After the authentication process has been successfully completed, the main user interface of the application should start up, prompting the user with four options:

    1. **Browse Tours:** This option will enable the user to browse, purchase (if not free) and download any city tours he may be interested in.
    When a tour is purchased by a certain user, it will be added to an environmental variable (purchased_tours), so it can be downloaded again without it requiring re-payment.

    2. **My Tours:** In this system state, the user will be able to look through his already downloaded tours, and choose to follow one of them.
    He will also have the option of erasing downloaded tours from the system storage, since they might not be needed after their use.

    3. **Settings:** This state is going to allow the user to personalize the application interface and modify his account details. (Eg. Choose preferred on-screen language or change personal password)

    4. **Author-mode:** If this option is selected, the user will be able to make his own tours by and upload them in the server for others to purchase.
    However, this system state will only be available to users with special 'author' permissions, which are provided by the app owner.

3. **Follow Tour:** The user gets to this system state after he has successfully downloaded a tour from the 'browse tours' and initializes it by choosing 'follow'.
    The system will start by assigning a waypoint to the user and providing him with directions on how to reach it. Information that is relevant to the specific leg of the route will also be shown on screen. When the distance to the desired waypoint becomes less than 20 meters, the system updates the on-screen directions and information for the next leg of the tour.
    If there is no other waypoint, the tour finishes, and the system terminates the 'follow tour' state.

4. **Rate Tour:** Each time a tour is finished, the user is going to be prompted with a window giving him the option of rating and commenting on it. The comments will be visible under the tour information in 'browse tours'.

3.5 USE CASES:

1. FOLLOW TOUR

Primary Actor: User.

Supplementary Actors: Author.

Summary: The user may choose a pre-made tour, by the authors, from their My Tours list, and then he/she may then follow the tour as they wish, perhaps skipping some stops.

Pre-Conditions: All attractions and stops are to be checked before the beginning of the tour in case of any problem such as temporary closing of attractions or flooding in a wet country. Also, the user must have connection to internet in order to initialise the app (log in) and synchronise personal data.

Trigger: The user opens up the app.

Main Success Scenario:
1. User selects Browse Tours and downloads a tour
2. User selects My Tours
3. User selects the tour they want to follow
4. System begins the tour
5. User follows instructions on screen about getting to next waypoint
6. User finishes tour
7. System offers the user the chance to review and comment on tour
8. System thanks user and takes him/her back to home page

Extensions: 5a. User wants to skip the next waypoint or next waypoint not available
    1. User selects Skip option
    2. System presents next phase of tour after skipped one

Additional Stakeholders: (apart from primary and supplementary actors) are the City Council and chosen shop owners

Notes: This use case is made as if user is brand new to app, meaning they have no saved tours on My Tours, which would facilitate the selecting tour process as no downloading would be necessary at that point.

2. BROWSE TOURS

Primary Actor: User choosing tour.

Supplementary Actors: Author.

Summary: The user may select the Browse Tours option in the main menu and browse tourist tours depending on what is available to him/her at their location. Some tours will require payment which the user may choose to accept to pay, or decline and keep browsing. The chosen tour will then be downloaded and added to My Tours.

Pre-conditions: There will be at least one tour within 10 miles of the user's location to chose from. The tours shown must be available, meaning it is possible to complete.

Trigger: The user opens up the app.

Main Success Scenario:
1. User selects Browse Tours
2. User selects Tour and analyses suitability
3. User selects download Tour
4. System adds selected Tour to My Tours once downloaded

Extensions: 4a. Tour chosen is not free
1. System presents message informing the user that the selected tour is not free
2. User selects Accept
3. User fills in credit card info
4. System authorises purchase
5. System adds selected tour to My Tours

Additional Stakeholders: The user's Bank stands to gain from the app succeeding as the better the app gets the more tours will be for purchasing and the more money will be spent.

Notes: Data coverage is not necessary for this part of the app.

3. AUTHOR TOUR

Primary Actor: Tour Author.

Supplementary Actors: App owner.

Summary: The author must walk the tour and note down the waypoints and leg annotations necessary to make that specific route.

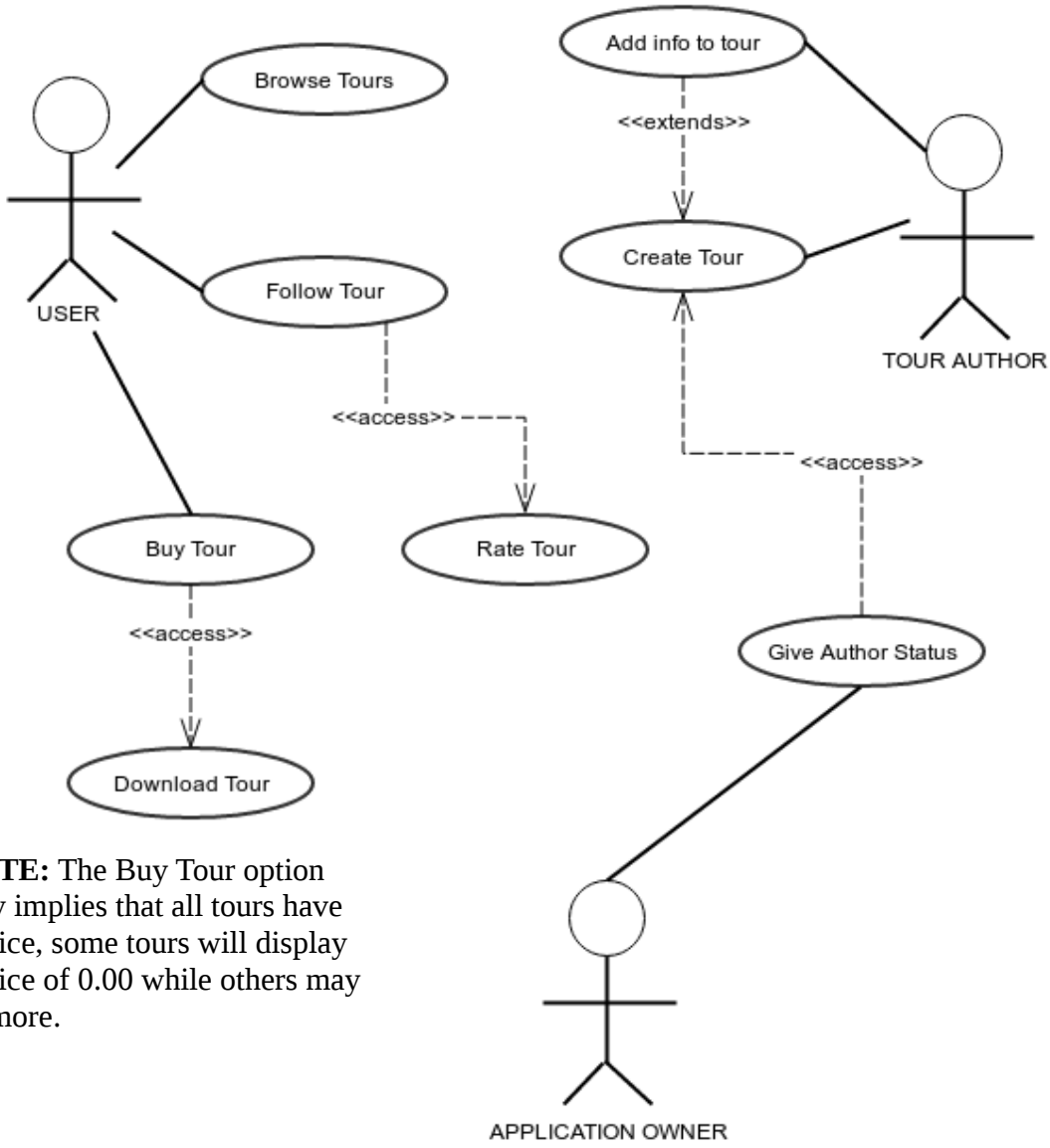
Pre-conditions: Author must be in the list of allowed authors, decided by the app owner, for the option of Create Tour to appear in the Main menu. This is checked in the Credential state.

Trigger: Author opens up the app.

Main Success Scenario:
1. Author selects Create Tour
2. Author begins to create Tour by selecting departing location
3. Author walks to next waypoint and adds information (e.g. pictures or time duration)
4. System adds exact coordinates for locations and adds route taken as a leg of tour
5. Author finishes tour
6. System notes down end location
7. System offers author to change or improve the tour by showing him such tour
8. Author selects Finish Tour

Notes: The author should also fulfil requirements placed by app owner on the information the authors must present for their tours- such as pictures, duration times, amusing comments, etc, but is not limited to them.

3.6 USE CASE DIAGRAM:



NOTE: The Buy Tour option only implies that all tours have a price, some tours will display a price of 0.00 while others may be more.

3.7 NON FUNCTIONAL REQUIREMENTS:

Security
Any details given by the user, such as address or email, will not be shared locally or globally, and the users will have control over their data.

GPS location of user can only be seen by user and no one else, such as the App Owner.

Tour Author cannot access details of people on tour.

Credit card details encrypted and stored in each user's account will be inaccessible.

Usability
The app should provide accurate estimated leg duration times to user.

Tour Author is not allowed to change tour while tour is being walked by a user.

When you leave app, unless fully closed, it will keep running at least until the end of the tour.

There must be enough storage space in user's device before downloading of tours (app will inform user of storage space needed beforehand in case user's mobile or roaming data has to be used – particularly relevant as users will likely be tourists in foreign countries).

App must be compatible with device (android/apple) and contain support for the app's media capabilities.

Performance
GPS location ping should occur every 15 seconds so as to save battery whilst maintaining accuracy.

App should n

Reliability
We require that the app work with a reliability of at least a 95%.

We will give the servers a minimum downtime during maintenance, which will take place over the app's least active hours

Using multiple servers will ensure there is no downtime during maintenance although lag time, due to increased server traffic, will be increased at this time.

Capacity

The app has the capacity to add tours and new user accounts, and eventually even other languages, depending on popularity.

3.8 AMBIGUITIES AND SUBTLETIES:

The application description above has been completed up to a simplistic level of detail, without considering many ambiguities and subtleties that would cause issues in a real life implementation. Some of these details will be listed below, along with possible solutions and fixes, in a Q&A format so as to be easily understood.

- How can someone gain author permissions?
  - As stated before, Tourway allows users with author privileges to create their own tours in 'author mode'. These permissions are given by the app owner upon user application, based on proof of previous experience in the field and personal judgement.
- How can a new user register?
  - If a user does not have an account, they are going to have to register in order to use the app. This option will be available on the initial credential page and it will require the user to sign up with his email account and provide payment details.
- How many languages are available?
  - The default language will be English. However, as popularity grows, the stakeholders of the application could hire translators to make it available in other languages.
- How are the directions presented when following a tour?
  - The application could use Google Maps as a directions platform by storing the tour files into KML/GPX format. As a result, the reliability of the application would be greatly improved, since Maps is a sophisticated program with minimal bugs.

- Furthermore, the directions would be presented in a user-friendly way by also showing the surroundings of the current tour leg and perhaps some special landmarks so as to avoid confusion.

- How much would a tour cost?
  - The tour cost could depend on many factors such as; tour length, city popularity, author's seniority, etc
  - Authors can set the price, but the app owner has the ability to modify any costs.
- How can a user pay?
  - The application should support the major credit card companies (Eg. Visa, Mastercard etc.) but also other platforms like PayPal.
- How can a user receive technical support?
  - It is very vital for the app owner to make sure that there is always help available to users that require it. For that, there should be a support email account (**support@tourway.com**) that is frequently monitored.