**Final Report on the “Software Product” Groupwork**

*A taxi management system*

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1. Introduction

Project Description   
This project is a school project for the Applied Software Engineering module. We have named the project ‘AlbaniaSuperUberApp’. The motivation behind this product is 2 fold. Firstly, to be able to harness technology and be able to stamp our footprint on what we really want the current Uber / Taxi systems out there to be. By developing something from scratch, we are able to create features that we deem will be useful. Secondly, we would like to put into practice what we have learnt throughout the module. These include the programming technologies such as Flask and Python and also the project management aspects such as Scrum which we utilized to run the entire product from start to end.

The product was developed for a duration of about 1 month. Unfortunately, 1 month is never sufficient to deliver everything that we would like in an ‘Uber’ type of system but we focused on the core features and believe we have made it happen successfully via our 3 man development team.

We feel there are 3 aspects to the novelty of the product. Firstly, the product is based on a proper client/server based architecture. The benefit of this is that the server side can be started small (due to just being a 1 month development project work) with a handful of RESTful API services and be scaled up over time. Thus, the system can always be built-on and it will never be the end to it as the code base will remain manageable and sustainable. Secondly, we feel that by including all 3 user roles into the system, the product is self-sustaining. For example, we have the Customer, Driver and Provider roles. Each role comes with their own set of features and a user can simply sign up and be completely self-sustaining instead of requiring any form of manual intervention. Lastly, we have the Feedback feature in the product such that Customers and Drivers can provide feedback in real-time in the application that the Provider can take note of and potentially include in subsequent Sprints. We have to be upfront that there are no novel Customer features over the current Uber app in the market but it would be silly to expect such in a 1 month development timeframe. Moreover, in any proper product management lifecycle, core features should be prioritized and developed first prior to other unique/advanced/novel features.

Challenges   
There were 2 main challenges we encountered throughout the project.

Firstly, other than Melvir, the other 2 members of the team are completely new to developing in the Client/Server architecture. Moreover, the architecture was covered at the very most 1 hour in a lesson and there was no practical lessons that the team members could try their hands on to try it out. Rather, this project became the practical lesson. Is that ideal? I think it depends on what the outcome and deliverable of the product is. However, we got through this challenge by Melvir sharing his experience in developing in such an architecture, giving concrete code examples as reference that the rest could follow. We also followed this up by spending lots of time and effort following online tutorials to learn the basics to be able to code in proper standards.

Secondly, it’s also the first time that the 3 of us are working together on something. Naturally, there will be scenarios where we are learning/adapting to each other’s working styles. Hence, we went through the typical group forming, storming, norming and performing lifecycle. We kept things objective on the project knowing that we had certain deliverables to meet. The scrum model did help as it helped to set tasks in smaller attainable ways.

Highlights   
We are very pleased to report that we feel that the entire team has come to a good standard of being able to code well and produce features quickly in the Client/Server architecture by the end of the project. We also worked well in the Scrum model and all of us adapted to the Planning, Daily Scrum (over 3 days instead of daily) and Review meetings well and were very consistent throughout the project lifecycle. Furthermore, all 3 of us got to be good friends and will continue to network even after the end of this module.

Changes

* Summarise any significant changes to any aspect of the project during the module.
* Include the date, motivation, description, and implications of each change.

1. Customer Needs

We feel that with some finetuning, the product could potentially be trialed in a proper market with Users able to sign up as either Customers or Drivers. Both these roles form the primary customers in the market for us. We do not have a specific planned customer in mind as we developed the product as an overall fit to the market and believe that it could be successful as a competitor to Uber with the features that we have built (and can potentially finetuned further).

We did User Journeys with some Customers and Drivers and realized that some of the pain-points they brought up (such as not being able to submit real-time feedback in app or not being able to export their Booking/Job history) which we have implemented in the product would definitely be useful and engaging to convince them to try out the product.

In terms of secondary stakeholders, we believe that they would include Citizens of Albania that we’re launching the application in as well as the media in general. For the Citizens, it definitely allows them a different option to Speed Taxi App. The benefit of such is that should Uber start to raise prices unfairly, they would be able to compare the prices to our product and thus still have a viable option to continue booking taxis. For the media, it will be a 2 way opportunity for them and for us to be able to provide a review of the product. Should the product be successful, it might draw more views to their review and thus their media company overall as well.

The desired overall experience that we wish to accomplish for our stakeholders is a good, consistent, intuitive product for them to trial and use as an alternative to Speed Taxi App in Albania.

User Requirements (**Giulio** – quite straightforward with what we already have)

* Include SMART user stories written using the “As a ... I want ... so that ...” template.
* Include acceptance tests for the user stories using the “Given ... when .... then ...” template.

*Documentation* (**Giulio** – quite straightforward with what we already have)

Briefly describe the following:

* Personas,
* user stories,
* user stories, and then the resulting
* feature identification.

The detailed descriptions should appear in other documents.

1. Project Goals

Since Albania does not have an Uber like app, we wanted to deliver a product that could be a solid competitor to the taxis and their current Speed Taxi app there.

Thus, the main customer problem we chose to solve and that we wanted to improve the experience of was to ensure the entire booking process intuitive and smooth. For the customer, we also wanted them to be able to provide us and the providers real-time feedback.

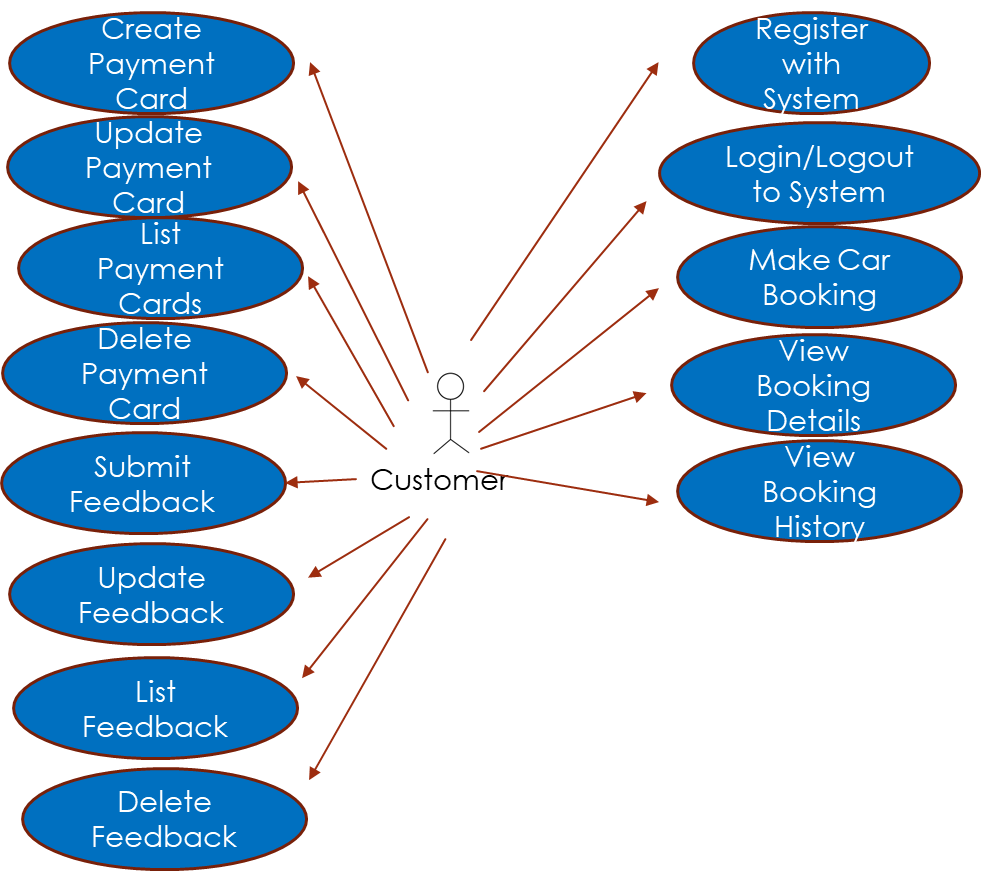
The main driver problem we wanted to solve was to allow them a comprehensive overview of all the jobs they have undertaken. Compared to the Speed Taxi app, the drivers feedback that the interface was buggy and often resulted in errors leading to them not being able to view their job history.

For the providers, the main problem we wanted to solve was that there was no current way to have a Command & Control view of all their cars in real-time. Thus, we wanted to achieve a C&C view for them to have a quick overview and sensing of all the cars and their respective locations.

We believe that by focusing on these 3 issues, we would be able to deliver a product that fit well for all 3 roles that we are releasing the product for – Customers, Drivers, Providers. The benefits would not only be in terms of time saved but also in terms of effort saved. We validated these ideas during the User Journeys with our users (covered above) and they were all very positive about the experience and benefits that our product will come with. That was indeed very encouraging.

Uses Cases

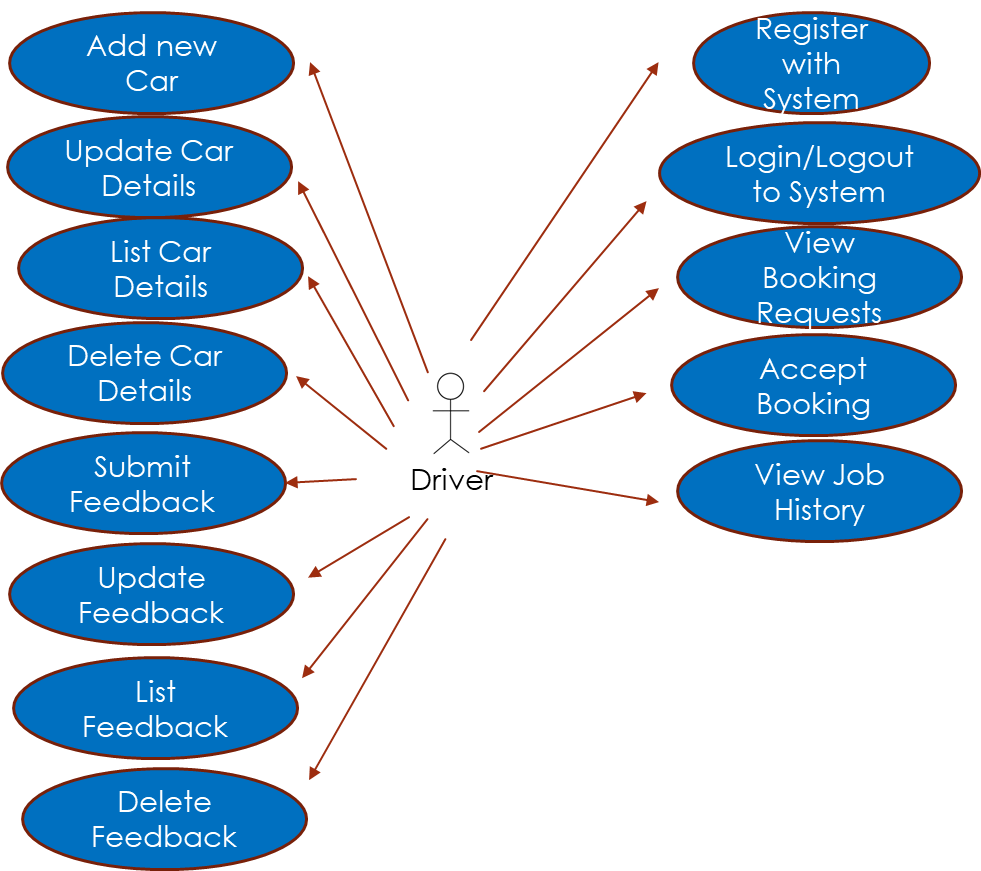
**For Customer Role**



**Detailed Description of 1 use-case for Customer Role**

|  |  |  |
| --- | --- | --- |
| Use-Case | Make Car Booking | |
| Description | Customer shall be able to make a booking for a Car to get from Current Location to Destination | |
| Precondition | The user has registered successfully with ‘Customer’ role and has also logged in successfully. | |
| Sequence | Step | Action |
| 1 | User logs into application |
| 2 | User clicks on ‘Book Car’ button on top navigation bar |
| 3 | User inputs in Current Location (eg. Wembley) and Destination (eg. Liverpool) |
| 4 | User clicks on ‘Book’ button |
| 5 | System updates user that the request has been sent and awaiting for acceptance by any Driver |
| 6 | User clicks on ‘Check if accepted by Driver (again)’. Assumption that a Driver has already accepted |
| 7 | System updates user with Car details |
| 8 | User clicks on ‘Simulate Starting of Ride’ |
| 9 | System updates user that Ride is started and updates Driver’s car pos X and pos Y with the Current Location specified |
| 10 | User clicks on ‘Simulate Completion of Ride’ |
| 11 | System updates user that Ride is completed and updates Driver’s car pos X and pos Y with the Destination specified |
| 12 | User selects Driver Rating and clicks on ‘Rate your Driver’ |
| 13 | System thanks user for the rating and informs the end of flow |
| Postcondition | Driver’s car’s pos X and pos Y are updated to the Destination longitude and latitude | |
| Comments | The steps are longer than a typical use-case on Uber as the current application is not able to automatically trigger starting and completion of ride and thus requires the User to push some buttons through the process | |

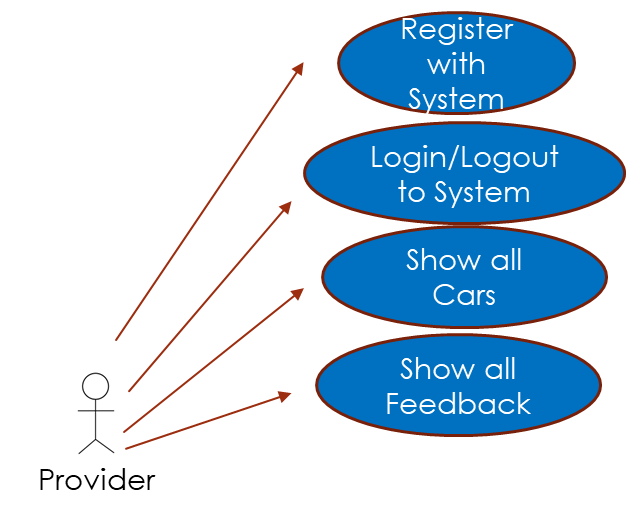
**For Driver Role**



**Detailed Description of 1 use-case for Driver Role**

|  |  |  |
| --- | --- | --- |
| Use-Case | Accept Booking | |
| Description | Driver shall be able to accept booking requests from Customers to get them from Current Location to Destination | |
| Precondition | The user has registered successfully with ‘Driver role and has also logged in successfully. | |
| Sequence | Step | Action |
| 1 | User logs into application |
| 2 | User clicks on ‘View Booking Requests’ button on top navigation bar |
| 3 | User looks through the Booking Requests that appear in a table format |
| 4 | User clicks on ‘Accept’ button for the ride that he/she wishes to accept |
| 5 | System updates user that the request has been accepted and that the Customer will be notified |
| 6 | System updates Booking table with the row’s ID to ‘Accepted by Driver’ status and car\_id to ID of Driver’s car |
| Postcondition | The accepted booking request’s row will be updated in the database with ‘Accepted by Driver’ status and the car\_id will also be populated | |
| Comments | The steps are straightforward and intentionally allows the Driver to freely select which job he/she wishes to accept rather than only showing those requests which are very close to him | |

**For Provider Role**



**Detailed Description of 1 use-case for Driver Role**

|  |  |  |
| --- | --- | --- |
| Use-Case | Show all Cars | |
| Description | Provider shall be able to show all the cars in their system into a nice overview of Map to have a Command & Control sort of view | |
| Precondition | The user has registered successfully with ‘Provider’ role and has also logged in successfully. | |
| Sequence | Step | Action |
| 1 | User logs into application |
| 2 | User clicks on ‘Show all Cars’ button on top navigation bar |
| 3 | Map loads with all the Cars in their correct positions |
| 4 | User can click on any of the Cars that appears on the map to see the car brand, model and ids |
| Postcondition | Page loads without any errors | |
| Comments | The steps are straightforward and allows the Provider to see an overview of all cars on the map | |

Measures of Success

We believe that measuring success of our product and its use-cases are critical. Thus, we plan on doing this via User Interviews and also Surveys. For the former, we plan on meeting up with the same users that we did the User Interviews with to check in with them after they have trialed the app. This will allow them to provide an honest assessment on whether their pain points discussed before had indeed been addressed by our product. For the latter. We plan on coming up with a Survey questionnaire asking users on aspects such as benefits, functionalities, intuitiveness, UI/UX. We would then compile the results and assess how successful our product has been. We would also be able to prioritize their feedback by creating PBIs to add on to our Product Backlog.

1. System Description (Melvir will handle this part)

System Overview

* Introduce the system and the main challenges.
* Summarise the rationale for the design.
* Include a Context Diagram showing how the system interacts with external services, databases, etc. Mark the boundaries of the system.
* Briefly explain the system’s external interactions.

Guides to the Main Architectural Views

* For each view, provide an appropriate diagram.
* For the architectural elements, provide a catalogue entry with the name and purpose of each element.
* For each element, identify the single owner in the team, even if multiple team members contributed to the element.

1. Final Status (Giulio – Show all the features/screenshots by each role by role. Need to make sure this part is really detailed. For test just say Unit Testing and also our manual Testing via the UI)

* What works? Include screenshots.
* What tests have you run?
* Estimate the adequacy of your tests.
* How many lines of code has the team written altogether?
* Did you use any existing codebases?
* What existing systems did you use as motivation?

1. Project Management (Melvir will handle this part)

* Describe your actual development process.
* What were the significant events during the project? Include dates.
* Anything else?

Team Coordination

* When and how often did the team meet?
* How else did you communicate?
* What did you accomplish during the meetings?
* How else did you communicate?

*Structure of your CODIO repository*

* What is the folder structure of your CODIO box, and why.
* Where are the documentation files?
* Provide a link to your Slack group.
* Provide a link to your Trello group.
* Where are the SCRUM "standup" files located?

1. Team (Giulio just see what you can do about this part. Melvir & Irdi will add on later)

Backgrounds

* What were the backgrounds of the team members?
* Did anyone have prior internships or work experience related to software?
* Has anyone on the team built something like this before?
* Were the tools known or new to the team?
* Did you make use of CoPilot, GhostWriter, ChatGPT, etc.?

Roles

* What were the roles of the team members during this project?
* What did each team member contribute? (You have a separate opportunity to describe any issues/freeloaders.)
* Use the element catalogue to identify individual contributions.
* Give rough estimates of percentage contributions by each team member.

1. Constraints and Risks (Irdi just see what you can do about this part. Melvir/Giulio will add on later)

* Were there any social, ethical, policy, or legal constraints?
* Did you have access to the data, services, and resources you needed?
* Was there anything else you needed?

1. Reflection (Irdi just see what you can do about this part. Melvir/Giulio will add on later)

* What were the lessons learned from doing this project?
* What went well?
* Which of your practices would you consider to be best practices?
* What didn't go well?
* What isn’t working, and how did you work around it?
* For the features that were not implemented, what were the issues?

Recommendations

* What would you do differently?
* What advice do you have for other teams?