Politecnico di Milano
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Software Engineering 2: "myTaxiService"
Project **P**lan

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Contents

1 Introduction

This document describes the project plan for myTaxiService application. It presents an analysis of the expected size and effort required for the implementation phase calculated respectively with the Function Points and COCOMO. Then it presents the available resources and how they will be allocated to the project tasks and, in the end, it discusses the possible risks this project might encounter and the associated recovery actions.

2 Size and Effort Estimation

2.1 Size Estimation – Function Points

Following Albrecht's method, our application's function points will be divided in 5 types:

- Internal Logical File (ILF): homogeneous set of data used and managed by the application.
- External Interface File (EIF): homogeneous set of data used by the application but generated and maintained by other.
- External Input: elementary operation to elaborate data coming from the external environment.
- External Output: elementary operation that generates data for the external environment.
- External Inquiry: elementary operation that involves input and output.

The function points' types stated above will be weighted as specified in the following table.

Function Type	Complexity		
	Simple	Medium	Complex
Internal Logic File	7	10	15
External Interface File	5	7	10
External Input	3	4	6
External Output	4	5	7
External Inquiry	3	4	6

2.1.1 Internal Logical File

The application stores information about:

- Admins (username, password hash, email)
- Users (username, password hash, email)

- City zones (nearest zones)
- Taxi drivers (taxi code, username, password hash, current zone, availability time)

The first three entities have a simple structure as they are composed of a small number of fields, while the taxi drivers have a more complex structure that also needs to be updated frequently. Thus we decide to adopt the simple weight for the first three entities and the medium weight for the last one. $3\times7+1\times10 = 31$ FPs concerning ILFs.

2.1.2 External Interface File

There are no such things in our project.

2.1.3 External Input

myTaxiService application interacts with users as follows:

- login/logout: as they're simple operations the simple weight can be adopted. $2\times3 = 6$ FPs.
- registration: this is considered of medium complexity as it requires a careful update of the ILFs. $1\times4 = 4$ FPs
- request/reserve a taxi: these operations are considered complex as they also require proper concurrency handling. $2\times6 = 12$ FPs
- cancel a request/reservation: these operation are complex as they involve two entities, users and taxi drivers, and a careful concurrency handling. $2\times6 = 12$ FPs
- modify personal data: this can be considered of medium complexity as it requires the handling of important information. 4 FPs
- toggle taxi driver state:
- accept/refuse requests/reservations:
- receiving gps information on the taxi driver's location:

It also interacts with admins as follows:

- insert/modify/remove a taxi driver from the database:

Function	Complexity	FP computation	FP
registration	Medium	4	4
login	Easy	3	3
logout	Easy	3	3
request a taxi	Medium	4	4
reserve a taxi	Medium	4	4
modify personal data	Medium	4	4
toggle taxi driver state	Medium	4	4
accept/refuse req and res	Medium ×4	4 ×4	16
location of the taxi driver based on the gps	Medium	4	4
add a new taxi driver into the system	Easy	3	3
remove a taxi driver from the system	Easy	3	3
modify taxi drivers' credentials data	Easy	3	3
cancel req/res	Medium ×2	4 ×2	8
Total			63

2.1.4 External Output

Function	Complexity	FP
autocompletion of streets name	Medium	5
notification with the code of the incoming taxi	Medium	5
notify a request to the taxi driver	Easy	4
notify a reservation	Easy	4
calculate the queues	Hard	6
calculate the CAT	Hard	6
calculate and show ETA	Hard	6
Total		36

2.1.5 External Inquiry

Function	Complexity	FP
select a currently active request or reservation	Easy	3
select a taxi driver for the admin	Easy	3
show the list of taxi drivers for the admin	Easy	3
show all active requests and reservations of a user	Easy	3
list all users of a type	Easy	3
Total		15

2.2 Effort Estimation - COCOMO

To convert the function points in SLOC we use a conversion factor of 46, as specified here http://www.qsm.com/resources/function-point-languages-table for J2EE.

$$\text{SLOC} = \text{FP} \times 46 = 145 \times 46 = 6670$$

We consider our project with all nominal Cost Drivers and Scale Drivers so we have an EAF of 1.00 and an exponent E of 1.0997.

$$\text{Effort} = 2.94 \times \text{EAF} \times 6.670 \text{ KSLOC} = 19.6098$$

3 Resource Allocation

3.1 Tasks

RASD:

- Domain assumptions
- Functional requirements
- Non functional requirements
- Use cases and scenarios
- User interface
- Alloy

Design Document:

-

Code Inspection:

-

Integration Test Plan Document:

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4 Risks