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|  |  | Final Project  Higher Diploma in Computer Science  Eduardo Kenji Zen Nakashima  Student Number: SB18004   |  |  | | --- | --- | | *Date :* | 06/07/2019 | |  |  | |  |  | |  |  | |  |  | |  |  | |

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# Project Introduction

The first chapter sets the background and motivation for the project. The problem to be solved is stated, with the project aims and a list of specific objectives.

The handbook SUGGESTS possible contents as follows:

* A brief synopsis of the **project context** (If your project is based on one of the scenarios that CCT provided, then you need to provide your own synopsis of the brief. If this is your OWN project, then you will need to provide some more detail, but you can use your proposal as a basis for this section)
* General areas of computing that project context covers / requires **knowledge** of
* **Brief summary** of your initial proposed plan for addressing the project context (you should update the draft plan that you submitted previously)
* Short section arguing ‘**why**’ this is a good project – outline Individual’s skills, interests, strengths – they Individual can describe how the project brings together many of the modules they’ve listed
* **Novel aspects** – a real world business or organisation or taking advantage of new technology.

## Project context

Ger’s garage needs a new web system to helps him out on management, booking, and invoice generation processes.

Ger’s businesses consists on selling parts and services to wide range of possible vehicles types.

He divides his booking services in four basic types of maintenance, each one with its own time frame and correlative initial budget cost.

As a small business he has a small number of employees and needs a system to help him with the roster schedule.

As expected from his customers, they should be able to see their relationship records within the garage as also to register their vehicles just once and reuse it later on as required.

The costumer interface should be able to schedule its services on date basis.

The costumer should be able to book just if there is availability on the date.

Dates with no available staff do not be possible to be booked.

## Required knowledge

**Web design**

HTML, CSS, PHP, JavaScript, JSON, hosting, access control, cyber security

**Database**

SQL, Database integration with website

## Summarised Project Plan



## Why this is a good project

This project brings together a lot of all content showed in class and spoke technologies and attention points.

The requirements covers mostly aspects of the viewed content, including but not limited to:

* Algorithms and constructs: They organised way to divide the code following the “KISS” principle (Keep It Stupid Simple) in order to facilitate the understanding of the code for whoever is going to need to maintain it or further developments.
* Database: All aspects of it in order to hold and deal with data from the input, structure, optimisation, queries and outputs.
* Web development: As basis of this particular project as a web system it need all sort of tools saw along the course.
* Cloud systems: The understanding on how the code could be deployed in the cloud platform allows me to better dimensioning the development solutions according with the customer expectations over reliability, confidentiality, security and availability.
* Software Development: The ability to understand the basics of programming language gave me the knowledge to enhance the comprehension of potential new languages, what is key for my further projects, including this one.
* Mobile Development: The practices brought within the course allowed me to understand better new templates and tools and frameworks in order to accelerate the development process and how to make sure the code is working properly through intensive tests along the development for each particular task. The breakdown development and versioning is key to keep the traceability over all working code and work in progress development.
* Strategic Business IT and Professional Practice: Created the foundation ethics around the code and practices, gave me the understanding on how to work in respect of the community and how it helps itself to improve the society even immersed in so many different culture and laws worldwide.
* Operating Systems and Architecture and Networking and Virtualisation: The understanding on the hardware and how it is connected impacts directly over the reliability of the system, the correct dimensioning is fundamental to achieve the target performance against the possible use of it. The amount of data use and traffic will direct impact in the overall performance accordingly to the designed solution. It is important to balance what information should be trafficking and where the processing should be happening for the aimed performance.

My accumulated experience within reports and system tools development helps me to come up with clearer work and data flows. My learned skills during this course allowed me to have a much more structured thinking way on how to build up the system and also points my in the right direction on development time, as the discussions and tools presented and spoke is going to be basis on my future career and projects.

The main idea on the project development plan approach is to breakdown the scope in order to be able to better estimate the required time for each task and plan the deliverables due date.

A good project plan is always a best way to start any project cause it is going to direct and show how the development progress is going on.

The key importance of this project is to give me basis on further developments aiming to be able to generate potentially new businesses all by myself and also to show my skill set to future new employers.

# Literature Review:

The aim of this chapter is to present all academic research carried out throughout the project cycle. It is important that learners produce research that defends their justifications for choosing one from of technology or software over another, and other sources of information that have helped inform the individuals thinking, planning and delivery of the project.

## Webdesign tools

The development of the web styles might take as much time as it available and it still might require future adjustments.

For this project scope, it is key to use some sort of available tool to help improve the its design regarding the visual appeal that its required in order to help to improve the amount customers.

This tool research will be restricted to one hour in order to identify the easiest and fastest tool to cover forms, requiring as minimal as possible dedicated customisations to have it working.

Its result come up with the following resources:

1. www.coffeecup.com
2. www.mobirise.com‎
3. www.phpform.org

It should be enough to develop this system once the phpform is very straight forward to generate a basic visual to a web form HTML page with some simple CSS.

While coffecup HTMLEditor application promises to be a powerful tool to develop a wide range of HTML appliances, including, but not restricted to HTML, CSS, JavaScript, PHP.

By the time I spent trying to understand all those tools I felt myself losing the control of my time against the plan. At the same time I remembered that in the first semester we did a simple dynamic web application that will be a good template for start as it has the Login forms, main welcome page, database connection using SQLite3 and all should be working fine.

My research back them required to configure my webserver to be able to work with the SQLite3 by changing the dll as clarified by Zeuf (posted: 04/May/2018 - [https://stackoverflow.com/](https://stackoverflow.com/questions/6951824/how-to-use-sqlite-database-with-xampp-using-php/50181145" \l "50181145) accessed:14/Jul/2019) it is about open “xampp/php/php.ini”, locate the line with “;extension=sqlite3” and delete “;”, save the file and it should work.

# System Analysis and Design:

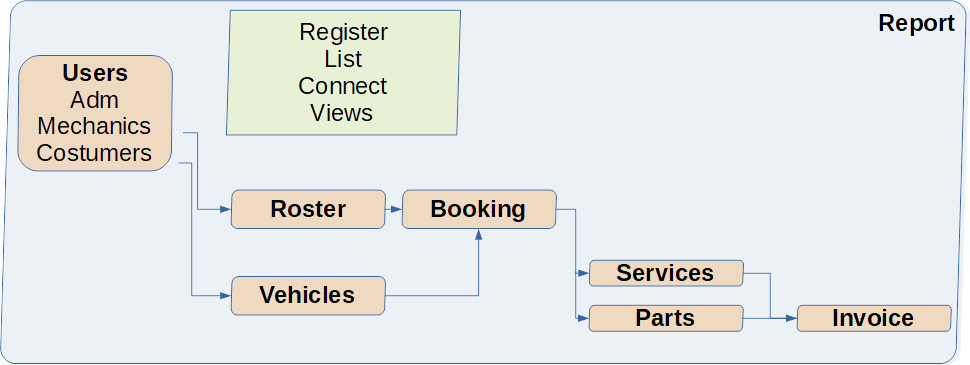
The overall aim of this chapter is to answer the questions – exactly what is the application supposed to do? It can include the following, where relevant:

- Functional Requirements:

* Detailed description of the functionality of the proposed system. This should be comprehensive and exact, break up the application into subsystems.
* Diagrams – use Case diagrams, Wire frames, with text descriptions
* Data Requirements – An overview of the entities and data in the system, and what data needs to be stored
* Diagrams – an Entity-Relationship Diagram
* User Interface Design – This should contain an argument as to how this suggested interface supports each of the use cases specified in the analysis
* Diagrams – Screen designs, either pen-and-paper or computer drawn of how the user interface will appear.
* Functional Design – should model both the structure of each software component in the systems, and also how they interact with each other.
* Diagrams – detailed class diagram and an Interaction Diagram to show the interaction between objects in the system
* Data Design – Whether to be implemented as a database or some other central data repository, a detailed design of the data storage components should be presented
* Diagrams – Normalised database tables

## Dataflow

The overall project data follows the diagram as following explanation:

This report should cover all the project.

All data supposed to be registered by the costumer as each costumer might have further developments without requiring new contracts to cover small changes in data, but still working through the same process.

Users might be different types, as administrator, staff or final costumers.

The costumers will be able to register their vehicles regardless it is already register type (motorbikes, car, small van or small bus, the administrator might be able to change those options as the business develops itself), brand (Volvo, Volkswagen etc) or model (Fiesta, Leaf, Up, Polo etc).

The administrator should be able to register the staff and also setup their roster, generating possible date-slots to be booked.

Each date-slot than will be able to hold one booking – same booking should be able to use more than one date-slot as it might require more time regarding its type (Annual Service, Small Repair / Fault or Major Maintenance).

Each booking should be linked to a specific vehicle.

The staff should be able to allocate services and parts for the booking, generating the correspondent invoice and changing the booking status – from Booked, Confirmed, In service, Serviced, Paid, Delivered and Unrepairable – the correspondent date and time for each status change might be kept for future reference.

## Web-design

In order to get the websites layouts ready to go as fast as possible, reducing the amount of labour required and consequentially the overall costs to develop the system to the costumer, but yet claim a marketing appeal, the development of the layouts is going to be done by using consolidate templates with just some customisations for the specifics of this project.

The initial amount of pages required are:

To the administrator:

1. Staff register
2. Rostering
3. Services register
4. Parts register
5. Bookings Statuses

To the costumer:

1. Register
2. Login
3. Vehicle register
4. Booking schedule
5. Booking Status

To the staff:

1. Booking pick, Add Services And Parts
2. Booking Invoice

It brought me to develop the following wire-framing, and given the time and budget it should be the best practice to use just pen and paper to draft out and discuss it with the costumer, once the task to do it by the book could take much more time and end up with higher costs.

## Database

The database system is going to be develop in SQLite as it is free and portable allowing for later compatibility for possible Cloud servers.

The overall required tables are:

1. Users
2. Vehicles
3. DateSlots
4. Booking
5. Roster
6. Invoice
7. Services
8. Parts

As required the database should be delivered with normalisation 3NF what will demand a breakdown tables that will be done at development and test phase.

# Implementation of the system:

This chapter should detail how the learner implemented a working system based on their design. This should include the technologies used (languages, APIs, frameworks etc.) and how the system was implemented, based on the user and functional requirements identified during the analysis and design phase. This chapter should address any potential problems that could arise in the system and suggested or implemented solutions.

Possible areas for discussion in this chapter are:

* Architecture considerations - e.g. are there specific functional requirements that will influence the software architecture implementation.
* Technologies used - operating systems, databases, computer languages, frameworks, API's etc.
* Implementation of the system - main body of work for the chapter. This will discuss precisely how the system was developed, based on the analysis and design considerations.
* Problems encountered - any issues that may have arisen during the implementation phase, e.g. the project's cross-platform compatibility between different operating systems.

## Database

The d

# Testing and Evaluation:

Details of the learner’s test plans, test results, user evaluations and discussion of these

results in detail and in summary.

Possible entries in this chapter might include:

- Functional correctness

o Set of tasks system should be able to perform – part of requirements

specification of system and include a focus on efficiency

o Set of inputs and correct outputs

o Set of ‘test scripts’

- Objective of test / statement of which part of systems is being

tested

- Input data/situation

- Correct output data / state / behaviour

- Need to show actual results of test – screen shots

- Evaluation - if actual matches correct then working

- Usability

o List of usability requirements

- set of tasks user should be able to perform

- Have a set of tasks for each type of user

- System Response times

- Time for user to complete a task

- Aesthetic

- Acceptable navigation of site and layout

o Set of ‘test scripts’

- Instructions for user

- Observation / measure time / evaluate success of task

- Analyse results to come up with usability result

o Can also measure qualitative usability aspects with questionnaires /

structured interviews etc.

- Commercialisation / marketing

o Requirements – registration on web search engines, direct marketing –

discuss real commercialisation aspects of project

o Evaluation – have set of key words / phrases for targeted websites

# Conclusions:

The Individual needs to review the entire project against their problem context, aims and

objectives, and evaluate project success and results. This may also include a section for

suggestions for further work.

Appendix A: Code Listings

This should be a link to a cloud resource (such as GitHub) where the project code is

maintained. Students should have only included selected code fragments or algorithm

summaries in the main chapters, otherwise the project report can become a monotonous

technical manual rather than a story of what they did and why they did it.

# Code Listings:

This should be a link to a cloud resource (such as GitHub) where the project code is maintained. Students should have only included selected code fragments or algorithm summaries in the main chapters, otherwise the project report can become a monotonous technical manual rather than a story of what they did and why they did it.

# Appendix B: (other technical or data appendices as required):

If you have additional technical data to showcase it should be included in this appendix,

you can also use this appendix to present the raw data of empirical research carried out

(questionnaires, interviews etc.)

# List of References:

All citations used within the report should include their full reference using the Harvard referencing style. A reference list should be included in this section of the report.