Assessment Brief

Module Leader: Soumya Sankar Basu	Level: 6
Module Name: Case Studies in Software Design	Module Code: 55-604410
Assignment Title: Developing a Software Design for Road Charging	

Group	Weighting: 30% (60% of Task 1)	Magnitude: About 2000 words or equivalent
Submission date/time: 17th March, 3 PM	Blackboard submission Y Turnitin submission N	Format: Word, Excel, Model Pictures, executable files
Planned feedback date: Informal feedback will be given in walkthrough across 3 weeks. Blackboard will be updated on 28th April (considering Easter Break)	Mode of feedback: Walkthrough, Blackboard	In-module retrieval available: No

Module Learning Outcomes

● LO1: Use design strategies effectively to guide the production of solutions in a complex problem domain.

● LO2 : Select and apply contemporary design techniques to generate effective and usable software designs

● LO3 : Use designs to construct non-trivial software systems

● LO4 : Use experience gained during the design and development case-studies to discuss and critically evaluate the impact of design approaches on software qualities

● LO5 : Discuss and evaluate current design techniques in particular development contexts, and the role of

these techniques in addressing issues and trade-offs, that arise during the development of complex software systems

Assessment Brief

For this subtask, you are required to implement your designs for the case study, test your implementation, and to evaluate the user interface of the system.

This subtask is *group work*. You should continue with the same group as subtask1.   In case you need a change please be in touch with the module team.

As with subtask one, you will be presenting your work via a walkthrough shortly after the submission deadline. You will also be expected to demonstrate the testing you have performed and provide written documentation about the testing and the evaluation that you have carried out.

This subtask will require a coordinated approach and as such, we expect you to plan your time appropriately using an appropriate project management model.

Basic Implementation

You are required to implement the system following the designs you created in Subtask 1. You should only deviate from the designs if you can present a very good, critical reason for making the change. You will be asked to explain and justify any changes you make from the designs.

While several designs for the case study include mobile capabilities, you may choose to develop your applications for a desktop using a suitably restricted window size to simulate a mobile screen if you find this more convenient. You are free to choose whichever programming languages, frameworks, toolkits and development tools that you wish in order to allow you to develop the system. You can mock some services if needed like payment. You can also have pre populated data , if required to implement the functionality.

As each group's design varied in scope, we are limiting the requirements for the group part of the assignment to specific areas of functionality:

1. Ability to log in using two different types of users and show appropriate homepage for them

2. As a driver review the bill and pay the bill. Should be able to view the bill and payment history.

3. As a Department of Transport person or Toll Operator view bill and payment history for each driver.

Your developed system should implement those parts of the static model needed to allow this functionality, as well as follow the flows shown in the dynamic model and storyboards. Your UI should also match that shown in the storyboards and wireframes.

In case your design does not highlight the functions above please talk to tutors about alternatives.

We are looking for quality of software engineering (good coding practice, testing, UI evaluation) over quantity. An overview of the marks for implementation is given below, but please check with the module team to clarify the scope of your implementation.

While the primary focus of this subtask is the end-product and the evaluation, we will be looking for quality within your engineering practice such as code commenting, documentation, careful testing, version control, static code review, containerised deployment etc.

Testing

In addition to implementing the design and producing a working system for the case study, you need to formally test it, and during the walkthrough you will be asked to demonstrate and discuss the testing that you have done. Your test cases should align with those described in your formal requirements specification from Subtask 1.

Evaluation

Along with the unit testing, you are also to conduct an evaluation of your UI design. For this you will be expected to review user interface evaluation approaches and select one specific approach that is appropriate to the system that you have developed. The choice of approach should be based upon both theoretical grounds and also the practical constraints of evaluating your specific UI. You should report on how the evaluation was conducted, the results obtained and make recommendations for redesign based on those results. Evaluations should be conducted with real users who are not members of your assignment team (up to 4 + 2 sides of A4, +2 being pictures and illustrations).

Critical Reflection

Finally, you are required to produce a critical reflection report, focusing on the ways in which your group's implementation differs from the original designs (including appropriate diagrams and code fragments to illustrate changes were appropriate) and explain the reasons for the change. You should also reflect upon the project management approach you used to plan the work required for this subtask (up to 2 sides of A4 remember, quality over quantity is being assessed).

Deliverables

All the implementation and documentation (proof of testing, UI evaluation report and critical reflection) created for this subtask must be uploaded as a single ZIP or 7z file to the module Blackboard site by the specified deadline. You must include all project files that will allow the application to be opened and executed on a

campus PC, and/or a link to an active online version of the submission. This deadline is shortly before the walkthroughs but must contain all materials you wish to present.

There is no requirement to upload a separate code-base for each individual group member.

You will present your implementations during a walkthrough where all team members must attend; individuals that do not attend their group walkthrough will be given a mark of zero for this subtask.

The walkthrough will last approximately 30 minutes.

Marking Process and Submission

Most of the marking and feedback will be undertaken during the walkthrough you provide as a group shortly after the submission deadline. All group members should participate equally during the walkthroughs, and you will be required to answer questions individually about the specific aspects that you worked on.

Your team will be able to choose a timeslot to present your work via a scheduling link on the module Blackboard site.. We will attempt to have a face-to-face walkthrough. If the situation does not permit, the walkthrough will be virtual either using Zoom or Blackboard Collaborate. You will be notified of the tool to use in due course.

In brief, marks will be awarded under the following headings:

Implementation ● System structure as per static model ● Functionality from dynamic model ● User interfaces from designs	20%
Quality of engineering practice ● Appropriate documentation and commenting ● Implementation of test cases ● Use of Version control and release management ● Demonstration of good development practice	30%
UI Evaluation Report (max 4 sides of A4 + appendices) ● Approach to evaluation used and justification ● Plan for evaluation ● Ethical considerations ● Report on evaluation conducted	35%

● Results and re-design suggestions	
Critical reflection report (max 2 sides of A4)	15%

Reports on UI Evaluation and Critical reflections may be marked outside of the walkthroughs.

Team and individual marks

It is up to you how you divide the work. If there are issues with the level of contribution within the team, these need to be raised in advance of the submission deadline with the module delivery team. By default, marks will be awarded equally for all students in the group; however, the lack of contribution by individual members (assessed via a peer review exercise and tutor observation) may result in some group members being awarded proportionally lower marks.

Assessment Criteria

	FAIL (insufficient)			THIRD (sufficient)			LOWER SECOND (good)			UPPER SECOND (very good)			FIRST (excellent)				
	Zero	Low Fail	Mid Fail	Marginal Fail	Low 3rd	Mid 3rd	High 3rd	Low 2.2	Mid 2.2	High 2.2	Low 2.1	Mid 2.1	High 2.1	Low 1st	Mid 1st	High 1st	Exceptional 1st	Perfect 1st
Criteria and weighting	<19		20-39		40-49			50-59			60–69			70-84			85+	
Implementation 20%	Insufficient implementation or the implementation not related to the design.		Core functionality is not present, and the user interaction does not follow the design.		The components required to implement the base functionality have been implemented successfully following the designs. The changes in			The components required to implement the base functionality have been implemented successfully following the designs. Some of the			The components required to implement the base functionality have been implemented successfully following the designs. The changes in			The components required to implement the base functionality have been implemented successfully following the designs. The changes in system design (static and dynamic model) or user interaction is highlighted and reasonably justified in the critical reflection.			The components required to implement the base functionality have been implemented successfully following the designs. The changes in system design (static and dynamic model) or user interaction is highlighted and thoroughly justified in the critical reflection.	

			system design (static and dynamic model) or user interaction is not highlighted in the critical reflection,	changes in system design (static and dynamic model) or user interaction is highlighted in the critical reflection.	system design (static and dynamic model) or user interaction is highlighted in the critical reflection with no justification,		
✔							
Quality of Engineering Practices 30%	No documentation provided. No evidence of testing is provided.	Basic evidence of testing is provided.	Version control tool is used. Professional release management approach is followed. Unit testing has been carried out.	Basic documentation for the system is provided. Evidence of professional release management with version control, test, build, and management tools are provided. Extensive unit testing has been carried out.	Reasonable documentation for the system is provided. Evidence of professional release management with version control, test, build, and management tools are provided. Two forms of testing has been carried out including Unit testing.	Detail documentation for the system is provided. Evidence of professional release management with integrated version control, test, build, and management tools are provided. Extensive testing covering test cases identified in requirements and including key aspects of the system.	Detail documentation for the system is provided. Evidence of professional release management with integrated version control, test, build, and management tools are provided. Extensive testing covering test cases identified in requirements and including key aspects of the system. Evidence of any additional good engineering practice (e.g. DevOps, Static Testing, Project Management, Deployment etc.) provided.
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UI Evaluation Report 35%	Evaluation is not carried out.	Evaluation is carried out without an approach and a usable plan. Ethical considerations have been presented. Evaluation	Evaluation is carried out with an approach and a usable plan. Ethical considerations have been presented. Evaluation	Evaluation is carried out with a justified approach and a usable plan. Ethical considerations have been presented.	Evaluation is carried out with a justified approach and a usable plan. Ethical considerations have been presented. Evaluation data	Evaluation is carried out with a justified approach and a usable plan. Ethical considerations have been presented. Evaluation data is presented clearly with detail analysis. Redesign recommendations are presented with links to evaluation findings.	Evaluation is carried out with a justified approach and a usable plan. Ethical considerations have been presented. Evaluation data is presented clearly with detail analysis. Well-reasoned Redesign recommendations are presented with clear links to evaluation findings.

			data is presented.	Evaluation data is presented clearly.	is presented clearly with detail analysis.		
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Critical Reflection Report 15%	No reflection is provided.	Very basic reflection is provided on the execution of the project.	Most of the changes in underlying software structure or user interactions are reflected upon.	Most of the changes in underlying software structure and user interactions are reflected upon. Project management issues also have been reflected upon.	Detailed account of changes in underlying software structure and user interactions are reflected upon. Project management issues also have been reflected upon.	Detailed account of changes in underlying software structure and user interactions are reflected upon with reasonable justification. Project management issues also have been reflected upon.	Detailed account of changes in underlying software structure and user interactions are reflected upon with clear justification. Project management issues also have been reflected upon and the learnings are presented.

Overall mark: 100%