# Application Design and Development

**Subtask Three:** Implementation & Evaluation

**Due Date:** Thursday 21st March, 2019

**Marks Available:** 100 (This assignment represents 40% of the overall assessment)

For this final 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 task involves both a *group element* (for 70 marks) and an *individual element* (for 30 marks).

As with subtask two, 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 2. 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 many 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.

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

1. Casting a vote. Your developed system should allow a user to log in and cast a vote for a single candidate in a single election. This vote should be stored in some form of data store.
2. An administrator (or auditor) interface that shows a record of votes that have been cast.

Your developed system should implement those parts of the static model need to allow this functionality, as well as following the flows shown in the dynamic model and storyboards for casting a vote. Your UI should also match that shown in the storyboards and wireframes.

Note that your individual enhancements may extend the overall system to include other aspects of your original design, or may add other useful aspects to the system. More details on the individual enhancements are provided later in this document.

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 and version control.

## 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 2.

## 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).

## Individual Enhancements

Along with the basic implementation, this exercise is an opportunity for you individually to demonstrate your understanding, your skill and the quality of your own work.

Each group member will be expected to present a specific contribution that they have made and taken responsibility for that enhances the quality and/or the functionality of the deliverable over and above the basic implementation.

Each team member will be required to explain their specific contribution during the walkthrough and answer questions about how it was implemented and what additional benefits it offers.

Examples of enhanced functionality could include: -

* Implementing UI functionality that improves the usability of the application for a specified user and task;
* Demonstrating live / real-time / synchronised updating of data;
* Supporting complex and extensible data structures that would allow the system to be used in different contexts;
* Improving the architecture of the system through the application of a number of best practices, such as design patterns
* Adding functionality that is relevant to users in the domain, but was not required for the basic implementation;
* Adding appropriate security measures

## 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 50 minutes. This will consist of approximately 35 minutes for the overall group work and 15 minutes for discussion of individual contributions.

## Marking Process and Submission

The majority 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.

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 | 15 marks |
| **Quality of engineering practice**   * Appropriate documentation and commenting * Implementation of test cases * Use of Version control * Demonstration of good development practice | 20 marks |
| **UI Evaluation Report** (max 4 sides of A4 + appendices)   * Approach to evaluation used and justification * Plan for evaluation * Ethical considerations * Report on evaluation conducted * Results and re-design suggestions | 25 marks |
| **Critical reflection report** (max 2 sides of A4) | 10 marks |
| **Individual contributions**   * Demonstration of a piece of advanced functionality or system improvement * Quality of documentation and testing | 30 marks |
| **Total** | 100 marks |

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

The same mark will be awarded to each group member for the basic implementation so 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.

The deadline for electronic submission is **Thursday 21st March, 2019.**