

ELECTRICAL AND COMPUTER

ENGINEERING DEPARTMENT

**115.611 Engineering Project (Electrical) Development Project**

Report 2016

Exam Manager Program

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# Abstract

This project is aimed at creating a set of applications developed in C# which will provide tools for creating and running electronic examinations. One program will handle the design and deployment of the exams and tests, having an easy to use but full featured GUI to allow the user to quickly and easily write an assessment and then publish it to students’ accounts for use. These assessments will be encoded so third party applications cannot open and view or edit them. It will also open completed assessment scripts for the user to mark and comment on. It will provide tools to email the results to students and save the results to a PDF file.

The other will have an easy to use GUI for students to use to complete these assessments, showing useful information that is relevant to the exam. It will periodically save the assessment as the student goes, to ensure nothing is lost. The assessment answers will be saved in a separate assessment script, so that the assessment file can be used later for practice purposes. The answers in this script will be encoded so others cannot open and read/edit them.

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# Objectives

* 1. To create a program with which to design, publish and mark electronic assessment papers for use in Manukau Institute of Technology.
  2. To create a program for students to use to partake in these assessments, with an easy to use GUI and appropriate features.

# Specifications

## Exam Designer

* + 1. This program will contain an easy to use GUI for creating exams, including options for adding questions and sub questions, setting the amount of marks and the time allowed, etc.
    2. The user will be able to define what type of answer each questions requires, and this will be reflected in the GUI of the exam taker program.
    3. The user will be able to save and load exams for modification and revision.
    4. The user will be able to publish the completed exam files to the student exam accounts and retrieve the completed exam scripts once the exam has been run.
    5. The program will include a GUI for opening and marking completed exam scripts, including functions for assigning marks, commenting on answers and emailing/saving to pdf/ printing the script.

## Exam Taker

* + 1. This program will contain an easy to use GUI for students to take the exam.
    2. It will display useful information to the user, such as time remaining and amount of marks attempted so far.
    3. The program will include an auto-save function, which automatically saves the exam as the student progresses. This will take the form of saving every few seconds by way of timer, or as the student changes questions.
    4. The program will record the time the student started and completed the exam.
    5. The program will save the exam to a separate exam script file, which will be viewable by the exam designer program. This is to allow students to use the exam for practice purposes, without including previous users’ answers.
    6. The program will offer settings to change the font style, colour and size to improve usability.

# List of Outcomes

* 1. Initial negotiation
  2. Planning the project
  3. Attend client meetings
  4. Design of user interface for Assessment Designer
  5. Design of user interface for Examiner
  6. Do backend for exam designer
  7. Do backend for exam taker
  8. Prepare half-way report
  9. Prepare report
  10. Prepare presentation

# Methodology

This project will be written in C# using Visual Studio 2015. It will target version 4.5.2 of the .NET Framework. The GUI will be modeled on the previous ExamManager program, with improvements and changes being applied as needed.

# Time Plan

The chart below shows the time for the first half of the year.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Outcomes** | | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Week 13 | Week 14` | Week 15 | **TOTALS** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **1** | Initial negotiation | **1** |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **1** |
| **2** | initial plan, budget & contract | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | **4** |
| **3** | Client meetings | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | **7.5** |
| **4** | Design of Examiner GUI |  | 3 |  |  |  |  |  |  |  |  | 10 |  |  |  |  | **13** |
| **5** | Design of Assessment Designer GUI |  |  | 3 | 10 |  |  |  |  |  |  |  | 10 | 10 |  |  | **33** |
| **6** | Backend programming for Examiner |  |  |  |  |  |  |  |  | 10 | 10 |  |  |  |  |  | **20** |
| **7** | Backend programming for Assessment Designer |  |  |  |  | 10 | 10 | 10 | 10 |  |  |  |  |  |  |  | **40** |
| **10** | Preparation of Interim Report |  |  |  |  |  |  |  |  |  |  |  |  |  | 10 | 10 | **20** |

# Project Budget

The chart below shows the budget for the first half of the year.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **EXPENDITURE** | |  |  |  |
| **SALARY** | |  |  |  |
|  | **Design charge rate:** |  | $15.25 |  |
|  |  |  |  |  |
|  |  |  | Budget | |
|  |  | Start date | Hours | Cost |
| **1** | Initial negotiation |  | 1 | $15.25 |
| **2** | initial plan, budget & contract |  | 4 | $61.00 |
| **3** | Client meetings |  | 7.5 | $114.38 |
| **4** | Design of Examiner GUI |  | 13 | $198.25 |
| **5** | Design of Assessment Designer GUI |  | 33 | $503.25 |
| **6** | Backend programming for Examiner |  | 20 | $305.00 |
| **7** | Backend programming for Assessment Designer |  | 40 | $610.00 |
| **10** | Preparation of Interim Report |  | 20 | $305.00 |
| **11** | Preparation of Presentation |  |  | $0.00 |
| **12** | Preparation of Final Report |  |  | $0.00 |
|  |  |  |  |  |
| **13** |  |  | 138.5 | $2,112.13 |
| **14** |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **FINAL QUOTE & PROFIT / (LOSS)** | Overhead allowance: | 50.00% |  |  |
|  | Profit | 40.00% |  |  |
|  |  | **Budget** |  |  |
|  | Estimated Cost before profit: | $3,168.19 |  |  |
|  | Gross Profit: | $1,267.28 |  |  |
|  | Quoted Price: | $4,435.46 |  |  |