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| Central Queensland University, Sydney |
| Project Plan and Proposal  Rotary Youth Drive Awareness Project |
| COIT20273: Software Design and Development Project |
|  |
| Lecturer/Tutor: Zakiullah Khan Course Coordinator: Dr. Lily Li |
| **Due date: 7/28/2017** |

Project Members:

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| 1. | Project plan and proposal | 1.0 | 2017-07-28 |

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# 1. Project Plan

## 1.1 Overview

Rotary is a global network of professionals and leaders working together to make the world a better place through the practical efforts and humanitarian services. Rotary Youth Driver Awareness program is an initiation of Rotary Club in collaboration with Road Safety Education Ltd. The program aims to educate young people of age 9 to 12 of senior high schools by providing practical workshops and awareness on road safety. Currently, the driving simulator are utilized to test the driving skills, however the driving environment factors can have significant consequences in real life situation. So, the rotary club has decided to develop an application as an education tool to build up road safety awareness    in youth drivers. The end application is expected to be an online survey or quiz application in a multiple-choice format that allows users to set up questions as an administrator or students to undertake the quiz or survey.

## 1.2. Objectives and Constraints

### 1.2.1. Objectives of the project

The objective of the project is to develop a three-tiered software application that allows the students to take a quiz or a survey on road safety awareness. The new system is expected to be interactive and informative with an objective to reduce road traumas by promoting awareness to young people of senior high on road safety issues.

The application system should be able to meet the following expectations:

The students should be able to:

1. Attempt quiz questions with multiple choices
2. View the results of their attempts
3. View the right answers for the questions
4. Review their performances

The administrator should be able to:

1. Create/read/update/delete quiz questions
2. View the report of quizzes undertaken by students

The initial non-functional requirements:

1. Strong security, authentication and authorisation mechanism must be implemented.
2. Database design must be in third normal form (3NF).
3. Coding must be documented, well indented and flexible for enhancement.
4. Interactive and responsive user interfaces must be implemented.
5. System must perform better in all aspects in terms of speed, reliability and availability.

### 1.2.2. Constraints of the project

**Scope**: The project will cover the overall initial expectations as proposed by the client. However, the changes being inevitable, can be agreed upon through meetings and feasibility study of the change requests.

**Time:** Time is the major constraint for the project as the project is expected to be aligned with the deadlines of milestones and report submission due dates on the unit profile of the course COIT20273. The total duration for the project is constrained to 12 weeks.

**Cost:** The only cost for the project is the labour hours of the team members dedicated to the project. Though, the team members are obliged to allocate personal time of 10 hours per week for the project, the flexibility to spend additional time is acceptable with the team members as required by the project loads.

Based on the above constraints, below is the project priority matrix:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Time | Scope | Cost |
| Constraint |  |  |  |
| Enhance |  |  |  |
| Accept |  |  |  |

**Table 1. Project priority matrix**

# 2. Hardware and Software Requirement

## 2.1 Hardware

* PC/Laptop with Windows 7 or above OS
* RAM: 4GB or above
* HDD: 100GB or above
* Processor: Intel i3 or above
* Internet access

## 2.2 Software

* Text-editor: Netbeans
* Server: Glassfish
* Language: J2EE
* Database: Derby
* Web browser: Google chrome, Firefox, Safari, Internet Explorer
* Microsoft Office package
* Microsoft Project
* Microsoft Visio
* Java Development Kit
* Repository: Github

# 3. Project Organisation

Client: Professor Wallace Taylor

Client Representative: Dr Lily Li

Project Manager: Keshav Khadka

Business Analyst: Bijay Shahi

Interface Designer: Pratik Shrestha

Application Developer: Keshav Khadka, Bijay Shahi & Pratik Shrestha

Application Tester: Pratik Shrestha

Project Evaluator: Keshav Khadka, Bijay Shahi

# 4. Work Breakdown Structure

The work breakdown structure for the project is as follow:

|  |  |  |  |
| --- | --- | --- | --- |
| WBS | Task Name | Duration | Predecessors |
| **0** | **Rotary Youth Driver Awareness Project** | **65 days** |  |
| **1** | **Initiation** | **5 days** |  |
| 1.1 | Develop business case | 3 days |  |
| 1.2 | Undertake the feasibility study | 2 days | 2 |
| **2** | **Planning** | **10 days** |  |
| 2.1 | Plan business scope | 1 day | 2,3 |
| 2.2 | Develop project objectives and constraints | 4 hrs | 5 |
| 2.3 | Approve development platform and programming language | 4 hrs | 6 |
| **2.4** | **Develop project plan** | **6 days** |  |
| 2.4.1 | Schedule management plan | 2 days | 7 |
| 2.4.2 | Resource management plan | 2 days | 9 |
| 2.4.3 | Risk management plan | 4 hrs | 10 |
| 2.4.4 | Monitoring and reporting plan | 4 hrs | 11 |
| 2.4.5 | Test strategy | 1 day | 12 |
| 2.5 | Review and project plan submission | 2 days | 7,8 |
| **3** | **Analysis** | **10 days** |  |
| **3.1** | **Requirement identification and specification** | **4 days** |  |
| 3.1.1 | Functional requirement identification | 2 days | 14 |
| 3.1.2 | Non-functional requirement identification | 2 days | 17 |
| 3.2 | Submission of progress report 1 | 1 day | 16 |
| **3.3** | **Construct use cases** | **3 days** |  |
| 3.3.1 | Draw UML use case diagram | 2 days | 19 |
| 3.3.2 | Describe each use cases | 1 day | 21 |
| 3.4 | Map requirements with use cases | 1 day | 20 |
| 3.5 | Review and requirement specification submission | 2 days | 20 |
| **4** | **Design** | **10 days** |  |
| 4.1 | Design software architecture | 1 day | 24 |
| **4.2** | **Design and model layers** | **6 days** |  |
| 4.2.1 | Design view layer | 2 days | 26 |
| 4.2.2 | Design presentation layer | 2 days | 28 |
| 4.2.3 | Design model layer | 2 days | 29 |
| 4.3 | Design database | 2 days | 26 |
| 4.4 | Design behavioural modelling | 1 day | 26,27 |
| 4.5 | Design sequence diagrams | 1 day | 26,27 |
| 4.6 | Submission of progress report 2 | 2 days | 32,33 |
| 4.7 | Review and design document submission | 2 days | 32,33 |
| **5** | **Implementation and testing** | **20 days** |  |
| 5.1 | Implement model layer | 14 days | 35 |
| 5.2 | Implement view layer | 14 days | 35 |
| 5.3 | Implement presentation layer | 14 days | 35 |
| 5.4 | Submission of progress report 3 | 1 day |  |
| 5.5 | Populate database | 1 day | 37,38,39 |
| **5.6** | **Testing** | **5 days** |  |
| 5.6.1 | Perform unit tests | 3 days | 37,38,39 |
| 5.6.2 | Perform integration tests | 3 days | 37,38,39 |
| 5.6.3 | Validation against requirement specification and design documents | 2 days | 44 |
| 5.7 | Develop user manual | 1 day | 44 |
| 5.8 | Submission of progress report 4 | 2 days | 46 |
| 5.9 | Review and implementation and testing document submission | 2 days | 46 |
| **6** | **Closure** | **10 days** |  |
| 6.1 | Project presentation | 5 days | 48 |
| 6.2 | Conduct project review | 5 days | 50 |
| 6.3 | Project review and project portfolio submission | 5 days | 50 |
| **7** | **Project plan submission** | **0 days** | **14** |
| **8** | **Progress report 1 submission** | **0 days** | **19** |
| **9** | **Requirement specification submission** | **0 days** | **24** |
| **10** | **Progress report 2 submission** | **0 days** | **34** |
| **11** | **Design document submission** | **0 days** | **35** |
| **12** | **Progress report 3 submission** | **0 days** | **40** |
| **13** | **Progress report 4 submission** | **0 days** | **47** |
| **14** | **Implementation and testing document submission** | **0 days** | **48** |
| **15** | **Project review and project portfolio submission** | **0 days** | **52** |

Table 2. Work breakdown structure

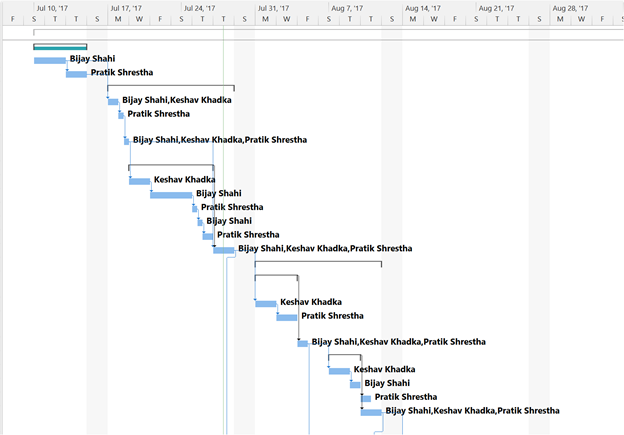
# 5. Project Schedule

The project schedule for the project is as follows:

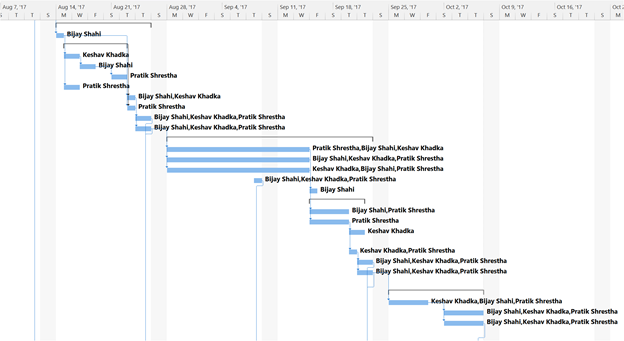
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Task Name | Duration | Start | Finish | Predecessors | Resource Names |
| **Rotary Youth Driver Awareness Project** | **65 days** | **Mon 7/10/17** | **Fri 10/6/17** |  |  |
| **Initiation** | **5 days** | **Mon 7/10/17** | **Fri 7/14/17** |  |  |
| Develop business case | 3 days | Mon 7/10/17 | Wed 7/12/17 |  | Bijay Shahi |
| Undertake the feasibility study | 2 days | Thu 7/13/17 | Fri 7/14/17 | 2 | Pratik Shrestha |
| **Planning** | **10 days** | **Mon 7/17/17** | **Fri 7/28/17** |  |  |
| Plan business scope | 1 day | Mon 7/17/17 | Mon 7/17/17 | 2,3 | Bijay Shahi,Keshav Khadka |
| Develop project objectives and constraints | 4 hrs | Tue 7/18/17 | Tue 7/18/17 | 5 | Pratik Shrestha |
| Approve development platform and programming language | 4 hrs | Tue 7/18/17 | Tue 7/18/17 | 6 | Bijay Shahi,Keshav Khadka,Pratik Shrestha |
| **Develop project plan** | **6 days** | **Wed 7/19/17** | **Wed 7/26/17** |  |  |
| Schedule management plan | 2 days | Wed 7/19/17 | Thu 7/20/17 | 7 | Keshav Khadka |
| Resource management plan | 2 days | Fri 7/21/17 | Mon 7/24/17 | 9 | Bijay Shahi |
| Risk management plan | 4 hrs | Tue 7/25/17 | Tue 7/25/17 | 10 | Pratik Shrestha |
| Monitoring and reporting plan | 4 hrs | Tue 7/25/17 | Tue 7/25/17 | 11 | Bijay Shahi |
| Test strategy | 1 day | Wed 7/26/17 | Wed 7/26/17 | 12 | Pratik Shrestha |
| Review and project plan submission | 2 days | Thu 7/27/17 | Fri 7/28/17 | 7,8 | Bijay Shahi,Keshav Khadka,Pratik Shrestha |
| **Analysis** | **10 days** | **Mon 7/31/17** | **Fri 8/11/17** |  |  |
| **Requirement identification and specification** | **4 days** | **Mon 7/31/17** | **Thu 8/3/17** |  |  |
| Functional requirement identification | 2 days | Mon 7/31/17 | Tue 8/1/17 | 14 | Keshav Khadka |
| Non-functional requirement identification | 2 days | Wed 8/2/17 | Thu 8/3/17 | 17 | Pratik Shrestha |
| Submission of progress report 1 | 1 day | Fri 8/4/17 | Fri 8/4/17 | 16 | Bijay Shahi,Keshav Khadka,Pratik Shrestha |
| **Construct use cases** | **3 days** | **Mon 8/7/17** | **Wed 8/9/17** |  |  |
| Draw UML use case diagram | 2 days | Mon 8/7/17 | Tue 8/8/17 | 19 | Keshav Khadka |
| Describe each use cases | 1 day | Wed 8/9/17 | Wed 8/9/17 | 21 | Bijay Shahi |
| Map requirements with use cases | 1 day | Thu 8/10/17 | Thu 8/10/17 | 20 | Pratik Shrestha |
| Review and requirement specification submission | 2 days | Thu 8/10/17 | Fri 8/11/17 | 20 | Bijay Shahi,Keshav Khadka,Pratik Shrestha |
| **Design** | **10 days** | **Mon 8/14/17** | **Fri 8/25/17** |  |  |
| Design software architecture | 1 day | Mon 8/14/17 | Mon 8/14/17 | 24 | Bijay Shahi |
| **Design and model layers** | **6 days** | **Tue 8/15/17** | **Tue 8/22/17** |  |  |
| Design view layer | 2 days | Tue 8/15/17 | Wed 8/16/17 | 26 | Keshav Khadka |
| Design presentation layer | 2 days | Thu 8/17/17 | Fri 8/18/17 | 28 | Bijay Shahi |
| Design model layer | 2 days | Mon 8/21/17 | Tue 8/22/17 | 29 | Pratik Shrestha |
| Design database | 2 days | Tue 8/15/17 | Wed 8/16/17 | 26 | Pratik Shrestha |
| Design behavioral modelling | 1 day | Wed 8/23/17 | Wed 8/23/17 | 26,27 | Bijay Shahi,Keshav Khadka |
| Design sequence diagrams | 1 day | Wed 8/23/17 | Wed 8/23/17 | 26,27 | Pratik Shrestha |
| Submission of progress report 2 | 2 days | Thu 8/24/17 | Fri 8/25/17 | 32,33 | Bijay Shahi,Keshav Khadka,Pratik Shrestha |
| Review and design document submission | 2 days | Thu 8/24/17 | Fri 8/25/17 | 32,33 | Bijay Shahi,Keshav Khadka,Pratik Shrestha |
| **Implementation and testing** | **20 days** | **Mon 8/28/17** | **Fri 9/22/17** |  |  |
| Implement model layer | 14 days | Mon 8/28/17 | Thu 9/14/17 | 35 | Pratik Shrestha,Bijay Shahi,Keshav Khadka |
| Implement view layer | 14 days | Mon 8/28/17 | Thu 9/14/17 | 35 | Bijay Shahi,Keshav Khadka,Pratik Shrestha |
| Implement presentation layer | 14 days | Mon 8/28/17 | Thu 9/14/17 | 35 | Keshav Khadka,Bijay Shahi,Pratik Shrestha |
| Submission of progress report 3 | 1 day | Fri 9/8/17 | Fri 9/8/17 |  | Bijay Shahi,Keshav Khadka,Pratik Shrestha |
| Populate database | 1 day | Fri 9/15/17 | Fri 9/15/17 | 37,38,39 | Bijay Shahi |
| **Testing** | **5 days** | **Fri 9/15/17** | **Thu 9/21/17** |  |  |
| Perform unit tests | 3 days | Fri 9/15/17 | Tue 9/19/17 | 37,38,39 | Bijay Shahi,Pratik Shrestha |
| Perform integration tests | 3 days | Fri 9/15/17 | Tue 9/19/17 | 37,38,39 | Pratik Shrestha |
| Validation against requirement specification and design documents | 2 days | Wed 9/20/17 | Thu 9/21/17 | 44 | Keshav Khadka |
| Develop user manual | 1 day | Wed 9/20/17 | Wed 9/20/17 | 44 | Keshav Khadka,Pratik Shrestha |
| Submission of progress report 4 | 2 days | Thu 9/21/17 | Fri 9/22/17 | 46 | Bijay Shahi,Keshav Khadka,Pratik Shrestha |
| Review and implementation and testing document submission | 2 days | Thu 9/21/17 | Fri 9/22/17 | 46 | Bijay Shahi,Keshav Khadka,Pratik Shrestha |
| **Closure** | **10 days** | **Mon 9/25/17** | **Fri 10/6/17** |  |  |
| Project presentation | 5 days | Mon 9/25/17 | Fri 9/29/17 | 48 | Keshav Khadka,Bijay Shahi,Pratik Shrestha |
| Conduct project review | 5 days | Mon 10/2/17 | Fri 10/6/17 | 50 | Bijay Shahi,Keshav Khadka,Pratik Shrestha |
| Project review and project portfolio submission | 5 days | Mon 10/2/17 | Fri 10/6/17 | 50 | Bijay Shahi,Keshav Khadka,Pratik Shrestha |
| **Project plan submission** | **0 days** | **Fri 7/28/17** | **Fri 7/28/17** | **14** |  |
| **Progress report 1 submission** | **0 days** | **Fri 8/4/17** | **Fri 8/4/17** | **19** |  |
| **Requirement specification submission** | **0 days** | **Fri 8/11/17** | **Fri 8/11/17** | **24** |  |
| **Progress report 2 submission** | **0 days** | **Fri 8/25/17** | **Fri 8/25/17** | **34** |  |
| **Design document submission** | **0 days** | **Fri 8/25/17** | **Fri 8/25/17** | **35** |  |
| **Progress report 3 submission** | **0 days** | **Fri 9/8/17** | **Fri 9/8/17** | **40** |  |
| **Progress report 4 submission** | **0 days** | **Fri 9/22/17** | **Fri 9/22/17** | **47** |  |
| **Implementation and testing document submission** | **0 days** | **Fri 9/22/17** | **Fri 9/22/17** | **48** |  |
| **Project review and project portfolio submission** | **0 days** | **Fri 10/6/17** | **Fri 10/6/17** | **52** |  |

Table 3. Project schedule

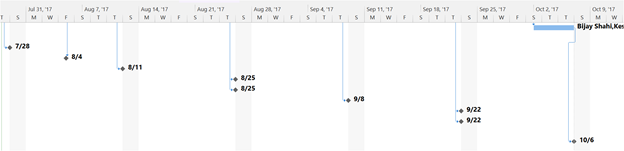
The Gantt Chart for the project schedule is as follows:



**Figure 1. Gantt Chart snapshot 1**



**Figure 2. Gantt Chart snapshot 2**



**Figure 3. Gantt Chart snapshot 3**

# 6. Monitoring and Reporting

This project will be monitored by the project manager Keshav Khadka. Client meetings are held every Monday morning to update current progress with client representative. Since, there are three developers throughout this project, each work is analysed and reviewed after the completion by one another practicing the pair programming methodology so that there is no dependency on a single resource meeting the contingency plan.

Timesheets are used for recording time spent on the project. GitHub is used to keep track of all the version of each document and codebase throughout the project making them available to team members from any machine to carry on the work. Microsoft Project Professional has been used for project management purpose. 9 milestones have been identified and listed below:

|  |  |
| --- | --- |
| **Milestones** | **Deadlines** |
| Project plan submission | 28/07/2017 |
| Progress report 1 submission | 04/08/2017 |
| Requirement specification submission | 11/08/2017 |
| Progress report 2 submission | 25/08/2017 |
| Design document submission | 25/08/2017 |
| Progress report 3 submission | 08/09/2017 |
| Progress report 4 submission | 22/09/2017 |
| Implementation and testing document submission project review and project portfolio submission | 22/09/2017 |
| Project review and project portfolio submission | 06/10/2017 |

# 7. Risk Plan

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Risk** | **Probability from 1 to 5** | **Effect** | **Indicators** | **Strategy** |
| Workload from other courses | 4 | May not meet all requirement of the project | Giving less time to the project on fulfilling the demand from other course | Try to fulfil the project and push the project ahead as possible to give enough time for other course |
| System crash | 2 | Loss of hours of work and work overload to team members to recover the previous work done | Error message on screen | Maintain repository of codebase for version control and regular database backup plan. |
| Not meeting project requirement | 1 | Negative review or rating from the client that affects portfolio of the company | Slow progress towards meeting the requirement | Weekly progress must be submitted to the Project Manager and difficulty area must be discussed |
| Loss of data | 3 | Future decisions and planning can be effected | All submitted data in the backend database are empty | If version control and daily backup are implemented on time, data loss can be resolved |
| Illness | 4 | Plan changes and other team member will overtake the task | Team member not reporting for more than 2 days | Implement pair programming so that there is no any dependency of a single person |

# 8. Quality Plan

## 8.1. Quality Roles and Responsibilities

|  |  |  |
| --- | --- | --- |
| **Name** | **Role** | **Quality Responsibility** |
| Keshav Khadka | Project Manager | Mentoring and monitoring |
| Bijay Shahi, Pratik Shrestha | Developer | Quality control |
| Bijay Shahi | Quality Manager | Quality auditing |

## 8.2. Quality metrics

|  |  |  |  |
| --- | --- | --- | --- |
| **Metric** | **Standard** | **Measuring Method** | **Quality Control** |
| Reliability | System should be reliable with consistent outcomes | Testing | System should be tested passing all the test cases. If success rate is more than 90%, then the project is considered to be reliable. |
| Performance | System should be consistent and stable | Testing | Response time for each request by the user should be addressed in quick time. |
| Material Cost | Hardware cost should be kept as low as possible but the quality must not be compromised | Auditing | Keeping quality in consideration, future material cost should be justified. |
| Product Availability | System should be available 24/7 as the product can be accessed by anyone from anywhere | Testing | Stress testing and implementing load balancing and failover.  Production team to be prepared for system recovery. |
| Security | Proper security level should be maintained and proper ACL should be implemented | Testing | Quiz taker should be restricted to create/read/update/delete quiz.  Admin credentials should be encrypted. |
| Functionality | System should have all functionality meeting the requirement | Testing | Each functions should have consistent outcome |
| User Interface (UI) | UI should be responsive and interactive | User feedback | Feedback from every user should be noted, as the system must be available for every device |