SIM5202 ADVANCED SOFTWARE ENGINEERING

FACULTY OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

"SOFTWARE DEVELOPMENT PLAN"

By:

Shirin Nazemoroaya (GS29086)

Nazanin Manafi (GS31020)

Ava Moradi (GS31026)

Meysam Karimi (GS33205)

LECTURER: DR.MARZANAH BT A JABAR

1. Project Overview

1.1 Project Purpose

The purpose of this "Project Management" software development is to address problems in information management of a "research center". Personnel, departments and projects registration and also ranking the personnel in each department are also main functions of this software.

1.2 Project Scope

The scopes of this system are as follows:

This system allows the administrator to:

- Insert personnel, projects and department's information.
- Assign projects to personnel.
- View overall report of list of personnel in each department, a list of projects in each department, list of personnel which participated in each project.
- Estimation and calculation the duration of a project.
- Ranking the personnel.
- Report of salary for each personnel in each department.
- Insert personnel information such as personnel ID, Name, Type of personnel (researcher or Apprentice), teaching experience, number of publications, working experience, salary and others.
- Insert department's information such as name, maximum number of required staff, address, field of research and etc.
- Insert project's information such as project ID, Project Start Date, duration of project and others.

1.3 Project Objectives

This project is conducted in order to achieve the following objectives;

- To register new staff's information to the repository.
- To identify total number of staff works on a specific project.
- To identify total number of staff works in a specific department.
- To estimate the duration of a project based on teaching and working experience of personnel.
- In order to rank the personnel based on the personnel teaching experience, working experience and number of publications.
- To have a list of personnel and their salary in each department.

1.4 Assumptions and Constraints

Assumptions:

- The department should be added to the system before registering personnel and projects in departments.
- The projects should be added before assigning personnel to them.
- All project team members will follow the process and procedures highlighted in this Software Development Plan (SDP).

Constraints:

- Limitations in estimating the duration of a project since it is based on teaching and working experience of personnel and it doesn't consider other parameters.

1.5 Project Deliverables

- The Software Requirement Specification (SRS)
- The Software Development Plan (SDP)
- The Software Quality Assurance Plan (SQAP)
- The User Interface Design
- The Software Design Description (SDD)
- The Software Test Plan (STP)
- The Change Request Documentation
- The "Management of a research center projects" system
- User manual for System Administrator

1.6 Evolution of the Plan

The structure of documentations for this system should comply with recommendations by IEEE STD 1058-1998.

1.7 Overall Approach

Design and development of "Management of a research center projects" is divided into phases as follows:

- Phase I :Requirement Gathered
- Phase II : SRS created
- Phase III: SDP created

- Phase IV : SDD created
- Phase V : Develop “Management of a research center projects” software
- Phase VI: Implement “Management of a research center projects” software

1.9 Definitions and Acronyms

- SRS : Software Requirements Specification
- SDP : Software Development Plan
- SDD : Software Design Document

2. Project Organization

2.1 Organization Structure

The organization structure set up for “Management of a research center projects” system consists of Three (3) personnel. Every development team members hold position ranging from project manager to programmer as shown in Figure 2.1

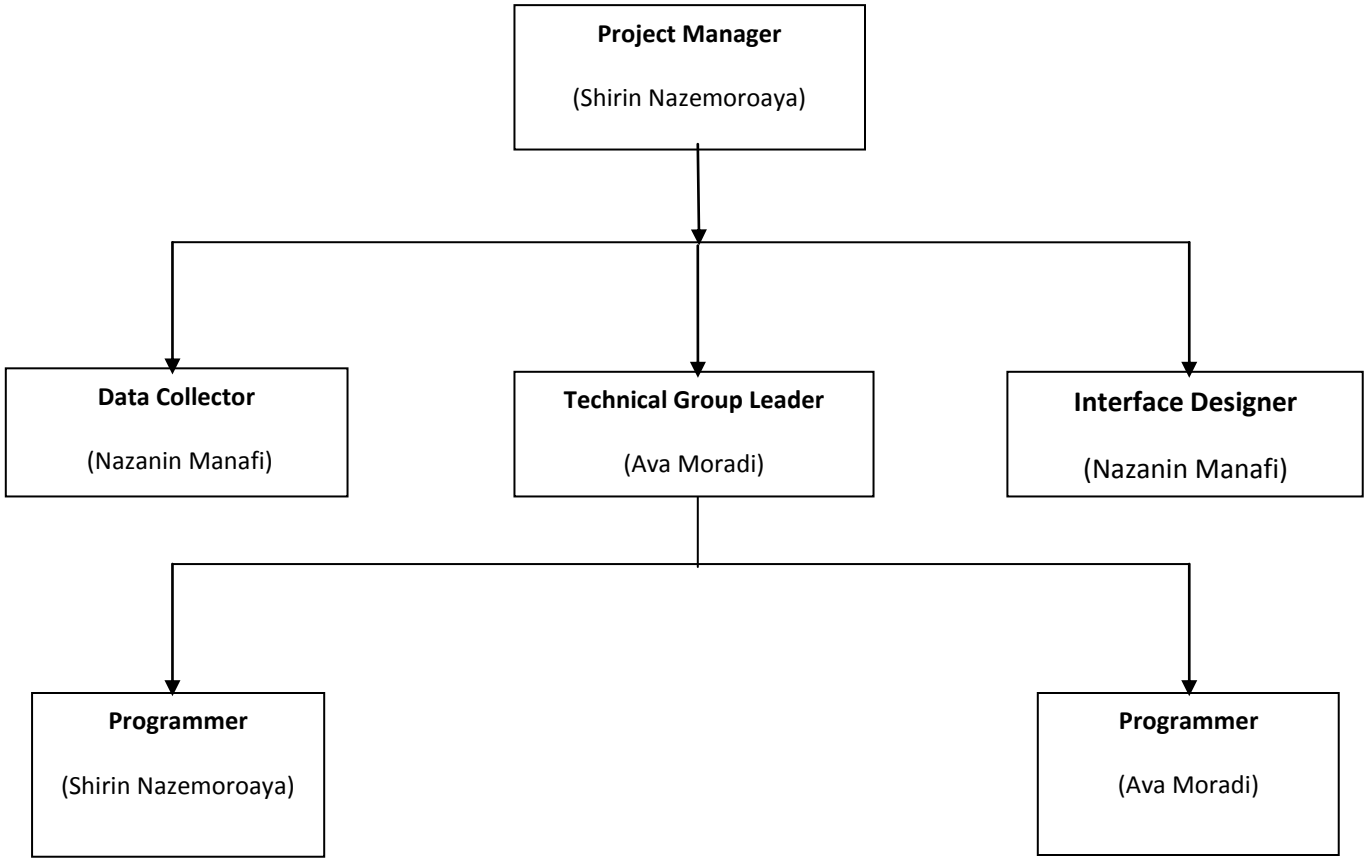

Figure 2.1 shows the organization structure of “Management of a research center projects” project.

2.2 Roles and Responsibilities

Project Manager
Responsibilities:

- Main person that manages overall project.
- Responsible in creating the project plan.
- Responsible for all project deliverables and ensuring project success.
- Manage project resources and schedule.
- Plan, organize, and control the scope, resource and schedule.
- Responsible for day to day management of the project activities.

Skill & Experience

- Experience in developing requirement and running application development.

Section of Data Collecting
Roles and Responsibilities:

- Requirement and information provider for the system.
- Monitor, review and discuss issues relevant to the project.
- Approve SRS document.
- Ensure and verify the data completeness;
  - All mandatory fields are provided during the data capture.
  - All data variances produce were identify and solutions are derive to mitigate the variances.

Experience Requirement:

- Head of Human Resource Development Division

Project Group Leader
Responsibilities:

- Project advisor.
- Provide expert consulting advice in implementing development processes.
- Create project and organizational matrix for evaluation.

Experience requirement:

- Academician from Faculty of Computer Sciences and Information Technology

Programmer
Roles and Responsibilities:

- Application developer.
- Responsible in identifying appropriate tools that can be used as a medium of programming language.
- Responsible to change system design provided by project group leader to a fully operated system.

Experience required:

- Experience in system / application development (coding).

3. Managerial Process Plan

Tables below (3.1.2 – 3.1.3) illustrate planning and numbers of the required staffs, resources and training the will support the development needs.

3.1 Start-up Plan

3.1.1 Staffing

Group	Skill/Position Required	No of Personal Required	Currently Available
Project Management	Project Manager	1	1
Development	Programmer	2	2
Documentation	Documenter	3	3

3.1.2 Resource

Resource Name	No. required	Currently available
Notebook	3	3
Development Server	1	1
Testing Server	1	1
Application Server	1	1
Printer and toner	1	1

3.1.3 Project Staffing Training

Training Type	No of Participants
C#.Net languages	3

3.2 Work Plan

3.2.1 Work Breakdown Structure

- *(refer to attached Annex A)*

3.2.2 Schedule Allocation

- *(refer to attached Annex B)*

3.3 Project Tracking Plan

3.3.1 Change Control

Changes in software development are inevitable, due to either change in customers' needs or as a result of a better understanding of the project. Some changes might be irrational and as such are discarded. In this project, all changes will be recorded in the configuration database. The flowchart shown in F**igure 3. 1** shows the procedures to be followed before any change is executed.

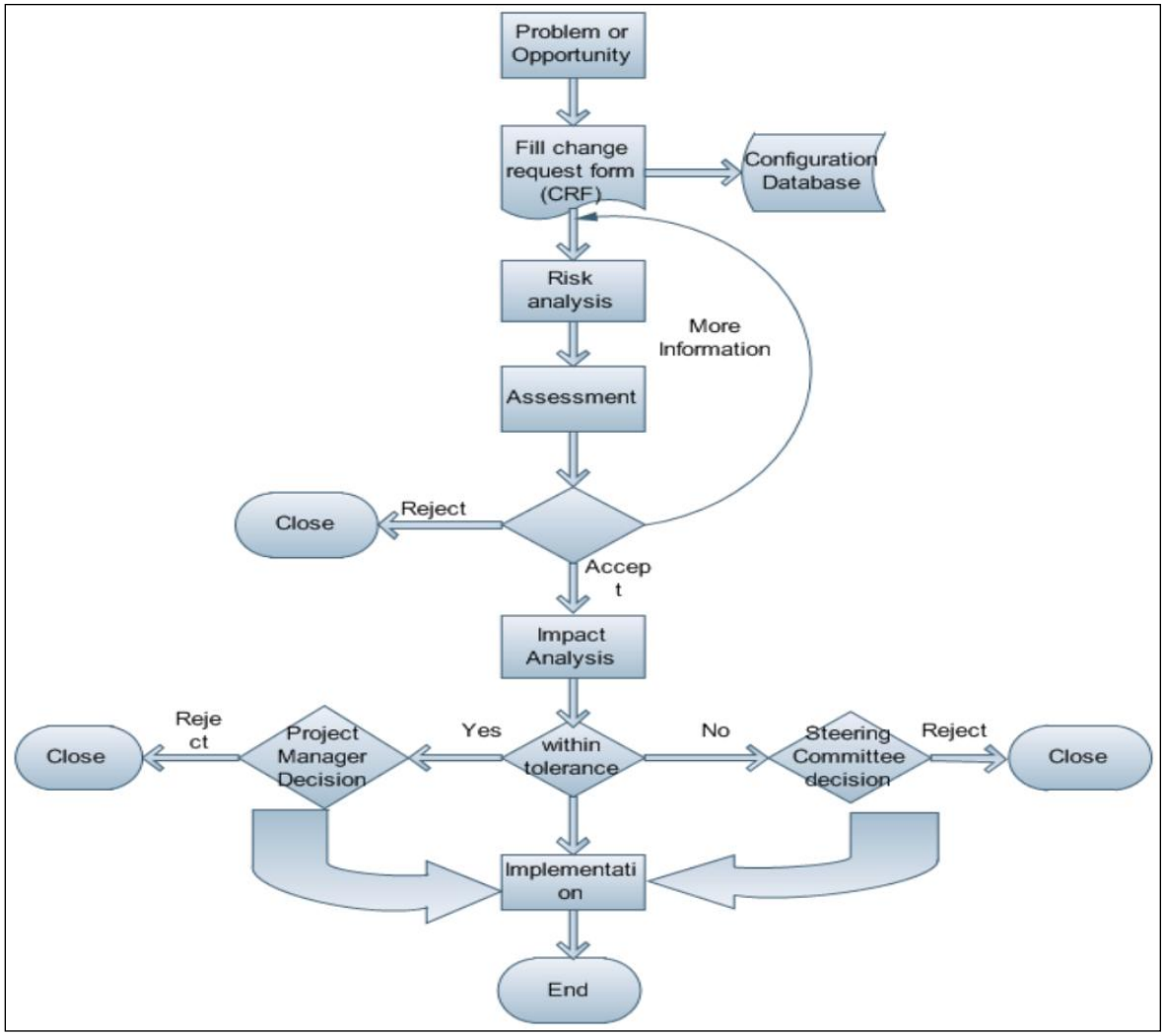

Figure 3.1: Change control

3.3.2 Schedule Control

At the beginning of the project, a meeting will be held twice a week to track progress. At one of this series of meetings, we assign tasks to the one who is responsible for this area. Other task will be reviewed or rescheduled if needed.

3.3.3 Quality Control

Quality control emphasizes testing of products to uncover defects and reporting to management who make the decision to allow or deny product release. Defects will be considered and tracked as Change Requests. The basic goal of this process is to ensure that the products or services that are provided meet specific requirements and characteristics. The review is required to ensure that each deliverable is of acceptable quality, using guidelines provided and check listed.

3.3.4 Reporting

As noted earlier in schedule control, meetings will be held twice a week with its main goal of reporting development progress and status. A status report will be prepared by the project leader and will contain information not limited to:

1. Current Status v. Plan (Ahead/Behind/On Schedule).

2. Progress of tasks planned for previous week.

3. Tasks planned for next week including tasks carried from previous week.

4. Prototype presentation for verification.

5. Issues / Risks.

3.3.5 Project Metrics

Below are project metrics to be assessed in order to validate efficiency of system development.

- Number of modifications to requirements.
- Number of available programmers.
- Hours of programmer time available.
- Source lines of code.
- Earned value for completed tasks: used to re-estimate schedules and budgets.
- Total defects open and closed: Used to estimate efforts to complete the project.
- Acceptance test cases passing.

3.4 Risk Management Plan

The risk management cycle consists of seven steps and formalises a natural thinking process that everyone applies subconsciously when faced with a real or potential opportunity or danger. Figure 3.2 shows the risk management cycle adopted for the system development.

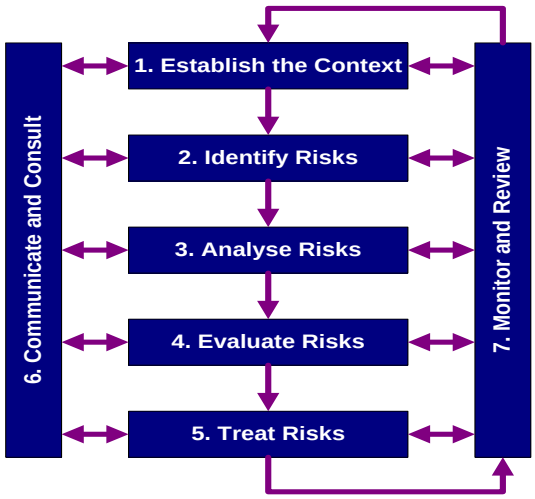

Figure 3.2: Risk management steps

Communicate and consult: *important throughout the whole process*
Hold meetings and workshops. Identify and involve all internal and external stakeholders, tell them why we develop the plan, what's in it for them and what we are going to do. Communicate with stakeholders at every step of the process.

- **Establish the context:** *what we do interacts with the wider environment.*
- **Identify risks:** *a risk that has not been identified cannot be managed.*
- **Analyse risks:** *don't assume existing controls are good or cost effective.*
- **Evaluate risks:** *it isn't possible to manage every risk.*
- **Treat risks:** *risks change constantly.*
- **Monitor and review:** *risks are never static*.

3.5 Project Closure

Project Closure Plan will consist of the following steps:

1. User Acceptance Test (UAT) will be conducted by actual users.
2. After passing the UAT, the system and related elements will wrapped together as one package.
3. Upon signing the signoff documents, the system will be passed to the system owner.

4. Technical Process Plans

4.1 Process Model

The Prototyping Model is a systems development method (SDM) in which a prototype (an early approximation of a final system or product) is built, tested, and then reworked as necessary until an acceptable prototype is finally achieved from which the complete system or product can now be developed. This model works best in scenarios where not all of the project requirements are known in detail ahead of time. It is an iterative, trial-and-error process that takes place between the developers and the users. Prototyping model will be used in this development. **Figure 4.1** shows the various phases in prototyping:

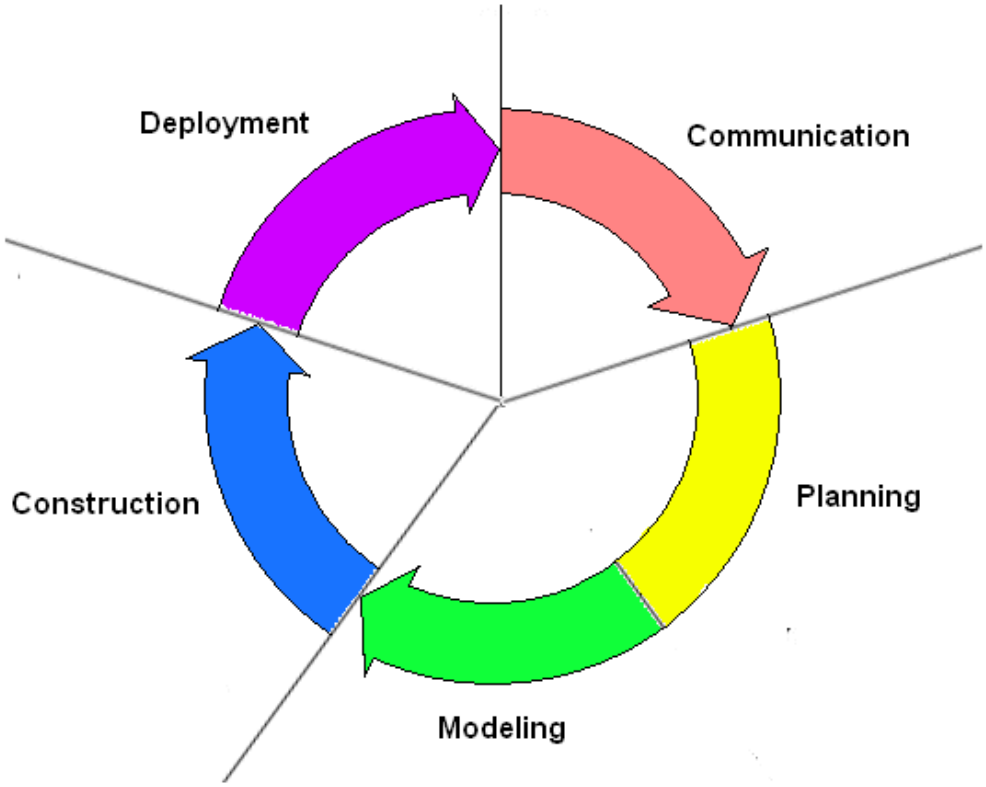

Figure 4.1: Prototyping process model

The process of prototyping involves the following steps:

- Defining the initial problem
- Planning the prototype
- Building the prototype
- Checking the prototype
- Redefining the problem
- Finish product

4.2 Methods, Tools and Techniques

Methods, tools and techniques employed are as listed below:

- Rapid Prototyping development methodology will be adopted for this project.
- Rational Rose / Microsoft Visio will be used to do modeling and analysis.
- Macromedia Flash will be used as a development tool.
- SQL Server will be used for database implementation.
- Microsoft Project will be used as a scheduling tool.

4.3 Infrastructure

Development infrastructures/equipments required and supplied for the development are as follows;

- Notebooks with high internet connectivity.
- Servers for development and testing environment.
- Servers for database.

4.4 Product Acceptance

- User acceptance test (UAT) to be conducted to confirm product acceptance.

5. Supporting Process Plans

5.1 Configuration Management

- Specify or reference the configuration management plan for the IM/IT project, providing the information identified in the following lines.
- Specify the methods that will be used to perform the following activities:
    - configuration identification
    - configuration control
    - status accounting
    - evaluation, and
    - Release management.

- Specify the processes of configuration management including procedures for the following activities:
    - initial base lining of work products,
    - logging and analysis of change requests,
    - change control board procedures,
    - tracking of changes in progress, and
    - Procedures for notification of concerned parties when baselines are established or changed.
- Identify the automated configuration management tools used to support the configuration management process.

5.2 Verification and Validation

- Specify or reference the verification and validation plan for the IM/IT project, providing the information identified in the following lines.
- Specify the scope, tools, techniques and responsibilities for the verification and validation work activities.
- Specify the organizational relationships and degrees of independence between development activities and verification and validation activities.
- Specify the use of verification techniques such as traceability, milestone reviews, progress reviews, peer reviews, prototyping, simulation and modeling.
- Specify the use of validation techniques such as testing, demonstration, analysis and inspection.
- Identify the automated tools to be used in verification and validation.

5.3 Documentation

- Specify the plans for generating non-deliverable and deliverable project documentation.
- Specify the organizational entities responsible for providing input information, and for generating and reviewing the project documentation.
- Specify the following information or object identification:
    - list of documents to be prepared,
    - controlling template or standard for each document,
    - who will prepare each document,
    - who will review each document,
    - due dates for review copies,
    - due dates for initial baseline versions, and
    - a distribution list for review copies and baseline versions and quantities required

5.4 Quality Assurance

- Specify or reference the quality assurance plan for the IM/IT project, containing the information identified in the following lines.
- Specify the plans for assuring that the IM/IT project fulfills its commitments to the IM/IT process and the IM/IT product as specified in the requirements specification, the IM/IT Project Management Plan, supporting plans and any standards, procedures, or guidelines to which the process or the product must adhere.
- As applicable, specify the quality assurance procedures to be used, such as analysis, inspection, review, audit, and assessment.
- Indicate the relationship among the quality assurance, verification and validation, review, audit, configuration management, system engineering, and assessment processes.

5.5 Reviews and Audits

- Specify the schedule, resources, and processes, and procedures to be used in conducting project reviews and audits.
- Specify the plans for joint customer-project reviews, management progress reviews, developer peer reviews, quality assurance audits, and customer-conducted reviews and audits.
- List the external agencies that approve or regulate any project deliverable.

5.6 Problem Resolution

- Specify the resources, methods, tools, techniques and procedures to be used in reporting, analyzing, prioritizing and processing IM/IT problem reports generated during the project.
- Indicate the roles of development, configuration management, the change control board, and verification and validation in problem resolution work activities.
- Provide for separate tracking of effort expended on problem reporting, analysis and resolution, so that rework can be tracked and process improvement accomplished.

5.7 Subcontractor Management

- Specify or reference the plans for selecting and managing any subcontractors that may participate in or contribute to the IM/IT project.
- Specify the criteria for selecting subcontractors.
- Generate a separate management plan for each subcontract, using a tailored version of this Project Plan, and include all items necessary to ensure successful completion of each subcontract as follows:
    - requirements management,
    - monitoring of technical progress,
    - schedule and budget control
    - product acceptance criteria,
    - risk management procedures,
    - additional topics as needed to ensure successful completion of the subcontract, and
    - a reference to the official subcontract and subcontractor/prime contractor points of contact.

5.8 Process Improvement

- Specify the plans for periodically assessing the project, for determining areas for improvement, and for implementing the improvement plans.
- Ensure that the process improvement plan is closely related to the problem resolution plan.
- Include in the improvement plan, a process to identify the project processes that can be improved without serious disruption to an ongoing project, and to identify the project processes that can best be improved by process improvement initiatives at the organizational

ANNEX A : Work Breakdown Structure Worksheet

Work ID	Work Name	Description	Assigned to
1.0	Planning	Create the overall plan for project	Management
	1.1 Kickoff meeting	• Definition of the base elements for the project and other project planning activities. • Introduces the members of the project team and the client and provides the opportunity to discuss the role of each team member. • Other base elements in the project that involve the client may also be discussed at this meeting (Schedule, Status Reporting, etc.).	Management and Project Manager
	1.2 System development plan created	• The purpose, objective and scope of the project will be clearly identified. • The staff and budget allocation will be documented. • The schedule and duration needed to complete certain task will be reported. • Develop the flow of the system.	Management and Project Manager
	1.3 Submit SDP & SQAP	• Submit SDP & SQAP document to user.	Management and Project Manager
	1.4Project Contract	• The SDP created will be submitted to management for an approval.	Management and Project Manager
2.0	Analysis	Analyze the requirement	Project Manager
	2.1 Meeting with users	• Verify functionality with users.	User Project Manager
	2.2Requirement Analyses	• Get reply from respondent. • Generate requirement list. • Generate appropriate use case. • Create scenario for each use case. • Take approval from User.	Project Manager User
	2.3 Submit SRS	• Submit SRS document to Registrar Office for approval.	Project Manager Data collector
3.0	Design	• Develop SDD document.	Programmer Project Manager
	3.1 Requirement Design	• Create sequence diagram, class diagram and activity diagram. • Verified by project manager. • Acknowledge programmer. • Develop SDD document.	Project Manager Programmer
4.0	Build	• Build the system according the SDD document	Project Manager Programmer
	4.1 Development 3.1.1 Interface 3.1.2 Database 3.1.3 Link Database and Interface	• Analyze the class diagram, activity diagram. • Extract the variable from class diagram. • Create interface according the User Interface Document. • Create Database. • Link application with Database.	Programmer Project Manager

Work ID	Work Name	Description	Assigned to
5.0	Test	• Develop test plan	Project Manager
	5.1 Test	• Develop test cases based on requirement. • Develop STP. • User test the system based on the test cases. • Report and result on the test verify by project manager.	Project Manager Programmer
6.0	Deploy	• Maintain the system	Programmer Project Manager
	6.1 Implementation and Deployment	• Implement the application	Programmer Project Manager
	4.1 Configuration and change Management	• Changes will be made according to the change request documentation.	Programmer Project Manager System Engineer

Annex B

Schedule Allocation

ID	Task Name	Duration	Start	Finish
1	**Management of a research center projects**	**65 days**	**Mon 3/5/12**	**Sun 5/27/12**
2	**Kickoff meeting**	**1 day**	**Mon 3/12/12**	**Mon 3/12/12**
3	Definition of the base elements for the project	1 day	Mon 3/12/12	Mon 3/12/12
4	Introduces the members of the project team	1 day	Mon 3/12/12	Mon 3/12/12
5	Discuss about other base elements in the proje	1 day	Mon 3/12/12	Mon 3/12/12
6	**Analysis Software requirement**	**17 days**	**Mon 3/5/12**	**Sat 3/24/12**
7	Conduct needs Analysis	7 days	Mon 3/5/12	Tue 3/13/12
8	Software requirement Specification	10 days	Mon 3/5/12	Fri 3/16/12
9	**Progress Meeting 1**	**1 day**	**Thu 3/15/12**	**Thu 3/15/12**
10	Review SRS	1 day	Thu 3/15/12	Thu 3/15/12
11	**Progress Meeting 2**	**1 day**	**Sat 3/17/12**	**Sat 3/17/12**
12	Produce Software development	1 day	Sat 3/17/12	Sat 3/17/12
13	Review SRS	1 day	Sat 3/17/12	Sat 3/17/12
14	**Progress Meeting 3**	**4 days**	**Wed 3/21/12**	**Sat 3/24/12**
15	Review SRS	1 day	Wed 3/21/12	Wed 3/21/12
16	Finalize SRS	1 day	Sat 3/24/12	Sat 3/24/12
17	**Design**	**12 days**	**Tue 3/27/12**	**Wed 4/11/12**
18	Business use case	3 days	Tue 3/27/12	Thu 3/29/12
19	Design Screen	2 days	Thu 3/29/12	Sun 4/1/12
20	Produce Software Design document	2 days	Mon 4/2/12	Tue 4/3/12
21	**Progress meeting 4**	**5 days**	**Thu 4/5/12**	**Wed 4/11/12**
22	Review SDD	2 days	Thu 4/5/12	Fri 4/6/12
23	Project Progress report	3 days	Mon 4/9/12	Wed 4/11/12
24	**Testing**	**7 days**	**Fri 4/13/12**	**Fri 4/20/12**
25	Develop test plan	2 days	Fri 4/13/12	Sat 4/14/12
26	Produce Software testing document	1 day	Mon 4/16/12	Mon 4/16/12
27	UAT	2 days	Tue 4/17/12	Wed 4/18/12
28	Review testing results	1 day	Wed 4/18/12	Wed 4/18/12
29	Modify Code	3 days	Wed 4/18/12	Fri 4/20/12
30	**Progress meeting 5**	**1 day**	**Fri 4/20/12**	**Fri 4/20/12**
31	Project progress report	1 day	Fri 4/20/12	Fri 4/20/12
32	Review UAT	1 day	Fri 4/20/12	Fri 4/20/12
33	**Documentation**	**12 days**	**Sun 4/22/12**	**Sun 5/6/12**
34	SDP	2 days	Sun 4/22/12	Mon 4/23/12
35	SQAP	1 day	Tue 4/24/12	Tue 4/24/12
36	SRS	1 day	Wed 4/25/12	Wed 4/25/12
37	SDD	2 days	Thu 4/26/12	Fri 4/27/12
38	STD	2 days	Sat 4/28/12	Mon 4/30/12
39	User Manual	3 days	Wed 5/2/12	Sun 5/6/12
40	**Impelementation**	14 days	Tue 5/8/12	Sun 5/27/12