

GUIDELINES FOR IT GROUP PROJECT

The IT Project constitutes a major component in most professional programmes. It needs to be carried out with due care, and should be executed with seriousness by the students. The project is not only a credit bearing module of the Diploma/Degree requirements, but also provides a mechanism to demonstrate student skills, abilities and specialisation. The project work should compulsorily include the software development. Physical installations or configuring the LAN/WAN or theoretical projects or study of the systems, which doesn't involve software development, are strictly not allowed.

1. OBJECTIVES

The objective of the project is to help the student establish the ability to apply theoretical and practical tools/techniques to solve real life problems.

The objective of the IT Project is to develop quality software solution. During the development of the project, student should be involved in all the stages of the software development life cycle like requirements engineering, systems analysis, systems design, software development, testing strategies and documentation with an overall emphasis on the development of reliable software systems. The primary emphasis of the project is to understand and gain the knowledge of the principles of software engineering practices, so as to participate and manage a large software engineering projects in future.

2. INTRODUCTION TO PROJECT MANAGEMENT AND GROUP PROJECT

For the project students need to do **Introduction to Project Management** in class and Lab as foundation for their project for this semester.

The introduction includes the following:

- Introduction to project management using software (Theory Introduction)
- Introduction to project management using software (Practical in a Lab using Ms Project)
- Project preparations and Guidelines
- Identification and allocation of mentors
- Identification and allocation of groups

3. The introduction will equip the learners with necessary skills for their field project and includes the following:

- Choose the project to work on.
- Identify the features and attributes of a project; and identify the steps and variables of the project management process.

- Identify the effects of the environment, various socioeconomic and organizational issues, and organizational structure on a project; and
- Identify the critical functions, necessary skills, responsibilities, and challenges of a project manager.
- Identify the participants in the project, the influence of stakeholders on a project, the objectives of the project, benefits of planning for a project, and project constraints.
- Identify the process and benefits of scope definition and verification; develop the work breakdown structure (WBS) and the work package;
- Identify the types of information that stakeholders need in order to verify the project scope; identify actions involved in controlling changes; and identify the role of a scope change control system.
- Identify project activities, and identify the categories of dependencies and dependency relationships.
- Apply project management concepts; start Project , open an existing project file, and navigate different views; use the Project Help features; create and save a new project file; and close a project file and close Project.
- Create a task list in Gantt Chart view
- Create a Work Breakdown Structure by adjusting task hierarchy.
- Develop the project schedule by using CPM, PERT, project network diagrams, arrow charting, and Gantt charts, identify the benefits of CPM and PERT, the critical path, and the methods of duration compression.

4. After the completion of this project work, the student should be able to:

- Apply and follow the Systems Development Life Cycle (SDLC).
- Evaluate systems requirements.
- Complete a problem definition.
- Evaluate a problem definition.
- Determine how to collect information to determine requirements.
- Perform and evaluate feasibility studies like cost-benefit analysis, technical feasibility, time feasibility and Operational feasibility for the project.
- Work on data collection methods for fact finding.
- Construct and evaluate data flow diagrams.

- Construct and evaluate data dictionaries.
 - Evaluate methods of process description to include structured English, decision tables and decision trees.
 - Evaluate alternative tools for the analysis process.
 - Create and evaluate such alternative graphical tools as systems flow charts and state transition diagrams.
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- Select and evaluate the Software and Hardware requirement specifications.
 - Plan the systems design phase of the SDLC.
 - Distinguish between logical and physical design requirements.
 - Design and evaluate system outputs and inputs.
 - Design and evaluate validity checks for input data.
 - Design and evaluate user interfaces for input.
 - Design and evaluate file structures to include the use of indexes.
 - Estimate storage requirements.
 - Explain the various file update processes based on the standard file organizations.
 - Decide various data structures.
 - Construct and evaluate entity-relationship (ER) diagrams for RDBMS related projects.
 - Perform normalization for the un-normalized tables for RDBMS related projects
 - Decide the various processing systems to include distributed, client/server, online and others.
 - Perform project cost estimates using various techniques.
 - Schedule projects using both GHANTT and PERT charts.
 - Perform coding for the project.
 - Documentation requirements and prepare and evaluate systems documentation.
 - Perform various systems testing techniques/strategies to include the phases of testing.
 - Systems implementation and its key problems.
 - Generate various reports.
 - Be able to prepare and evaluate a final report.

- Brief the maintenance procedures and the role of configuration management in operations.
- To decide the future scope and further enhancement of the system.
- Plan for several appendices to be placed in support with the project report documentation.
- Work effectively as an individual or as a team member to produce correct, efficient, well organized and documented programs in a reasonable time.
- Recognize problems that are amenable to computer solutions, and knowledge of the tools necessary for solving such problems.
- Develop of the ability to assess the implications of work performed.
- Get good exposure and command in one or more application areas and on the software
- Develop quality software using the software engineering principles
- Develop of the ability to communicate effectively.

Prescribed Textbook:

Engineering MIS, DP Sharma (India Textbook)

Recommended Textbook(s):

Systems Analysis & Design; Shelly Cashman,

The Supervisor's Role

The supervisor guides the project work. The supervisor, marks the project proposal and makes sure that the group's project proposal is feasible and at the right level for both diploma and degree. During the course of the project the supervisor will advise you on executing the work and what to do in the case of difficulties.

When it comes to the report the supervisor can generally be expected to provide detailed comments on a selected draft chapter. Your supervisor will also be willing to read through a draft of the final report and provide either verbal or written feedback. Such requirements for feedback must be scheduled in advance (as part of the project plan).

The Student's Role

Complete tasks on time and to plan; ensure that the work of the group is coordinated and up to date. Part of the idea with the project is to teach you project and people management skills. Your group will meet regularly with your supervisor and as needed with any outside client. The meetings will be chaired and minuted by members of the group in rotation. The project group should also schedule their own meetings and minute them as well. The agenda should cover progress on agreed actions, new action points and specific issues to raise with your supervisor. Minutes include a record of attendance.

5. POINTS TO REMEMBER WHILE PREPARING FOR THE PROJECT

1. The **project documentation** may be about 50 to 80 pages (excluding coding). The project documentation details should not be too generic in nature. Appropriate project report documentation should be done, like, **how you have done the analysis, design, coding, use of testing techniques/strategies, etc., in respect of your project**. To be more specific, whatever the theory in respect of these topics is available in the reference books should be avoided as far as possible. **The project documentation should be in respect of your project only**. The project documentation should include the topics given below.

1. ***Table of Contents/Index with page numbering***
2. ***Introduction/Objectives***
3. ***Planning Phase***
 1. Identification of Need
 2. Preliminary Investigation
 3. Feasibility Study
 4. Project Planning
 5. Project Scheduling (PERT Chart and Gantt Chart both)
 6. Software requirement specifications (SRS)
 7. Software Engineering Paradigm applied
 8. Data models (like DFD), Control Flow diagrams, State Diagrams/Sequence diagrams, Entity Relationship Model, Class Diagrams/CRC Models/Collaboration Diagrams/Use-case Diagrams/Activity Diagrams depending upon your project requirements
4. ***System Design***
 1. Modularisation details
 2. Data integrity and constraints
 3. Database design, Procedural Design/Object Oriented Design
 4. User Interface Design
 5. Test Cases (Unit Test Cases and System Test Cases)
5. ***Coding***
 1. Complete Project Coding

2. Comments and Description of Coding segments
3. Standardization of the coding
4. Code Efficiency
5. Error handling
6. Parameters calling/passing
7. Validation checks
- 6. Testing**
 1. Testing techniques and Testing strategies used
 2. Testing Plan used
 3. Test reports for Unit Test Cases and System Test Cases
 4. Debugging and Code improvement
- 7. System Security measures (Implementation of security for the project developed)**
 1. Database/data security
 2. Creation of User profiles and access rights
- 8. Cost Estimation of the Project along with Cost Estimation Model**
- 9. Reports (sample layouts should be placed)**
- 10. Future scope and further enhancement of the Project**
- 11. Bibliography**
- 12. Appendices (if any)**
- 13. Glossary**
6. The project documentation should normally be printed with single line spacing on A4 paper. All the pages, tables and figures must be numbered. Tables and figures should contain titles.

Assessment guidelines for project evaluation

Each and every component of the project work carries its own weightage, so the student needs to concentrate on all the sections given in the project report formulation.

In this section, we have given a few general parameters as checkpoints for the assessment of any software development project. You can note these points and emphasise them during the project documentation preparation and examination. Basically, assessment will be based on the quality of your work, the technical merit of the project and the project execution. Technical merit attempts to assess the quality and depth of the intellectual effort, you have put into the project. Project execution is concerned with assessing how much work you have put in.

NO.	PROJECT PHASES	PROJECT DELIVARABLES	ALLOCATED MARKS	SUPERVISOR MARK	DUE DATE
1.	PROJECT PROPOSAL	1.1. Introduction	15%		23 AUGUST 2019
		1.2. Aim			
		1.3. Problem Definition			
		1.4. Hypothesis			
		1.5. Objectives			
		1.6. Justification			
		1.7. Expectations			
		1.8. Conclusion			
2.	PLANNING PHASE	2.1. Identification of need	25%		13 SEPTEMBER 2019
		2.2. Preliminary Investigation			
		2.3. Feasibility Study (Technical, Operational, Economical)			
		2.4. Project Planning			
		2.5. Project Scheduling (PERT Chart and Gantt Chart both)			
		2.6. Software Requirement Specification			
		2.7. Data Models			

3.	ANALYSIS PHASE	3.1 Introduction	20%		04 OCTOBER 2019
		3.2 Information Gathering methodology (Observation, participatory, Interviews)			
		3.3 Analysis of existing system			
		3.4 Data Analysis (Data Integrity & Constraints)			
		3.5 Weakness of the Current System			
		3.6 Analysis of the Proposed System (Functional Requirements)			
		3.7 Non Functional Requirements			
		3.8 Data Modeling for Proposed System			
4.	SYSTEM DESIGN	4.1 Introduction	20%		25 OCTOBER 2019

	PHASE	4.2 System Design (Description of Proposed System)			
		4.3 Architectural Design (Software Architectural Design, Hardware Architectural Design, Network Architectural Design, class diagram)			
		4.4 Physical Design			
		4.5 Database Design			
		4.6 Program Design (Program Pseudo code)			
		4.7 Interface Design (Menu Interface Design, Input Design, Output Design)			
		4.8 Security back up design (Software concern)			
5.	IMPLEMENTATION PHASE	5.1 Introduction	20%		08 NOVEMBER 2019
		5.2 Coding			
		5.3 Testing			
		5.4 System Testing (Test Case, Evaluation of the testing results)			
		5.5 Installation (Software Application Installation)			

		5.6 Maintenance Activities (Corrective, Adaptive, Perfective)		
		5.7 System Back-up		
		5.8 System Evaluation		
		5.9 Constrains		
		5.10 Recommendation		
		5.11 Conclusion		

Note: Project Documentation carries 60% of the overall project and Project presentation by individual student will carry 40% of the overall project. The presentation week will be from the 11th of November to the 15th of November 2019.