1.1 Introduction

The Final Year Project (FYP) is the culmination of students' degree program. The main purpose of this project is to encourage students to apply the knowledge acquired during their studies. It allows them to work on a substantial problem for an extended period of time, show how proficient they are in solving real world problems. It brings them a sound opportunity to demonstrate their competence as professionals and to apply what they have learnt in the other components of the degree. Besides, they get a chance to improve their technical skills, communication skills by integrating writing, presentation and learn how to work in teams. With a real-world problem at hand, they get to learn professional practice and a variety of non-technical issues such as management, finance, safety, reliability, environment and social impacts. Moreover, it provides an integrated assessment of the progress of the students toward the training they went through during their academic tenure at the college.

FYP course is different other courses because it demands independent objective formulation, planning, management and self-motivation. It is therefore essential to design fair and comprehensive guidelines for the students, supervisors and the evaluators. A structured manual and lifecycle process is therefore essential in order to help students conform to the required quality standards, outline general expectations from the supervisors and sketch assessment criteria for the evaluators. Hence, contribute as a fundamental underpinning to achieve high quality learning outcomes of the projects.

1.2 Degree Program Learning Outcomes (PLOs)

Program Learning Outcomes are the narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills and attitude that the students acquire while progressing through the program. The program must demonstrate that by the time of graduation the students have attained a certain set of knowledge, skills and behavioral traits, at least to some acceptable minimum level. Specifically, it is to be demonstrated that the students have acquired the following graduate attributes:

(i) Engineering Knowledge: An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

(ii) Problem Analysis: An ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

(iii) Design/Development of Solutions: An ability to design solutions for complex engineering problems and design systems, components or processes
that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

(iv) Investigation: An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.

(v) Modern Tool Usage: An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations.

(vi) The Engineer and Society: An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.

(vii) Environment and Sustainability: An ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.

(viii) Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

(ix) Individual and Team Work: An ability to work effectively, as an individual or in a team, on multifaceted and /or multidisciplinary settings.

(x) Communication: An ability to communicate effectively, orally as well as in writing, on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

(xi) Project Management: An ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment.

(xii) Lifelong Learning: An ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological developments.

1.3 Overview of Final Year Project

A Final Year Project is a two-semester course in which students usually of 2-3 members select a project and are supervised by a faculty member. In this course, students choose a project subject and define the objectives of the project under the supervision of a faculty member, and prepare the project proposal including: defining the statement of the problem, defining system requirements, defining different candidate solutions for

the problem of study, making feasibility study for different candidate solutions, defining the best candidate solution, defining time table schedule. Students present the final project report at the end of the semester to an evaluation a committee.

1.4 FYP milestones and evaluation stages

The FYP milestones, deliverables, evaluation stages along with their timelines is given the Table 1 and Table 2.

Table 1: Milestones & Marks Distribution

Proposal Defense (PD)	5%
o Project Proposal Document + Presentation	(Advisor 60% of PD, Co-Advisor 40% of PD)
Design Expo (DE)	10%
o DE Committee Marks	o 10%
Mid Defense (MD)	30%
o Advisor + Co-Advisor Marks (SRS)	o 15% (8% Advisor+ 7% Co-Advisor)
o KG's Marks (Presentation)	o 15%
Final Defense(FD)	45%
o KG's Marks for Presentation + Demonstration	o 20%
o Advisor's Marks (Presentation + Demonstration)	o 10%
o Advisor + Co-Advisor Marks (Report)	o 10% + 5%
Open House	10%
Total	100%

Table 2: Detailed timeline of FYP phases

Phase	Week	Duration	Semester
Project & Committee Selection	Week 09	3 Weeks	6th
Proposal Defense	Week 15	1 Week	6th
Design Expo	Week 15	1 Week	7th

Mid Defense	Week 02	1 Day	8th
Final Defense	Week 14	1 Week	8th
Final Report Submission	Week 14		8th
Open House	Week 15	1 Day	8th

1.4.1

1.4.1 Proposal Defense

The students must choose a project subject and define the objectives of the project under the supervision of a faculty member, and prepare the project proposal. The format of FYP proposal defense and evaluation forms and their rubric are given in Annex A. Also the template for FYP proposal is added in Appendix A.

1.4.2 Mid-Defense/ Design Expo

After proposal defense, next FYP activity is Mid-Defense and Design expo. Students have to present their work and progress. The format of mid defense and evaluation forms and their rubric are given in Annex B. Students also have to submit the Software Requirement Specifications (SRS) document at the time of mid defense. Template for SRS and evaluation rubrics are attached in Annex B.

1.4.3 Final Defense

Final Defense is the final activity for FYP students, which is evaluated by Advisor, Coadvisor and evaluation committee. The format of FYP Final defense and evaluation forms and their rubric are given in Annex C. Also the template for FYP final report submission is attached in Annex C.

1.4.4 Open House

Open house is arranged for final exhibition of final year projects. Most of the people from industry visits FYP stalls and judges are allocated to each FYP for evaluation.

1.5 Guidelines for Project Supervision

Following rules should be taken under considerations during project supervision.

a) Each group will work under the supervision of an assigned supervisor throughout the final year (term 7 & 8).

b) Students are recommended to meet with their supervisor at least once a week. The students are expected to discuss their progress with their supervisors in these weekly meetings. Depending on students' requirements and the supervisor's availability, supervisors may also arrange additional meetings (physical/online) as requested.

c) Supervisors might also arrange communication with student groups via email or other means for the purpose of advising project groups.

d) It is the responsibility of the supervisor to inform his students with this handbook and all the included instructions and regulations.

1.5.1 Tasks expected from supervisors

During these meetings supervisors are expected to:

□ To provide FYP Outlines / Objectives	Orientation
□ Discuss project expectations and the plan with the group	
□ To share previous practice experience, research, skills and expertise	
□ Assign /Recommend related literature	Provide Knowledge
□ Give training sessions on the respective research area and tell them what they need to know	
□ To clarify students queries effectively as needed	
□ To make students aware of professional ethics and standards	
□ To advise students on how to deal effectively as a team while working under pressure, remaining optimistic and persistent, and how to meet milestone deadlines	
□ To monitor the project progress on a weekly/fortnightly basis	Assess
□ To ensure students are completing outlined project deliverables	
□ To grade students work (at individual/group level) at the end of each semester	

1.5.2 Project Development Life Cycle:

The supervisors will guide the group through different steps in the software engineering life cycle and describe, discuss, assign, receive and review the corresponding outcomes/artifacts at the end of each step as described in Figure 1.

Inception	• Problem Statement
Feasibility Study	• Feasibility Report
Requirement Gathering	• Survey report • SRS
System Modeling	• System Models • ERD / DFD /DB Schema
System Design	• SDS
Implementation	• Code /Working System
Testing	• Test cases / Test Results
Deployment	• Deliverable product / Client site installation
System Acceptance	• Acceptance certificate from client

Figure 1: Software Engineering Lifecycle and Respective artifacts

During the Project Proposal, students undertake the initial phases of project planning, selection, analysis and designing phases. In the Project Implementation, students proceed with the implementation phase of their proposed project. As part of SDLC, the supervisors should guide the students to follow, but not limited to, the following best-practices:

a) Having a life cycle or system development methodology
b) Ensure proper research and background knowledge is acquainted
c) Feasibility study is conducted on the proposed project
d) Scope of the project is precise and crystal clear
e) Generating and comparing alternative designs to determine best match for the requirements
f) Roles & responsibilities of individual student working within the group is clear and accepted
g) Able to apply project resources as per the approved project plan
h) Track and report any issues and risks in completing assigned tasks
i) Both logical and physical design aspects are analyzed
j) Proper programming standards are maintained during the development of the project
k) Auto or Manual Test Cases are implemented and executed
l) Source control with versioning tools are used for developing as a team
m) Documenting required deliverables using industry standards

n) Participating in Seminars, Events, Publications and Workshops relevant to the project

1.6 Team Leadership:

Every graduation project group is assigned with a team leader who is essentially a crossfunctional key player working within the project group. It is extremely important to get the right student within each group fit for the role of team leader which is crucial for the success of any project. Team leader should work very closely with the supervisor with the following, but not limited to, the primary tasks:

a) Provide input on the performance of team members
b) Resolve any conflicts within group members and maintain healthy group dynamics
c) Inform supervisor of any task delays and meeting hours change requests from students
d) Ensure rest of the group understands their roles and responsibilities on the assigned tasks;
e) Coordinate with internal or external project stakeholders on behalf of the team
f) Provide weekly status report – completed and signed by each team member as per the schedule

Note: During the course of the project, if the supervisor finds team leader is not performing as per the above expectations, the supervisors can request for the replacement of team leader with an alternative group member fit for this role.

1.7 Students Responsibility:

During the Final Year Project, students are responsible for the following:

a.	Agree with their assigned supervisors on the topic
b.	Perform weekly tasks, assigned by the supervisor (or distributed by the team leader)
c.	Discuss problems and seek advice from the supervisor in order to accomplish the assign tasks.
d.	Provide supervisor weekly status reports and get his/her feedback
e.	Apply recommendations to refine the previous task
f.	Finalize the project proposal and implementation, incorporating all the feedbacks and comments provided by the supervisor and evaluators.
g.	Conduct presentation at the end of each semester and defend project to the evaluation panel

1.8 Late submissions:

It is the responsibility of each group to ensure they complete the milestones of each semester and submit deliverables by the cutoff submission date. No project will be

accepted after the cutoff date and necessary actions will be taken as per the supervisor and the evaluation committee decision policy.

1.9 Plagiarism:

Each project must be the original work of student groups. At the end of each semester, students will be required to present their project proposal and implementation outcomes as per the provided deliverables guidelines and the original work undertaken throughout each semester.

In the project report, for instance, if students have taken ideas or referencing other work as part of the proposed project, then, it must be cited and reference should be clearly specified. Same is the case while implementing the proposed solution. For instance, if students are developing project using 3rd party tools and libraries, it must be referenced and relevant comments and notes must be highlighted and will not be regarded as part of the original work of student groups. Hence, it is extremely important to note that it is the responsibility of students to ensure they are not plagiarizing knowingly or unknowingly.

In order to prevent plagiarism related issues, students are encouraged to get familiar with plagiarism specified in [1] and general referencing guidelines specified in [2].

In order to prevent plagiarism related issues during implementation, students are strongly encouraged to get familiar with software plagiarism specified in [3].
If students are found plagiarizing either in project proposal report or in the project implementation solution/code, immediate strict action will be taken as per the university policy.

FYP Proposal Document Template

TITLE

Final Year Project Proposal

by

Names

Advisor:

Co-Advisor:

School of Electrical Engineering and Computer Science

National University of Sciences and Technology

Islamabad, Pakistan

(2016)

ABSTRACT

Abstract of the proposal

INTRODUCTION

Discuss the opening perspective of the problem area, the challenge in that area and refine the challenge into a concise

PROBLEM STATEMENT

Unmet need or Problem

What is the unmet need or problem the FYP is aiming to solve. How significant is the problem? Quantify as much as possible.
Incase of a research problem, show the significance of the unsolved problem.
Who needs it

List the type of customers who want a solution to the problem. For each type of customers indicate the potential market size. Incase of a research problem, identify where this research will be used?

LITERATURE REVIEW

What has been done by others to solve the problem? What solutions are already present in the market? what are their disadvantages?
In case of a research problem, literature review of the state-of-the-art should be included.

PROJECT OVERIEW/GOAL

Discuss the overview/goal of the project and highlight the proposed solution. Give your value proposition. How is your solution going to be different and better than others?

Students must describe to maximum detail the final project output, its expected packaging, and hardware and software components.

In case of a research problem, how the proposed research solution is expected to be better than the state-of-the-art?

PROJECT DEVELOPMENT METHODLOGY / ARCHITECTURE

Distribute the project goals into smaller objectives/modules and highlight deliverables for each objective.
Explain the modules of project through a system level block diagram.

Students may also mention tools, technologies and suitability of the method(s) to be employed with justification.

In case of a research problem, show the few approaches that will be investigated in the project?

PROJECT MILESTONES AND DELIVERABLES

Clear milestones should be defined at the start of the project which includes a Gantt chart in the project management document

WORK DIVISION

Clear work division among group members to be shown

COSTING

Cost breakdown of the project to be shown, estimating the total cost of the final product.

REFERENCES

Any material/information referred from research papers, books or/and websites should be acknowledged under this heading.

The students are recommended to use any biblography management software to keep track of references. e.g. EndNote, Mendlay, Jabref

FYP Proposal Defense Evaluation Form and Rubrics

Criteria	1	2	3	4	5
R1 Subject Knowledge	Student has no knowledge of both problem and solution. Cannot answer basic questions.	Student has no or very less knowledge of both problem and solution. Cannot answer questions.	Student is uncomfortable with information. Seems novice and can answer basic questions only.	Student has competent knowledge and is at ease with information. Can answer questions but without rationalization and explanation.	Student has presented full knowledge of both problem and solution. Answers to questions are strengthen by rationalization and explanation
R2 Organization and Content of Presentation	Student is clueless about the content of his presentation.	Information is arranged in confused and unstructured way. Key points are not covered. The contents are hard to understand and interpret.	Information articulated clearly but it is difficult to follow the presentation. All key points are covered but no use of charts, graphs, figures etc., to explain salient points.	Information articulated clearly and the flow is reasonable All key points are covered but limited use of charts, graphs, figures etc., to explain salient points.	Information articulated clearly and is organized in a structured way with logical flow between parts. All key points are covered. Enhances presentation and keeps interest by effective use of charts, graphs, figures etc., to explain salient points.
R3 Problem Statement	Problem statement is not stated at all or vaguely stated Description of unmet need or problem is missing	Problem statement is stated but not entirely clear. Seems novice and can answer basic questions only.	Problem statement is stated but lacks necessary justification in light of the literature review.	Problem statement is stated and covers necessary justification with reference to the literature review. Details of the unmet need or problem the FYP is aiming to solve are clear	Problem statement is stated and covers sufficient justification. New reader can clearly understand its value and context. Details of unmet needs are there. Potential customers have been identified
R4 Literature Review	Literature Review is not written or written in a vague form	Ligature Review is written in an ordinary way. The review material i.e. research papers or web material is not at all clear to a reader who is unfamiliar.	Literature review provides a reasonable description of the project background and its significance but can be improved. Number of research papers/ web material needs to be added more	The review provides a good background and details of the literature. However, it is not written in scientific writing standards for review.	Literature review is excellently written according to the scientific writing standards and covers maximum of the research papers/web material related to project
R5 Project Overview,	The approach that will be taken to solve	Some aspects of the solution are discussed	The methods, approaches, tools, techniques,	The methods, approaches, tools, techniques,	The methods, approaches, tools, techniques, algorithms, or other

Methodology	the problem is not discussed.	briefly but much of the description is left out.	algorithms, or other aspects of the solution are discussed but not is a convincing manner. Much is left to the readers' imagination.	algorithms, or other aspects of the solution are sufficiently discussed.	aspects of the solution are sufficiently discussed with sufficient details and supporting figures. Work division between group members is clearly defined
R6 Language and Grammar	A lot of spelling and grammatical mistakes in the report Writing is not understandable.	Frequent spellings and grammatical errors that impede the reading flow. Writing is in need of significant editing and improvement	Occasional spellings and grammatical errors Writing is acceptable but not entirely clear.	Occasional spellings and grammatical errors that have only minor impact on flow of reading. Writing is overall clear. Organization is good. Content is supported by good number of figures and tables.	Almost no spelling or grammatical mistake. Writing is easy to read. Excellent organization. Writing is concise yet all necessary content is included. Figures and tables support content.
R7 Delivery & Presentation Skills	Presentation was not clear at all. Language was not appropriate	Presenter occasionally spoke clearly. Holds little to no eye contact.	Presenter spoke clearly. Language was generally clear but mostly reading from notes.	Presenter spoke very clearly. Language was generally clear and delivery was fluent. Consistent use of direct eye contact with audience.	Presenter spoke clearly and at a good pace to ensure audience comprehension. Language was used effectively and delivery was fluent and expressive.
R8 Work Division	Work division among group members is not shown	Work Division among group members is not appropriate.	Work division is shown but more clarity is needed	Work division is shown.	Clear work division among group members is shown.

FYP Proposal Defence Evaluation Form

Project Title _____

Student Names _____

PLO	S No	Description	Weight	Performance (1 – 5)	Marks
PLO-1: Engineering Knowledge	R1	Subject Knowledge	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R2	Organization and Content of Presentation	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-6: The Engineer & Society	R3	Problem Statement	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-2: Problem Analysis	R4	Literature Review	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-3: Design/ Development of Solution	R5	Project Overview, Methodology	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R6	Language and Grammar	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R7	Delivery & Presentation Skills	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-9: Individual & Team Work	R8	Work Division	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	

Evaluator Name: _____ Signature with Date: _____

Comments ____

____

FYP SRS Document Template

National University of Sciences & Technology (NUST)
School of Electrical Engineering and Computer Science (SEECS)
Department of Computing

Final Year Project

Software Requirements Specification

For

[Name of System]

Version [xx]

[Team Members]

[Advisor]

Date of preparation

Table of Contents

Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

<Identify the product whose software requirements are specified in this document, including the revision or release number. Describe the scope of the product that is covered by this SRS, particularly if this SRS describes only part of the system or a single subsystem.>

1.2 Document Conventions

<Describe any standards or typographical conventions that were followed when writing this SRS, such as fonts or highlighting that have special significance. For example, state whether priorities for higher-level requirements are assumed to be inherited by detailed requirements, or whether every requirement statement is to have its own priority.>

1.3 Intended Audience and Reading Suggestions

<Describe the different types of reader that the document is intended for, such as developers, project managers, marketing staff, users, testers, and documentation writers. Describe what the rest of this SRS contains and how it is organized. Suggest a sequence for reading the document, beginning with the overview sections and proceeding through the sections that are most pertinent to each reader type.>

1.4 Product Scope

<Provide a short description of the software being specified and its purpose, including relevant benefits, objectives, and goals. Relate the software to corporate goals or business strategies. If a separate vision and scope document is available, refer to it rather than duplicating its contents here.>

1.5 References

<List any other documents or Web addresses to which this SRS refers. These may include user interface style guides, contracts, standards, system requirements specifications, use case documents, or a vision and scope document. Provide enough information so that the reader could access a copy of each reference, including title, author, version number, date, and source or location.>

2. Overall Description

2.1 Product Perspective

<Describe the context and origin of the product being specified in this SRS. For example, state whether this product is a follow-on member of a product family, a replacement for certain existing systems, or a new, self-contained product. If the SRS defines a component of a larger system, relate the requirements of the larger system to the functionality of this software and identify interfaces between the two. A simple diagram that shows the major components of the overall system, subsystem interconnections, and external interfaces can be helpful.>

2.2 Product Functions

<Summarize the major functions the product must perform or must let the user perform. Details will be provided in Section 3, so only a high level summary (such as a bullet list) is needed here. Organize the functions to make them understandable to any reader of the SRS. A picture of the major groups of related requirements and how they relate, such as a top level data flow diagram or object class diagram, is often effective.>

2.3 User Classes and Characteristics

<Identify the various user classes that you anticipate will use this product. User classes may be differentiated based on frequency of use, subset of product functions used, technical expertise, security or privilege levels, educational level, or experience. Describe the pertinent characteristics of each user class. Certain requirements may pertain only to certain user classes. Distinguish the most important user classes for this product from those who are less important to satisfy.>

2.4 Operating Environment

<Describe the environment in which the software will operate, including the hardware platform, operating system and versions, and any other software components or applications with which it must peacefully coexist.>

2.5 Design and Implementation Constraints

<Describe any items or issues that will limit the options available to the developers. These might include: corporate or regulatory policies; hardware limitations (timing requirements, memory requirements); interfaces to other applications; specific technologies, tools, and databases to be used; parallel operations; language requirements; communications protocols; security considerations; design conventions or programming standards (for example, if the customer's organization will be responsible for maintaining the delivered software).>

2.6 User Documentation

<List the user documentation components (such as user manuals, on-line help, and tutorials) that will be delivered along with the software. Identify any known user documentation delivery formats or standards.>

2.7 Assumptions and Dependencies

<List any assumed factors (as opposed to known facts) that could affect the requirements stated in the SRS. These could include third-party or commercial components that you plan to use, issues around the development or operating environment, or constraints. The project could be affected if these assumptions are incorrect, are not shared, or change. Also identify any dependencies the project has on external factors, such as software components that you intend to reuse from another project, unless they are already documented elsewhere (for example, in the vision and scope document or the project plan).>

3. External Interface Requirements

3.1 User Interfaces

<Describe the logical characteristics of each interface between the software product and the users. This may include sample screen images, any GUI standards or product family style guides that are to be followed, screen layout constraints, standard buttons and functions (e.g., help) that will appear on every screen, keyboard shortcuts, error message display standards, and so on. Define the software components for which a user interface is needed. Details of the user interface design should be documented in a separate user interface specification.>

3.2 Hardware Interfaces

<Describe the logical and physical characteristics of each interface between the software product and the hardware components of the system. This may include the supported device types, the nature of the data and control interactions between the software and the hardware, and communication protocols to be used.>

3.3 Software Interfaces

<Describe the connections between this product and other specific software components (name and version), including databases, operating systems, tools, libraries, and integrated commercial components. Identify the data items or messages coming into the system and going out and describe the purpose of each. Describe the services needed and the nature of communications. Refer to documents that describe detailed application programming interface protocols. Identify data that will be shared across software components. If the data sharing mechanism must be implemented in a specific way (for example, use of a global data area in a multitasking operating system), specify this as an implementation constraint.>

3.4 Communications Interfaces

<Describe the requirements associated with any communications functions required by this product, including e-mail, web browser, network server communications protocols, electronic forms, and so on. Define any pertinent message formatting. Identify any communication standards that will be used, such as FTP or HTTP. Specify any communication security or encryption issues, data transfer rates, and synchronization mechanisms.>

4. System Features

<This template illustrates organizing the functional requirements for the product by system features, the major services provided by the product. You may prefer to organize this section by use case, mode of operation, user class, object class, functional hierarchy, or combinations of these, whatever makes the most logical sense for your product.>

4.1 System Feature 1

<Don't really say "System Feature 1." State the feature name in just a few words.>

4.1.1 Description and Priority

<Provide a short description of the feature and indicate whether it is of High, Medium, or Low priority. You could also include specific priority component

ratings, such as benefit, penalty, cost, and risk (each rated on a relative scale from a low of 1 to a high of 9).>

4.1.2 Stimulus/Response Sequences

<List the sequences of user actions and system responses that stimulate the behavior defined for this feature. These will correspond to the dialog elements associated with use cases.>

4.1.3 Functional Requirements

<Itemize the detailed functional requirements associated with this feature. These are the software capabilities that must be present in order for the user to carry out the services provided by the feature, or to execute the use case. Include how the product should respond to anticipated error conditions or invalid inputs. Requirements should be concise, complete, unambiguous, verifiable, and necessary. Use "TBD" as a placeholder to indicate when necessary information is not yet available.>

<Each requirement should be uniquely identified with a sequence number or a meaningful tag of some kind.>

REQ-1:
REQ-2:

4.2 System Feature 2 (and so on)

1. Other Nonfunctional Requirements

5.1 Performance Requirements

<If there are performance requirements for the product under various circumstances, state them here and explain their rationale, to help the developers understand the intent and make suitable design choices. Specify the timing relationships for real time systems. Make such requirements as specific as possible. You may need to state performance requirements for individual functional requirements or features.>

5.2 Safety Requirements

<Specify those requirements that are concerned with possible loss, damage, or harm that could result from the use of the product. Define any safeguards or actions that must be taken, as well as actions that must be prevented. Refer to any external policies or regulations that state safety issues that affect the product's design or use. Define any safety certifications that must be satisfied.>

5.3 Security Requirements

<Specify any requirements regarding security or privacy issues surrounding use of the product or protection of the data used or created by the product. Define any user identity authentication requirements. Refer to any external policies or regulations containing security issues that affect the product. Define any security or privacy certifications that must be satisfied.>

5.4 Software Quality Attributes

<Specify any additional quality characteristics for the product that will be important to either the customers or the developers. Some to consider are: adaptability, availability, correctness, flexibility, interoperability, maintainability, portability, reliability, reusability, robustness, testability, and usability. Write these to be specific, quantitative, and verifiable when possible. At the least, clarify the relative preferences for various attributes, such as ease of use over ease of learning.>

5.5 Business Rules

<List any operating principles about the product, such as which individuals or roles can perform which functions under specific circumstances. These are not functional requirements in themselves, but they may imply certain functional requirements to enforce the rules.>

2. Other Requirements

<Define any other requirements not covered elsewhere in the SRS. This might include database requirements, internationalization requirements, legal requirements, reuse objectives for the project, and so on. Add any new sections that are pertinent to the project.>

Appendix A: Glossary

<Define all the terms necessary to properly interpret the SRS, including acronyms and abbreviations. You may wish to build a separate glossary that spans multiple projects or the entire organization, and just include terms specific to a single project in each SRS.>

Appendix B: To Be Determined List

<Collect a numbered list of the TBD (to be determined) references that remain in the SRS so they can be tracked to closure.>

Rubrics for Evaluation of Software Requirements Specification (SRS) Document of FYP

Criteria	1	2	3	4	5
R1 Product Scope	Not written	Product Scope is identified and written in vague way and is it very hard to understand	Product scope is identified and written in ordinary way and conveys the massage	Product scope is identified and written in good way and it clearly defines the scope, however it can be improved to achieve excellency	Product scope is identified and written in excellent and concise way. No further improvements are required
R2 Overall Description	Not written	Overall description is written in vague way and is it missing any of the two required points i.e. Product perspective and design constraints	Overall description is written in ordinary way and defines the required points i.e. Product perspective and design constraints in normal way. Product perspective is not formulated and analyzed accurately	Overall description is written in good way. Product perspective does not lack any required information. All the necessary design constraints are well derived and formulated	Overall description is written in excellent and concise way. No further improvements are required in this regard
R3 External Interface Requirements	Not written	Software, user, hardware and communication interface requirements are not satisfactory. Either all of them are not properly defined or mentioned in vague way	These external interface requirements are satisfactory. They have been defined in ordinary way with a lot of improvements required to meet the criteria	All these external requirements are described in good way. All required information is properly conveyed. However, still there is room for improvements	Overall external interface requirements are written in excellent and concise way. No further improvements are required in this regard
R4 Functional Requirements	Not written	System features which covers the functional requirements of the product are not satisfactory. Very difficult to understand. Did not cover all the functional	All the identified functional requirements are satisfactory; however they have been described with ordinary details. However, there is repetition in these	All the functional requirements are identified and written in good way; including the important details. There is no repetition in these requirements. However these can be further improved by removing the inconsistencies and	Functional requirements have been covered in excellent and clear way with all the needed details. There exists no repetition. All the ambiguities and inconsistencies have been

		requirements of the system. They have been defined in vague way	requirements and includes ambiguities. There are many errors in UML notations.	ambiguities. There are very few UML notation issues	removed. All the UML notations have been used in correct way
R5 Non-Functional Requirements	Not written	Non-functional requirements of the system have not been covered in proper way. There are a lot of deficiencies and does not achieve the basic level of satisfaction. Very difficult to understand	The non-functional requirements are identified and described in satisfactory way. . However, there is repetition in these requirements and includes ambiguities. There is no proper categorization of various types of non-functional requirements	Non-functional requirements are identified and classified properly and written in a good way. Performance, Reliability, Security, Efficiency, Robustness and maintainability etc. are clearly defined. However, there is still room for improvement.	Non-Functional requirements have been covered in excellent and clear way with all the needed details. There exists no repetition. All the ambiguities and inconsistencies have been removed. They are well-organized, prioritized and written in testable form
R6 Grammar, and spelling	Very Serious mistakes in grammar and language. There are a lot of spelling mistakes and typos	Serious mistakes in grammar and spelling.	Some grammar and spelling mistakes. Also not appropriate wording at some places.	Very minor grammar, spelling and language issues. The improvements are possible by using more appropriate wording	Excellent grammar used. No spelling mistakes at all
R7 Expression Tone	Very hard to understand. Tone not at all appropriate	Hard to follow or poor word choices. Tone also non-professional	Easy to read and understandable. However, still the tone is not professional	Easy to read and understandable. Good expression tone is used. Professional tone is used. However, there is room for improvements	Pleasure to read. Tone is concise, clear and highly professional. No further improvements are needed.

SRS Evaluation Form

Project Title _____

Student Names _____

PLO	S No	Description	Weight	Performance (1 – 5)	Marks
PLO-2: Problem Analysis	R1	Product Scoop	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-2: Problem Analysis	R2	Overall Description	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-3: Design/ Development of Solution	R3	External Interface Requirements	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-4: Investigation	R4	Functional Requirements	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-4: Investigation	R5	Non-Functional Requirements	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R6	Grammar, and spelling	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R7	Expression Tone	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	

Evaluator Name: _____ Signature with Date: _____

Comments _____

Annex C

FYP Design Expo Poster Template

Title of your Poster Presentation

Student Name(s), Advisor, co-advisor name

Abstract

This section provides an overview of your project so that the people reading your poster know what you did.

Heading 2 (Background and Project Objectives)

This section gives the background of the problem and current solutions (literature review). The reader should be able to understand the contributions of the project and why you have undertaken it. What unmet need or problem the project solves. Use combination of figures/graphics and text

Heading 3 (Research Methods / Development methodology)

This section describes the method and approach you have taken to tackle the problem. Use figures/graphics to help the reader.

Heading 4 (Results)

Be brief and include only the most important findings and results

Use a combination of text and graphics.

All figures must be accompanied by captions

Heading 5 (Conclusions and Discussion)

Provide a succinct summary of all the essential results

Give recommendations for follow-up work

References

Rubrics for Evaluation of FYP Design Expo Poster

Criteria	1	2	3	4	5
R1 Overall Appearance RULE: Use a light background color, solid non-gradient fill pattern; 2 or 3 font colors; dark text on light background best. White Space: Don't create large, monolithic blocks of text Text / Graphics Balance:	Cluttered or sloppy appearance. Gives the impression of a solid mass of text & graphics, or scattered and disconnected pieces. Impression of solid mass of text and graphics Too much text. An overwhelming impression of text only. OR Not enough text. Cannot understand what the graphics are supposed to	In between	Pleasant to look at. Pleasing use of colors, text, and graphics. Some separation between sections. Balanced text & graphics are evenly dispersed in the poster. But there is not enough text to explain graphics.	In between	Very pleasing to look at. Particularly nice colors & graphics. WINNER: An effective visual display of data… an "illustrated abstract." Sections of the poster are separated from one another Text & graphics are evenly dispersed in the poster. Enough text used to explain the graphics.
R2 Organization & Flow RULE: Use headings in contrasting color; use 3 or 4 column format for flow.	Cannot figure out how to move through poster.	In between	Implicit flow used by making headings stand out (Methods, etc)	In between	Explicit numbering used or columns used to indicate logical flow (top to bottom, then L to R)
R3 Research Objective / Project Objectives RULE: Tell readers why your work matters!!	Can't find.	In between	Present, but not explicit. Buried at end of "Introduction" or "Background."	In between	Explicit. This includes headings of "Objectives", "Aims", "Goals", etc.

R4 Research Method / Development Methodology	Cannot figure out	In between	Partial or incomplete. Not enough information to comprehend method and	In between	Complete. This includes design and development; tools

RULE: Tell reader about the design and development; tools technologies and methodologies used in project development			main variables in the study, especially the outcome variable.		technologies and methodologies used in project development
R5 Results RULE: Share just the main results relevant to the research objectives/aims.	Can't find	In between	Present, but not explicit. May be embedded in monolithic blocks of text.	In between	Explicitly labeled. Uses heading, e.g. "Main Points", "Conclusions", "Results"
R6 Discussion/Conclusion /Recommendation RULE: Interpret findings, summarize and recommend, what's next…	None	In between	Present, but not explicit. A summary is given under the "Conclusion." No "Discussion" or "Implication."	In between	Explicitly labeled. "Discussion", "Conclusions", and "Implications" heading is used and stands out.

FYP Design Expo Poster Evaluation Form

Project Title _____

Student Names _____

PLO	S No	Description	Weight	Performance (1 – 5)	Marks
PLO-10: Communication	R1	Overall Appearance	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R2	Organization & Flow	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R3	Research Objective / Project Objectives	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R4	Research Method / Development Methodology	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R5	Results	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R6	Discussion/Conclusion /Recommendation	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	

Evaluator Name: _____ Signature: _____

Comments _____

_____

Rubrics for Evaluation of FYP Mid Defence Presentation

Criteria	1	2	3	4	5

R1 Analysis and approach	Unable to plan and set objectives for the realization of the project. Correct approach to solve the project is not followed	In between	Adequate analysis of the project. Objectives have been set, but strategies to follow are not clearly stated. Approach taken to solve the problem is satisfactory.	In between	Complete analysis of the project has been done. Objectives have been set. Strategies to follow have been defined. Approach taken to solve the problem has been chosen after through analysis.
R2 Novelty and Creativity	Description of unmet need or problem the project caters to is missing. The proposed solution is not novel. The project appears trivial.	In between	Details of the project novelty are briefly discussed. The novelty of the proposed solution is marginal.	In between	Details of unmet needs the project caters to are there. Potential customers have been identified. The proposed solution is novel The project solves complex engineering problem. The project can be included in the startup stream
R3 Subject Knowledge	Student has no knowledge of both problem and solution. Cannot answer basic questions.	In between	Student is uncomfortable with information. Seems novice and can answer basic questions only.	In between	Student has presented full knowledge of both problem and solution. Answers to questions are strengthen by rationalization and explanation
R4 Timeline and Implementation Progress	Timeline as defined in the project proposal is not followed. Milestones have not been achieved.	In between	Timeline as defined in the project proposal is followed for the most part. Some of the milestones have been achieved	In between	All milestones are completed according to the timeline defined in project proposal
R5 Team work	Only one member appears to be actively working on the project.	In between	Not all members have contributed to the project. Work division is not clearly mentioned.	In between	All members contributed. Work division clearly mentioned

FYP Mid Defence Evaluation Form

Project Title _____

Student Names _____

PLO	S No	Description	Weight	Performance (1 – 5)	Marks
PLO-4: Investigation	R1	Analysis and Approach	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-12: Lifelong Learning	R2	Novelty and Creativity	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-1: Engineering Knowledge	R3	Subject Knowledge	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-11: Project Management	R4	Timeline	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-9: Individual & Team Work	R5	Team work	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
		Understanding of the domain & Quality of work completed uptil now?			
		Implementation Progress: Has the team achieved the milestones uptil the middefense?			

Comments _____

_____

Signature_____ Date_____

Annex-D

FYP Final Report Template

TITLE OF THE PROJECT

Final Year Project Report

by

Names

In Partial Fulfillment

Of the Requirements for the degree

Bachelors of Engineering in Software Engineering (BESE)

School of Electrical Engineering and Computer Science

National University of Sciences and Technology

Islamabad, Pakistan

(2016)

DECLARATION

We hereby declare that this project report entitled “TITLE” submitted to the “DEPARTMENT NAME”, is a record of an original work done by us under the guidance of Supervisor “NAME” and that no part has been plagiarized without citations. Also, this

project work is submitted in the partial fulfillment of the requirements for the degree of Bachelor of Computer Science.

Tram Members	Signature
Name	_____
Name	_____
Name	_____
Name	_____
Name	_____

Supervisor: Supervisor Name	Signature _____

Date:

_____

Place:

_____

DEDICATION

ACKNOWLEDGEMENTS

TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

Include a brief summary of the problem statement, challenges, proposed solution, approaches, scope, and comparison with existing systems/evaluation methods, conclusion and future directions. Recommend length is 1 page maximum. Abstract must be selfexplanatory and should not include any references or short hand notations in the abstract.

Chapter 1

INTRODUCTION

Introduction is mostly written for non-specialists so that they can get an overview of the project without technical details. It should provide a brief overview of the project aims and structure of the solution. It should also specify what unmet need or problem the FYP caters for and who needs it.

At the end of chapter, provide a summary of the report organization, chapter outlining what has been covered in this chapter and explain what comes in the following chapters.

1.1 GENERAL FORMAL OF THESIS

Following is the generic format for the final documentation.

1. Introduction
2. Literature Review
3. Problem Definition
4. Methodology/Solution Statement
5. Detailed Design and Architecture
6. Implementation and Testing
7. Results and Discussion
8. Conclusion and Future Work
9. References
10. Appendices (if any)

1.2 STYLES

1.2.1 Typeface

Space of the text should be 1.5, Font. 12 Times New Roman (TNR), text must be justified

The first line of the paragraph should be indented and single line space be given between paragraphs.

1.2.2 Margins

Left 1.5 inches

Right, Top, Lower 1.2 inches

1.2.3 Headings

Chapter Number 16 TNR (Italics, Bold, Justified to the right, first letter in capital i.e. “C”)

Chapter Heading 16 TNR (All capital, bold, adjusted in the center)

The following headings should all be left aligned and text should begin from the next line with indentation.

First Level Heading 14 TNR (All capital, bold)

Second Level Heading 12 TNR (Bold, First letter of each main word in capital) Third Level Heading 12 TNR (Bold, Only first letter of first word in capital)

1.3 TABLES AND FIGURES

Every table must bear a title and table number which should be written on the top of the table (Table 1: Abc)

Titles of the figures should be written under the figures, along with the figure number (Figure 1: Xyz)

1.4 REFERENCES

All of the references should be alphabetically ordered

1.4.1 Journals

Author Name/s (Surname, initial), year of publication in-parenthesis, title of the article, name of the journal, volume number, issue number (in parenthesis) followed by a colon and page numbers

1.4.2 Books

Author Name/s (Surname, initial), year of publication in-parenthesis, title of the book, publisher’s name, place of publication, page numbers

1.4.3 Reference from Internet

Name of the Author/s (If Known), Title of the topic followed by complete web address

LITERATURE REVIEW

Provide an overview to the projects background knowledge without too much in detail (stick to the scope of the project). The background can refer to previous work referenced from journals, articles, newspapers, or any academic literature providing evidence that the proposed problem is significant and real problem worth solving.

If available, provide closely related work done within the project scope and the challenges or defects identified which can be considered as part of the new solution.

Describe why you worked on this project in light of the literature review?

Chapter 3

PROBLEM DEFINITION

Chapter 4

METHODOLOGY

The methods, approaches, tools, techniques, algorithms, or other aspects of the solution are sufficiently discussed with sufficient details and supporting figures.

Chapter 5

DETAILED DESIGN AND ARCHITECTURE

5.1 SYSTEM ARCHIECTURE

This section should provide a high-level overview of how the functionality and responsibilities of the system were partitioned and then assigned to subsystems or components.

Don't go into too much detail about the individual components themselves (there is a subsequent section for detailed component descriptions). The main purpose here is to gain a general understanding of how and why the system was decomposed, and how the individual parts work together to provide the desired functionality.

At the top-most level, describe the major responsibilities that the software must undertake and the various roles that the system (or portions of the system) must play. Describe how the system was broken down into its components/subsystems (identifying each top-level component/subsystem and the roles/responsibilities assigned to it). Describe how the higher-level components collaborate with each other in order to achieve the required results. Don't forget to provide some sort of rationale for choosing this particular decomposition of the system (perhaps discussing other proposed decompositions and why they were rejected). Feel free to make use of design patterns, either in describing parts of the architecture (in pattern format), or for referring to elements of the architecture that employ them.

If there are any diagrams, models, flowcharts, documented scenarios or use-cases of the system behavior and/or structure, they may be included here (unless you feel they are complex enough to merit being placed in the Detailed System Design section). Diagrams that describe a particular component or subsystem should be included within the particular subsection that describes that component or subsystem.

5.1.1 Architecture Design Approach

Describe the architectural design approach.

5.1.2 Architecture Design

Provide and describe a figure that depicts the overall system architecture. Develop a modular program structure and explain the relationships between the modules to achieve the complete functionality of the system. This is a high level overview of how responsibilities of the system were partitioned and then assigned to subsystems. Identify each high level subsystem and the roles or responsibilities assigned to it. Describe how these subsystems collaborate with each other in order to achieve the desired functionality. Don’t go into too much detail about the individual subsystems. The main purpose is to gain a general understanding of how and why the system was decomposed, and how the individual parts work together. Provide a diagram showing the major subsystems and data repositories and their interconnections. Describe the diagram if required.

5.1.3 Subsystem Architecture

Provide a decomposition of the subsystems in the architectural design. Supplement with text as needed. You may choose to give a functional description or an object oriented description.

For a functional description, put top level data flow diagram (DFD) and structural decomposition diagrams. For an OO description, put subsystem model, object diagrams, generalization hierarchy diagram(s) (if any), aggregation hierarchy diagram(s) (if any), interface specifications, and sequence diagrams here.

5.2 DETAILED SYSTEM DESING

Most components described in the System Architecture section will require a more detailed discussion. Other lower-level components and subcomponents may need to be described as well. Each subsection of this section will refer to or contain a detailed description of a system software component. The discussion provided should cover the following software component attributes:

5.2.1 Classification

The kind of component, such as a subsystem, module, class, package, function, file, etc. ....

5.2.2 Definition

The specific purpose and semantic meaning of the component. This may need to refer back to the requirements specification.

5.2.3 Responsibilities

The primary responsibilities and/or behavior of this component. What does this component accomplish? What roles does it play? What kinds of services does it provide to its clients? For some components, this may need to refer back to the requirements specification.

5.2.4 Constraints

Any relevant assumptions, limitations, or constraints for this component. This should include constraints on timing, storage, or component state, and might include rules for interacting with this component (encompassing preconditions, post conditions, invariants, other constraints on input or output values and local or global values, data formats and data access, synchronization, exceptions, etc.)

5.2.5 Composition

A description of the use and meaning of the subcomponents which are a part of this component.

5.2.6 Uses/Interactions

Description of component collaboration with other components. What other components is this entity used by? What other components does this entity use (this would include any side-effects this entity might have on other parts of the system)? This concerns the method of interaction as well as the interaction itself. Object-oriented designs should include a description of any known or anticipated subclasses, super classes, and meta classes.

5.2.7 Resources

A description of any and all resources that are managed, affected, or needed by this entity. Resources are entities external to the design such as memory, processors, printers, databases, or a software library. This should include a discussion of any possible race conditions and/or deadlock situations, and how they might be resolved.

5.2.8 Processing

A description of precisely how this components goes about performing the duties necessary to fulfill its responsibilities. This should encompass a description of any algorithms used; changes of state; relevant time or space complexity; concurrency; methods of creation, initialization, and cleanup; and handling of exceptional conditions.

5.2.9 Interface/Exports

The set of services (resources, data, types, constants, subroutines, and exceptions) that are provided by this component. The precise definition or declaration of each such element should be present, along with comments or annotations describing the meanings of values, parameters, etc. .... For each service element described, include (or provide a reference) in its discussion a description of its important software component attributes (Classification, Definition, Responsibilities, Constraints, Composition, Uses, Resources, Processing, and Interface).

Much of the information that appears in this section is not necessarily expected to be kept separate from the source code. In fact, much of the information can be gleaned from the source itself (especially if it is adequately commented). This section should not copy or reproduce information that can be easily obtained from reading the source code

(this would be an unwanted and unnecessary duplication of effort and would be very difficult to keep up-to-date). It is recommended that most of this information be contained in the source (with appropriate comments for each component, subsystem, module, and subroutine). Hence, it is expected that this section will largely consist of references to or excerpts of annotated diagrams and source code. Any referenced diagrams or source code excerpts should be provided at any design reviews.

5.2.10 Detailed Subsystem Design

Provide a detailed description of this software component (or a reference to such a description). Complex diagrams showing the details of component structure, behavior, or information/control flow may be included in the subsection devoted to that particular component (although, unless they are very large or complex, some of these diagrams might be more appropriately included in the System Architecture section. The description should cover any applicable software component attributes (some of which may be adequately described solely by a source code declaration or excerpt).

5.3 CLASS DIAGRAM

5.4 ER DIAGRAM

Chapter 6

IMPLEMENTATION AND TESTING

Explain the methods, tools and techniques used to develop the software. What kind of software and testing methodologies implemented. Explain core functionalities in narrative format. Controlled libraries, templates, code walkthroughs,

Explain how the proposed software has been evaluated and compared at runtime with the original specifications. The Accuracy, Performance and Scalability of the proposed software must be critically analyzed and should solve identified problem statement.

Chapter 7

RESULTS AND DISCUSSION

A comprehensive evaluation of the solution is presented with supporting figures and graphics.

System testing is performed through a strong testing strategy and the test cases cover all the use cases.

Chapter 8

CONCLUSION AND FUTURE WORK

Include a brief summary of how the proposed solution is going to/has addressed the problem statement specified in the introduction section. Provide an overview of what kind of evaluations were undertaken in order to prove that the solution really solves the problem with evidence on results findings.

Provide an overview of the recommendations and Include a future directions which is required as part of the future work.

Chapter 9

REFERENCES

A comprehensive list of references is cited using a standard format.

Rubrics for Evaluation of FYP Report

Criteria	1	2	3	4	5
R1 Abstract	Abstract is not written or written in a vague form	Abstract is written in an ordinary way. The important results are not clear to a reader who is unfamiliar.	Abstract provides a reasonable description of the project but can be improved	The abstract provides a good overview of the project and results in two pages or less.	Abstract is excellently written according to the scientific writing standards and provides a good summary in two pages or less
R2 Literature Review, References	Literature Review is not written or written in a vague form. The list of references is clearly inadequate.	Ligature Review is written in an ordinary way. The review material i.e. research papers or web material is not at all clear to a reader who is unfamiliar. The list of references should be expanded	Literature review provides a reasonable description of the project background and its significance but can be improved. Number of research papers/ web material needs to be added more. The list of references appears reasonable but citation does not follow standard format.	The review provides a good background and details of the literature. However, it is not written in scientific writing standards for review. The list of references appears reasonable and citation follow standard format	Literature review is excellently written according to the scientific writing standards and covers maximum of the research papers/web material related to project. A comprehensive list of references is cited using a standard format
R3 Problem Statement	Problem statement is not stated at all or vaguely stated	Problem statement is stated but not entirely clear.	Problem statement is stated but lacks necessary justification in light of the literature review.	Problem statement is stated and covers necessary justification with reference to the literature review.	Problem statement is stated and covers sufficient justification. New reader can clearly understand its value and context
R4 Methodology	The approach taken to solve the problem is not discussed.	Some aspects of the solution are discussed briefly but much of the description is left out.	The methods, approaches, tools, techniques, algorithms, or other aspects of the solution are discussed but not is a convincing manner. Much is left to the readers' imagination.	The methods, approaches, tools, techniques, algorithms, or other aspects of the solution are sufficiently discussed.	The methods, approaches, tools, techniques, algorithms, or other aspects of the solution are sufficiently discussed with sufficient details and supporting figures.

R5 System Architecture	System architecture is not included at all or vaguely stated	System architecture is included but entirely poor way. No architecture design approach is stated. Subsystem architecture is not	System architecture is included in ordinary way. Architecture design approach is stated. However, it is missing the required details. Subsystem architecture is also not clear and missing few	System architecture is included in good way. Architecture design approach is stated and clear. Subsystem architecture is also clear. Functional description or object oriented description is	System architecture is included in excellent way. Architecture design approach is stated and clear. Subsystem architecture is also added in excellent way. Functional description or object oriented description is included

		mentioned. Neither functional description nor object oriented description is included	important information. Functional description or object oriented description is included; however, required diagrams are missing	included along with required diagrams. However, there is still need to add more details and further improvements are required	along with required diagrams. There is no need for further improvements
R6 Detailed system design	System design is not included at all or vaguely stated	System design is included but entirely in poor way. No lowlevel components and subcomponents are stated. Also class diagram and ER diagrams are missing	System design is included in ordinary way. Low-level components and subcomponents are described but, it is missing the required details. Also class diagram and ER diagram are ordinary designed	System design is included in good way. Low-level components and subcomponents are described with adequate details. Also class diagram and ER diagram are good. Subcomponents are described according to software component attributes i.e. classification, definition and responsibilities etc. However, does not cover all the ten attributes	System design is included in excellent way. Low-level components and subcomponents are described with very good details. Also class diagram and ER diagram are drawn according to UML standards. Subcomponents are described according to software component attributes i.e. classification, definition and responsibilities etc. And it cover all the ten attributes

R7 Implementation and Testing	System implementation and testing is not included at all or vaguely stated	System implementation is included but entirely in poor way. Very little description is added. No system testing is performed	System implementation is included in ordinary way. However, Testing is not adequate enough to test the entire system	System implementation is added in good way and provides all the necessary details for the reader. System testing is performed in good way. Various test cases are generated and details are included; however, further improvements are required regarding the number and quality of test cases	System implementation is added in excellent way and provides all the necessary details for the reader. System testing is performed in very good way. Various test cases are generated and details are included. No further improvements are required regarding the number and quality of test cases
R8 Results	Results and evaluation of the solution are not provided.	Results and Evaluation of the solution are briefly discussed without supporting figures and graphics.	Results and Evaluation of the solution are discussed with few supporting figures and graphics	Results and Evaluation of the solution are discussed with supporting figures and graphics.	A comprehensive evaluation of the solution is presented with supporting figures and graphics.
		Evaluation test cases do not cover all the use cases.	Evaluation performed using weak testing strategy.	Evaluation test cases cover all the use cases. Deployment plan is presented	System testing is performed through a strong testing strategy and the test cases cover all the use cases. Their results are added properly
R9 Conclusion and future work	Conclusion does not present the essential project contribution and results. No recommendations for follow-up work given.	Essential project results are not clearly stated. Recommendation for future work is incomplete.	Conclusions are largely qualitative rather than quantitative. The discussion of strengths and limitation could be expanded. Recommendations for future work are given but not clearly thought-out.	Most important results and contribution are presented. Strengths and limitations of the final design are discussed. Some cost information is included. A good set of recommendations for future work is provided. Reflections on the design process are included.	Conclusions provide a succinct summary of all essential results. Results are summarized quantitatively as well as qualitatively. The discussion of strengths and limitations is insightful and objective. Useful final cost information is provided. A clear and complete set of recommendations for follow-up work is provided. A succinct evaluation of the design process is provided.

R10 Language and Grammar, Formatting Style	A lot of spelling and grammatical mistakes Writing is not understandable. Improper format and style. Table of content missing.	Frequent spellings and grammatical errors that impede the reading flow. Writing is in need of significant editing and improvement. The formatting of the chapters may need improvement.	Occasional spellings and grammatical errors Writing is acceptable but not entirely clear. Formatting style is proper but figures and tables don't follow standard practice (caption figure number etc.)	Occasional spellings and grammatical errors that have only minor impact on flow of reading. Writing is overall clear. Organization is good. Content is supported by good number of figures and tables. Formatting style of chapters, table of contents, title page, references and appendices are proper.	Almost no spelling or grammatical mistake. Writing is easy to read. Excellent organization. Writing is concise yet all necessary content is included. Content is supported by good number of figures and tables. Formatting style of chapters, table of contents, title page, references and appendices are proper and relevant.

FYP Report Evaluation Form

Project Title _____

Student Names _____

PLO	S No	Description	Weight	Performance (1 – 5)	Marks
PLO-10: Communication	R1	Abstract	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-2: Problem Analysis	R2	Literature Review, References	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-2: Problem Analysis	R3	Problem Statement	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-4: Investigation	R4	Methodology	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	

PLO-3: Design/ Development of Solution	R5	System Architecture	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-3: Design/ Development of Solution	R6	Detailed system design	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-5: Modern Tool Usage	R7	Implementation and Testing	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-4: Investigation	R8	Results	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-4: Investigation	R9	Conclusion and future work	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R10	Language and Grammar, Formatting Style	1		

Evaluator Name: _____ Signature (Date): _____

Comments _____

_____

Rubrics for Evaluation of FYP Demonstration

Criteria	1	2	3	4	5
R1 Completeness and Accuracy	The system failed to produce the right accurate results	The system execution led to inaccurate or incomplete results. It was not correctly functional or not all the features were implemented.	The system was correctly functional and most of the features were implemented	The system was correctly functional and all of the features were implemented	The system was correctly functional and all of the features were implemented. It was demonstrated how the real world problem was solved
R2 Coding Standards	Coding standards, best programming practices are not followed. Students cannot understand the code.	Coding standards, best programming practices are not followed.	Coding standards, best programming practices are rarely followed.	Coding standards, best programming practices are followed appropriately	Coding standards, best programming practices are followed extensively
R3 Ways of Demonstration	The system does not fulfill the functional requirements.	It is not clearly demonstrated how the system fulfills its functional requirements	It is demonstrated how the system fulfills some of its functional requirements	It is demonstrated how the system fulfills most of its functional requirements	It is clearly and effectively demonstrated how the system fulfills all of its functional requirements

R4 Quality	Student is unaware of System's non-functional requirements	System's non-functional requirements (as mentioned in SRS) are not demonstrated	Some of the system's non-functional requirements are demonstrated	Most of the system's nonfunctional requirements are demonstrated	All of the system's nonfunctional requirements are clearly demonstrated
R5 Originality	Most part of the working product is copied.	Working product is uninspired and straightforward work with little to no creative potential.	Working product has some potential for making a creative contribution.	Working product has some creative /original /inventive element and a potential for making a creative contribution	Working product has several creative /original /inventive /innovative elements and a clear potential for making a creative contribution.
R6 Modern Tool Usage	Modern engineering software were not used, where applicable, to solve complex engineering problems.		Computer-based tools and technical software were used, but more could have been used to solve the problem.		Modern computer-based tools and software were used extensively in the project. New software/language was learned as needed

FYP Demonstration Evaluation Form

Project Title _____

Student Names _____

PLO	S No	Description	Weight	Performance (1 – 5)	Marks
PLO-11: Project Management	R1	Completeness and Accuracy	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-3: Design/ Development of Solution	R2	Coding Standards	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R3	Ways of Demonstration	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	

PLO-3: Design/ Development of Solution	R4	Quality	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-8: Ethics	R5	Originality	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-5: Modern Tool Usage	R6	Modern Tool Usage	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	

Evaluator Name: _____ Signature (Date) : _____

Comments _____

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Rubrics for Evaluation of FYP Defence Oral Presentation

Criteria	1	2	3	4	5
R1 Subject Knowledge	Student has no knowledge of both problem and solution. Cannot answer basic questions.	Student does not have grasp of information; student cannot answer questions about subject	Student is uncomfortable with information and is able to answer only rudimentary questions	Student has competent knowledge and is at ease with information. Can answer questions but fails to elaborate.	Student has presented full knowledge of both problem and solution. Answers to questions are strengthen by rationalization and explanation
R2 Organization and Content of Presentation	Student is clueless about the content of his presentation.	Information is arranged in confused and unstructured way. Key points are not covered. The contents are hard to understand and interpret.	Information articulated clearly but it is difficult to follow the presentation. All key points are covered but no use of charts, graphs, figures etc., to explain salient points.	Information articulated clearly and the flow is reasonable All key points are covered but limited use of charts, graphs, figures etc., to explain salient points.	Information articulated clearly and is organized in a structured way with logical flow between parts. All key points are covered. Enhances presentation and keeps interest by effective use of charts, graphs, figures etc., to explain salient points.

R3 Delivery & Presentation Skills	Presentation was not clear at all. Language was not appropriate	Holds no eye contact with audience, as entire report is read from notes Speaks in low volume and/ or monotonous tone, which causes audience to disengage	Displays minimal eye contact with audience, while reading mostly from the notes Speaks in uneven volume with little or no inflection	Consistent use of direct eye contact with audience, but still returns to notes Speaks with satisfactory variation of volume and inflection	Holds attention of entire audience with the use of direct eye contact, seldom looking at notes Speaks with fluctuation in volume and inflection to maintain audience interest and
R4 Completeness of Project, Timeline	The project could not be completed.	Some of the major features are complete but the timeline for project was not followed.	Major features of the project are completed. However, the timeline was not followed	Most features of the project were completed and timeline as defined in the proposal was followed	The project is completed in the timely manner with all features implemented according to the timeline defined in project proposal.
R5 Professional ethical values	The student never reported to his supervisor	Student reported occasionally to his supervisor. The student did not follow the timeline.	Student had few meetings. More are required. Some time he came prepared, other times he was not prepared.	Student held regular meetings with his supervisor.	Student held regular meetings with his supervisors and committee members. He reported his progress regularly
R6 Team Work	Only one member did all the work. Conflicts between the group members were clearly visible.	Only one member did all the work. Other members could not answer basic questions about the project.	Not all members contributed to the project. Work division is not mentioned.	All members contributed to the project. Cooperation between group members was reasonable. Work division is mentioned	All members contributed to the project. Any conflicts within the group members were amicably resolved. Work division is clearly mentioned.

FYP Defence Oral Presentation Evaluation Form

Project Title _____

Student Names _____

PLO	S No	Description	Weight	Performance (1 – 5)	Marks
PLO-1: Engineering Knowledge	R1	Subject Knowledge	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R2	Organization and Content of Presentation	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-10: Communication	R3	Delivery & Presentation Skills	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-11: Project Management	R4	Completeness of Project, Timeline	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-8: Ethics	R5	Professional ethical values	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	
PLO-9: Individual & Team Work	R6	Team Work	1	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐	

Evaluator Name: _____ Signature (Date): _____

Comments _____

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PROJECT EVALUATION FORM (Open House)

Project Name _____ Table # _____

	S No	Description	Weight	Performance (0 – 10)	Marks
PLO-6	1	How well does the project solve an industry/social/local problem?	2	Fail ☐ Below Average ☐ Average ☐ Good ☐ Excellent ☐	
PLO-3	2	Quality of the System level design work?	1	Fail ☐ Below Average ☐ Average ☐ Good ☐ Excellent ☐	
	3	Commercialization potential of the project	2	Fail ☐ Below Average ☐ Average ☐ Good ☐ Excellent ☐	
PLO-10	4	DEMONSTRATION How well are the interactions between Software & Hardware defined and implemented?	1	Fail ☐ Below Average ☐ Average ☐ Good ☐ Excellent ☐	
	5	POSTER Creativity, Clarity, layout	1	Fail ☐ Below Average ☐ Average ☐ Good ☐ Excellent ☐	
PLO-3	6	END PRODUCT QUALITY H/W Projects: Physical Design, Finishing S/W Projects: UI Design, Completeness Research Project: Results, Completeness	2	Fail ☐ Below Average ☐ Average ☐ Good ☐ Excellent ☐	

PLO-1	7	Did the student understand and answer your questions completely and appropriately?	1	Fail ☐ Below Average ☐ Average ☐ Good ☐ Excellent ☐	

Name (judge) _____ Company _____ Signature (with Date)_____

Comments _____

References

[1] PLAGIARISM.ORG, Available Online: http://plagiarism.org

[2] London South Bank University, “How to do your referencing: Numeric Style”, Available Online: http://www.lsbu.ac.uk/library/helpsheets/hs28.pdf

[3] Neal R. Wagner, University of Texas, Plagiarism by Student Programmers, Available Online: http://www.cs.utsa.edu/~wagner/pubs/plagiarism0.html