# 410448 & 410455: Project Work Book (Guidelines and Log)

## Fourth Year Computer Engineering
### Year 2023 – 2024

**Group/Project ID: 7**

**Team Members:**
Solankey Himanshu
Dighe Akash
Sathe Shweta
Makode Yash

**Project Title:** Movie Popularity Content-based Database System.

**Project Guide:** Prof. Jaishri Shiilpakar

**Area of Project:** React web development and deep learning.



Department of Computer Engineering

**Parvatibai Genba Moze College of Engineering Gate No 2181 Wagholi, Pune-412207, Pune**
**Affiliated to Savitribai Phule Pune University**

# Prologue

Project work is one of the most important components of the curriculum for the Engineering Graduates. From conceiving the idea to the materialization of it is a journey that has to be systematized, well defined and well documented to enjoy the full benefits of the efforts undertaken.

Every activity of the project development has its own importance and typical activities are like: Team formation, conceiving the idea, preparing the hypothesis, reporting the progress / development to the guide/ mentor, Interactions, suggestions and improvements, relevant documentations in proper format, schedule plans and visit logs.

Every institute is following their own best methods and techniques as per the guidelines and curriculum at the affiliated university. To bring the uniformity and standardization for the project work there is a need to come together and prepare the comprehensive guidelines regarding it.

This work book for the project work will serve the purpose and facilitate the job of students, guide and project coordinator. This document will reflect accountability, punctuality, technical writing ability and work flow of the work undertaken.

This document will definitely support the work undertaken.

Dr. Varsha H Patil

Coordinator, BoS Computer Engineering SPPU, Pune

# General Instructions

1. Students should enter the correct information in the work book.

2. Get all entries verified by respective project guide. No changes are to be made without project guide permission.

3. Students should report to their respective guides as per the schedule and its log is to be maintained in the work book.

4. Follow all deadlines and submit all documents strictly as per prescribed formats.

5. The work book should be produced at the time of all discussions, presentations and examinations.

6. The work book must be submitted to project coordinator/ guide/ department / College after successful examination at the end of year.

7. All documents and reports are to be prepared in Latex only (All the formats specifications provided adheres to MS Word but consequently applicable to final project report published using Latex)

8. Submit hard as well as soft copy. Maintain one copy with each member.

This booklet is supportive document to rules and a regulation provided by affiliated university curriculum providing recommendations, guidelines and is record of all related activities associated with project. This booklet is provided with the genuine intent to bring uniformity and to systematize the project work and to keep the audit of the work undergone by team members.

## Work Book Development Project

| | |
|---|---|
| Project Institution | Department of Computer Engineering Parvatibai Genba Moze College of Engineering ,Pune |
| Support & Guidance | Prof. Shrikant Dhamdhere |
| Concept and Design | Dr. Varsha. H. Patil BoS Coordinator Computer Engineering , SPPU, Pune Vice Principal, Matoshri College of Engineering and Research Centre, Nashik |
| Project coordinator | Mrs. Jaishri Shilpakar, Assistant Professor, Parvatibai Genba Moze College of Engineering ,Pune |
| Technical Committee Members | 1. Dr. Goraksh V. Garje 2. Dr. Parikshit Mahalle 3. Mr. Niranjan L. Bhale 4. Dr. Sunil R. Dhore 5. Dr. Nuzhat Shaikh 6. Dr. Sudeep Thepade 7. Dr. Mangesh Bedekar 8. Ms. Swapnaja Hiray 9. Mr. Ranjeet Gawande |
| Date | 4th April 20124 |
| Version No. & Revision Date | 3.0 (Revised on 10th June 2018) |
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# Savitribai Phule Pune University
# Computer Engineering

## Program Educational Objectives

**PEO1.** To prepare globally competent graduates having strong fundamentals, domain knowledge, updated with modern technology to provide the effective solutions for engineering problems.

**PEO2.** To prepare the graduates to work as a committed professional with strong professional ethics and values, sense of responsibilities, understanding of legal, safety, health, societal, cultural and environmental issues.

**PEO3.** To prepare committed and motivated graduates with research attitude, lifelong learning, investigative approach, and multidisciplinary thinking.

**PEO4.** To prepare the graduates with strong managerial and communication skills to work effectively as an individual as well as in teams.

## Program Outcomes

**Students are expected to know and be able –**

**PO1.** To apply knowledge of mathematics, science, engineering fundamentals, problem solving skills, algorithmic analysis and mathematical modeling to the solution of complex engineering problems.

**PO2.** To analyze the problem by finding its domain and applying domain specific skills

**PO3.** To understand the design issues of the product/software and develop effective solutions with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

**PO4.** To find solutions of complex problems by conducting investigations applying suitable techniques.

**PO5.** To adapt the usage of modern tools and recent software.

**PO6.** To contribute towards the society by understanding the impact of Engineering on global aspect.

**PO7.** To understand environment issues and design a sustainable system.

**PO8.** To understand and follow professional ethics.

**PO9.** To function effectively as an individual and as member or leader in diverse teams and interdisciplinary settings.

**PO10.** To demonstrate effective communication at various levels.

**PO11.** To apply the knowledge of Computer Engineering for development of projects, and its finance and management.

**PO12.** To keep in touch with current technologies and inculcate the practice of lifelong learning.

## Program Specific Outcomes (PSO)

A graduate of the Computer Engineering Program will demonstrate-

**PSO1:** Professional Skills-The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying.

**PSO2:** Problem-Solving Skills- The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success.

**PSO3:** Successful Career and Entrepreneurship- The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and a zest for higher studies.

# Table of Contents

# 1. About Project Work

The word *project* comes from the Latin word *projectum* from the Latin verb *proicere*, "to throw something forwards" which in turn comes from *pro-*, which denotes something that precedes the action of the next part of the word in time (paralleling the Greek πρό) and *iacere*, "to throw". The word "project" thus actually originally meant "something that comes before anything else happens".

<div align="right">(Curtsey Ref- http://en.wikipedia.org/)</div>

The Project is conceiving the idea and implementing it systematically by using the knowledge derived in the course of education mainly to innovate or facilitate.

Work involves, study the feasibility of the project, planning project, studying existing systems, tools available to implement the project and state of art software testing procedures and technology with use of case tools.

The group of Under Graduate students at Final Year students will undertake project over the academic year. Work involves study the feasibility of the project, planning project, studying existing systems, tools available to implement the project and state of art software testing procedures and technology with use of case tools, design is to be implemented into a working model (software or hardware or both) with necessary software interface as an executable package.

## a.  Objectives and Outcomes:

**Objectives -**
* To apply the knowledge for solving realistic problem To develop problem solving ability
* To Organize, sustain and report on a substantial piece of team work over a period of several months
* To Evaluate alternative approaches, and justify the use of selected tools and methods,
* To Reflect upon the experience gained and lessons learned, To Consider relevant social, ethical and legal issues,
* To find information for yourself from appropriate sources such as manuals, books, research journals and from other sources, and in turn increase analytical skills.
* To Work in TEAM and learn professionalism.

**Outcomes -**
Students are expected to know and be able to-
Solve real life problems by applying knowledge.
Analyze alternative approaches, apply and use most appropriate one for feasible solution.
Write precise reports and technical documents in a nutshell.
Participate effectively in multi-disciplinary and heterogeneous teams exhibiting team work, Inter-personal relationships, conflict management and leadership quality.

**b. Guidelines for Selection of Project Work:**

Project is one of the significant contributory team works that has to be completed with distinct impression. It is really very difficult to explore the domain of interest / research/ thirst area/ society need. In Toto one cannot figuratively define best project but still there are certain parameters on which we can gauge the quality of project work done. It will be better suited to go for well-defined and relatively safe projects that provide scope for demonstrating proficiency with a low risk of failure especially at Under Graduate level.

**General guidelines:**

Identifying domain, feasibility and usability of work.

Project work is expected to involve a combination of sound background research (thorough study/ follow a line of investigation), and methodical implementation. Instead of fancied and driven behind the gaudy and ostentatious ideas, the utility has to be emphasized. It is also acceptable to identify the discrepancies/ flaws in the existing system and work accordingly to rectify or improve.

It is irrational to select the IDE and the software/ tools before the idea is not yet finalized.

Understanding the way project will be materialized and progressed.

**c. Guidelines for Project Evaluation:**

Project work is to be evaluated by both Internal and External examiners jointly, unanimously agreeing the following parameters among many others.

1. Problem definition and scope of the project
2. Through Literature Survey
3. Appropriate Software Engineering approach
4. Exhaustive and Rational Requirement Analysis
5. Comprehensive Implementation- Design, platform, coding, documentation
6. Optimization considerations (Memory, time, Resources, Costing)
7. Thorough Testing of all modules and integration of modules
8. Project Presentation and Demonstration (User Interface, ease of use, usability)
9. Presentation of work in the form of Project Report(s)
10. Understanding individual capacity, Role & involvement in the project
11. Team Work (Distribution of work, intra-team communication and togetherness)
12. Participation in various contests, Publications and IPR
13. Documents /Manuals (Project Report, Quick reference, System, Installation guide)
14. Outcomes / Usability / commercial value /product conversion of Work

**(Refer Rubrics – page number 26)**

## 2. **University Syllabus**

**Term I**
**Teaching Scheme:**

**Tutorial: 2 Hours/Week**                    **Term Work Assessment: 50 Marks**

### Course Objectives:
• To develop problem solving abilities using mathematics;
• To apply algorithmic strategies while solving problems;
• To develop time and space efficient algorithms;
• To develop software engineering documents and testing plans
• To use algorithmic solutions using distributed, Embedded, concurrent and parallel environments.
• To encourage and expose students for participation in National/ International paper presentation activities.
• Exposure to Learning and knowledge access techniques using Conferences, Journal papers and participation in research activities.

### Course Outcomes:
To solve problem in projects;
To develop SRS and other software engineering documents in the project report;
 To solve problems using multi-core, distributed, embedded, concurrent/Parallel environments;
To write conference paper;
To demonstrate presentation, communication and team-work skills.

### Tools:
> Preferably 64-bit FOSS tools but if sponsoring company's requirement is non-open source platform then it must be latest and current version of non-obsolete tools. 64-bit i5/i7/ Desktops/Mobiles, Latest SAN,3-tier architectures along with latest version of FOSS Operating systems like Fedora 21 or equivalent, LAMP tools, Web server, Applications servers, Database servers, MongoDB or latest open source Big DATA tools, FOSS Programming Tools like gcc,g++,Eclipse, Python, Java and other tools are as per the requirement of the SRS. The documentation tools like Open office, GIT, Latex, Latex-Presentation.

### Activity Planning for Tutorial Sessions:

I. Selection of Project Option and Framing the Problem to solve as a Project for the group of 3 to 4 students.
    Option A: Industry Sponsored Project
    Option B: Project as an Entrepreneur
    Option C: Internal Project

II.   Internal guide allocation for the BE Project:
    Assistant Professor/Associate Professor/Professor as per AICTE norms in Computer Engineering having at least 5 years of full time approved experience can guide the BE Project without compromising on the quality of the work (ref. Note1). The Project laboratory of 4 project groups (3 to 4 students in one group) constituting one laboratory tutorial batch (2 hrs per week), be allocated to the guide. The project group will submit the synopsis including title of the project, Technical Key Words (Ref. ACM Keywords)

and relevant mathematics associated with the Project, names of at least two conferences, where papers can be published, Review of Conference/Journal papers (at least 10 papers + White papers or web references, (if any)) supporting the project idea, Plan of project execution using planner or alike project management tool. (Recommended dates: 3 weeks after Commencement of the Term). Preferably, the projects are Industry Sponsored or part of high level research/ Sponsored Research Project that are not conducted for any award of the educational degree or entrepreneurship project.

III.  <u>The project conduct and procedures are suggested as detailed below: -</u>

Problem statement feasibility assessment using, satisfiability analysis and NP-Hard, NP-Complete or P type using modern algebra and relevant mathematical models. (recommended date of submission: - 8 weeks before term end).

IV. Use of above to identify objects, morphism, overloading, functions and functional relations and any other dependencies. (Recommended submission date: - 6 weeks before term end) Functional dependency graphs and relevant UML diagrams or other necessities. (recommended submission date: - 3 weeks before term end)

V. Testing of problem statement using generated test data (using mathematical models, Function testing principles) selection and appropriate use of testing tools, testing of UML diagram's reliability. (recommended submission date: - two weeks before term end)

VI. The index of submission must cover above mentioned 5 heads in addition to the instructions by the guide. Students must submit a Latex Report consisting of problem definition, literature survey, platform choice, SRS (System Requirement Specification) Document in specific format and high-level design document along with

Annex A: Laboratory assignments on Project Analysis of Algorithmic Design,

Annex B: Laboratory assignments on Project Quality and Reliability Testing of Project Design at the end of term-I and

Annex C: Project Planner and progress report after checking, removing/ avoiding the plagiarism.

**Give an additional assignment per reporting plagiarism to be submitted in the report under the Annex heading extra-work. If the project is the replica of any other previous project or work from other unrelated persons than the student's team, such project should be rejected for the term work.**

The term work at the end of Term-I shall be assessed and evaluated for 50 marks by the panel of examiners in the subject (Internal (preferably guide) and external examiner from Computer Department of Engineering Colleges). At-least one technical paper must be submitted on the project design in the conferences/workshops in IITs, Central Universities or UoP Conferences or equivalent International Conferences Sponsored by IEEE/ACM and review comments received as Annex D. The examiners must seek answers regarding the suggestions given in the review comments of the paper submitted.

**<u>Term-I Project Laboratory Assignments: Tutorial Session</u>**

1.  Refer Chapter 7 of first reference to develop the problem under consideration and justify feasibility using concepts of knowledge canvas and IDEA Matrix.

2. Project problem statement feasibility assessment using NP-Hard, NP-Complete or satisfiability issue using modern algebra and/or relevant mathematical models.
3. Use of divide and conquer strategies to exploit distributed/parallel/concurrent processing to identify objects, morphisms, overloading in functions (if any), and functional relations and any other dependencies (as per requirements).
4. Use of above to draw functional dependency graphs and relevant Software modeling methods, techniques including UML diagrams or other necessities using appropriate tools.
5. Testing of project problem statement using generated test data (using mathematical models, GUI, Function testing principles, if any) selection and appropriate use of testing tools, testing of UML diagram's reliability.

## For Entrepreneurship type project additional assignments: Tutorial Session

6. To sign the MoU/agreement with the Engineering College for the Industry-on-Campus.
The college shall provide the company the enclosure with lock-and-key t accommodate required table space, stabilized electricity and the Internet access. The College may host such company for first two years and further by renewing the MoU/Agreement. The college shall provide all the documents necessary for the establishment of the company. The College shall provide all the facilities as per agreement for Rent FREE, without any charges or fees or returns whatsoever for the First Year or Academic Duration of the activity. The college may prepare joint proposal with Industry for the AICTE/Government/University grants if any.
7. To study and establish a partnership company/proprietorship and get the PAN, MVAT, Profession Tax Number and such other necessary legal permissions.
8. Try and prepare clients list and communication with the clients or advertise the product by developing the Company WEB Site.
9. To submit Product Proposal for raising venture capital through government schemes of micro/small sector industries or through private venture capital entities.
10. To submit National/International patent/Copyright for first year to the Government Department of Patents and IPR.

**Note 1.** The guide for an entrepreneurship project shall be a full time approved Professor or Associate Professor possessing qualifications as per AICTE norms.

**Note 2.** If the students fail to complete the entrepreneurship assignments successfully then the project shall be treated as Internal Project for the purpose of assessment.

**Note 3.** All projects are expected to exploit multi-core, embedded and distributed computing wherever possible
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## Savitribai Phule Pune University
(Refer SPPU website for recent syllabus)
### Semester II

**Tutorials: 6 Hours/Week**                    **Term Work: 100 Marks**
                                               **Oral: 50 Marks**

**Course Objectives:**
• To develop problem solving abilities using mathematics;
• To apply algorithmic strategies while solving problems;
• To develop time and space efficient algorithms;
• To develop software engineering documents and testing plans;
• To use algorithmic solutions using distributed, Embedded, concurrent and parallel environments.
• To encourage and expose students for participation in National/ International paper presentation activities.
• Exposure to Learning and knowledge access techniques using Conferences, Journal papers and participation in research activities.

**Course Outcomes:**
To solve problem and demonstrate the results of the project;
To develop SRS, reliability testing reports, and other software engineering documents in the project report;
To solve problems using multi-core, distributed, embedded, concurrent/Parallel environments;
To write conference paper;
To demonstrate presentation, communication and team-work skills.

**Tools:**

> Preferably 64-bit FOSS tools but if sponsoring company's requirement is non-open source platform then it must be latest and current version of non-obsolete tools. Latest SAN,3-tier architectures along with latest version of FOSS Operating systems like Fedora 21or equivalent, LAMP tools, WEB server, Applications servers, Database servers, MongoDBor latest open source BigDATA tools, FOSS Programming Tools like gcc, g++, Eclipse, Python, Java and other tools are per requirement of the SRS. The documentation tools like Open office, Version control, Latex, Latex-Presentation.

1. Project workstation selection, installations and setup along with report to the guide. (Recommended submission date: - 3 weeks after commencement of second term)
2. Programming of the project, GUI (if any) as per 1st Term term-work submission. (recommended submission date: - Progress report every week during laboratory hours)
3. Test tool selection for various testing recommended by preferably external guide and generate various testing result charts, graphs etc. including reliability testing. (7 weeks before Term II Conclusion)
4. Review of design and necessary corrective actions taking into consideration feedback report of Term I assessment, and other competitions/conferences participated like IIT, Central Universities, University Conferences or equivalent centers of excellence etc.

5. Students must submit and preferably publish at least one technical paper in the conferences held by IITs, Central Universities or UoP Conference or International Conferences in Europe or US.

6. Final term work submissions in the prescribed format given by the guides consisting of a project report consisting of a preliminary report prepared in term-I, detailed design (all necessary UML diagrams) document, User Interface design, Laboratory assignments on test cases and test results generated by selected project testing tool, conclusions, appendix (if necessary), glossary, tools used and references at the end of Term-II after checking, removing/ avoiding the plagiarism. Give an additional assignment per reporting plagiarism to be submitted in the report under the Annex heading extra-work. If the project is the replica of any other previous project or work from other unrelated persons than the student's team, such project should be rejected for the term work.

7. The Term II examination is conducted by panel of examiners (preferably guide and expert from Industry having at least 5 years' subject experience or senior teacher in the subject in case of non- availability of industry expert). The project assessment shall be done using Live Project Demonstration (in existing functional condition), using necessary simulators (if required) and presentation by the students. The remarks of Term I assessment and related corrective actions must be assessed during examining the term-work.

## Term-II Project Laboratory Assignments

1. Review of design and necessary corrective actions taking into consideration the feedback report of Term I assessment, and other competitions/conferences participated like IIT, Central Universities, University Conferences or equivalent centers of excellence etc.

2. Project workstation selection, installations along with setup and installation report preparations.

3. Programming of the project functions, interfaces and GUI (if any) as per $1^{st}$ Term term-work submission using corrective actions recommended in Term-I assessment of Term-work.

4. Test tool selection and testing of various test cases for the project performed and generate various testing, result charts, graphs etc. including reliability testing.

## Additional assignments for the Entrepreneurship Project:

5. Installations and Reliability Testing Reports at the client end.

6. To study Clients Feedback reports and related fix generations.

7. To create Documents will Profit and Loss accounts and balance-sheet of the company.

Note: If the students fail to complete the Entrepreneurship assignment successfully then the project shall be treated as Internal Project for the purpose of assessment.

# तंत्र शिक्षण विभागीय कार्यालय, पुणे

## ४१२-ई, शिवाजीनगर, पुणे- ४११ ०१६.

☎ / फॅक्स २५६५६२३४ Email : jdtepu@pn3.vsnl.net.in. Web.repune.org.in

जा.क्र.विकप/(विवि/प्रोजेक्ट/२००९/ ३७६9                दिनांक : १ ९ MAR 2009

प्रति,

प्राचार्य,

शासकीय / शासकीय अनुदानित आणि

विना अनुदानित पदवी अभियांत्रिकी महाविद्यालये

विषय : अभियांत्रिकी विद्यार्थ्यांना प्रोजेक्ट विकण्यावर कार्यवाही करणेबाबत

संदर्भ : १) शिक्षण संचालनालय, (उच्च शिक्षण) महाराष्ट्र राज्य, पुणे यांचे पत्र क्र.
           युएनआय/अभियांत्रिकी प्रोजेक्ट/विशि(६)/२००९/१०९७३  दि. ३०.०१.२००९
       २) शासनपत्र क्र युएसजी-२००८/(३४६/०४)विशि-४ दि. ३१.१२.२००८
       ३) मा.संचालक, तंत्र शिक्षण संचालनालय, महाराष्ट्र राज्य, मुंबई यांचे पत्र क्र.२/
           युनिव्हीपी/प्रोजेक्ट/२००९/१६१-अ दिनांक १२-०२-२००९

उपरोक्त विषयासंदर्भात आपणास कळविण्यात येते की, अभियांत्रिकी विद्यार्थ्यांनी विकत घेतलेले प्रोजेक्ट स्वीकारण्यात येऊ नये, असे प्रोजेक्ट स्वीकारणा-या संस्थावर कार्यवाही करण्यात यावी तसेच अभियांत्रिकी महाविद्यालयातील विद्यार्थ्यांना प्रोजेक्ट विकणा-यावर कारवाई करण्यात येईल असे शासनाने वरील संदर्भीय पत्र क्र. २ अन्वये कुलसचिव, सर्व विद्यापीठांना कळविण्यात आले आहे. तरी याबाबत अभियांत्रिकी महाविद्यालयातील विद्यार्थ्यांनी विकत घेतलेले प्रोजेक्ट स्वीकारण्यात येणार नाहीत तसेच अभियांत्रिकी महाविद्यालयातील शिक्षकांनी कोणत्याही विद्यार्थ्यास प्रोजेक्ट विकू नयेत. जर असे आढळल्यास संबंधित शिक्षकांवर योग्य ती कारवाई करण्यात येईल. याची संबंधीत संस्थांनी नोंद घ्यावी. तसेच आपल्या संस्थेमध्ये शिक्षकांनी विद्यार्थ्यास प्रोजेक्ट विकले असतील, अशा शिक्षकांची नावे तसेच ज्या विद्यार्थ्यांना प्रोजेक्ट विकण्यात आला आहे अशा विद्यार्थ्यांची नावे व तपशील  या कार्यालयास त्वरित सादर करावा.

(गो. पं. चौधरी)

प्र. सहसंचालक,

तंत्र शिक्षण विभागीय कार्यालय, पुणे

# PARVATIBAI GENBA MOZE COLLEGE OF ENGINEERING PUNE

## UNDERTAKING BY STUDENT

We, the students of B.E. Computer hereby assure that we will follow all the rules and regulations related to project activity for the academic year 2016-2017.The Project entitled-

will be fully designed/ developed by us and every part of the project will be  original work and will not be copied/ purchased from any source.

| Name of student | Signature |
|---|---|
| 1. Solankey Himanshu | _____ |
| 2. Dighe Akash | _____ |
| 3. Sathe Shweta | _____ |
| 4. Makode Yash | _____ |

## 5. Instructions Regarding Project Proposal and Finalization

1. The project work may involve the designing a system/subsystem or upgrading / improving an existing system. The design is to be implemented into a working model (software or hardware or both) with necessary software interface as an executable package (installable package or hardware model) along with

   User & system manual and quick reference guide. A

   project report including all necessary documents.

2. Group may come up with sponsored project. Sponsorship may not be in terms of money or resources. It might be in terms of just suggesting problem definition and associated guidance. Students may collect the letter required for applying the Institute/Industries for the project sponsorship from project coordinator

3. List of suggested projects, prominent domains and respective expert, whom you may contact for guidance, with Project Coordinator. Students may contact respective staff along with synopsis for the guidance. Students may contact respective staff for projects suggested by them in the respective areas.

4. Meet Project Coordinator for project title registration.

5. Synopsis must include project title, group members, sponsor details (if any), detailed problem definition, area, abstract, details of existing similar systems if any, scope of the project and software-hardware requirements. Sponsorship details include name of sponsoring authority, address, name of guide, sponsorship terms & conditions and respective documents certifying the same from authorities.

6. A Panel of experts will approve the project group and title only after presentation as per schedule. Presentation will cover details mentioned in the synopsis as above.

## 4. <u>Schedule of Project Work</u>    Semester I

| Sr. No. | Activity Scheduled | Date (Tentative) |
|---|---|---|
| 1. | Registration of Project Teams | Third Year Semester II/ Mid of June |
| 2. | Submission of Project Proposal | Last Week of June |
| 3. | Project presentations | First week of July |
| 4. | Finalization of projects & allotment of guide | Second week of July |
| 5. | Submission of final Proposal | Third week of July |
| 6. | Review meeting/ presentation for progress of project work- I | Last week of July |
| 7. | Review meeting/ presentation for progress of project work- II | Third week of August |
| 8. | Review meeting/ presentation for progress of project work- III | Second week of Sept |
| 9. | Review meeting/ presentation for progress of project work- IV | Last week of Sept |
| 10. | Submission of partial project report | 1$^{st}$ Week Oct |
| 11. | Project work (Stage I) Examination | As per SPPU Notification |

## Semester II

| Sr. No. | Activity Scheduled | Date(Tentative) |
|---|---|---|
| 1. | Review meeting/ presentation for progress of project work -V | Second week of Jan |
| 2. | Review meeting/ presentation for progress of project work -VI | Second week of Feb |
| 3. | Review meeting/ presentation for progress of project work- VII | Last week of March |
| 4. | Submission of final project report and Project Work book to the project Coordinator | First week of April |
| 5. | Project Examination | As per SPPU Notification |

**7. Copy of Proposal / Synopsis as per format (Annexure I)**

<table>
<tr>
<td></td>
<td><b>Genba Sopanrao Moze Trust's</b><br><b>Paravatibai Genba Moze College of Engineering</b></td>
</tr>
</table>

# Synopsis

## 1    Group Id

Group ID – 7

## 2    Project Title

"Movie Popularity Content-Based Database System"

## 3    Project Option

Internal Project

## 4    Internal Guide

Prof. Shrikant D. Dhamdhere

## 5    Sponsorship and External Guide

- http://medium.com/web-mining-is688-spring-2021
- http://kaggle.com
- http://analyticsindiamag.com/how-to-build-content-based-system
- https://github.com

## 6    Technical Keywords (As per ACM Keywords)

Technical keywords aligned with Association for Computing Machinery (ACM) keywords that are relevant to project "Movie Popularity and Target Audience System":

    a) Human-centered computing:
- User profiling
- Personalization
- User engagement

    b) Information retrieval:

---

- Recommender systems
- Content-based filtering
- Collaborative filtering

c) Data analytics:
- Data mining
- Predictive modelling
- Market analysis

d) Marketing optimization:
- Resource allocation
- Campaign optimization
- Marketing analytics

e) Optimization algorithms:
- Linear programming
- Genetic algorithms
- Simulated annealing

f) Cultural diversity and sensitivity:
- Cultural modelling
- Diversity considerations
- Cultural impact

g) Statistical analysis:
- Hypothesis testing
- ANOVA (Analysis of Variance)
- Descriptive statistics

h) Box office predictions:
- Revenue forecasting
- Box office analytics
- Performance modelling

i) Content creation strategies:
- Storytelling techniques
- Visual communication
- Narrative design

# 7   Problem Statement

Perform analysis and Basic Recommendations based on Similar Genres and Movies which Users prefer. Comparison of Gross and Profit for Different Genres, Recommendation systems based on Actors, Movies, Genres. This Project will help us to understand the Correlation between these factors.

# 8  Abstract

The movie is one of the integral components of our everyday entertainment. The worldwide movie industry is one of the most growing and significant industries and seizing the attention of people of all ages. It has been observed in the recent study that only a few of the movies achieve success. Uncertainty in the sector has created immense pressure on the film production stakeholder. Moviemakers and researchers continuously feel it necessary to have some expert systems predicting the movie success probability preceding its production with reasonable accuracy. A maximum of the research work has been conducted to predict the movie popularity in the post-production stage. To help the movie maker estimate the upcoming film and make necessary changes, we need to conduct the prediction at the early stage of movie production and provide specific observations about the upcoming movie. This study has proposed a content-based (CB) movie recommendation system (RS) using preliminary movie features like genre, cast, director, keywords, and movie description. Using RS output and movie rating and voting information of similar movies, we created a new feature set and proposed a CNN deep learning (DL) model to build a multiclass movie popularity prediction system. We also proposed a system to predict the popularity of the upcoming movie among different audience groups. We have divided the audience group into four age groups junior, teenage, mid-age and senior. This study has used publicly available Internet Movie Database (IMDb) data and The Movie Database (IMDb) data. We had implemented a multiclass classification model and achieved 96.8% accuracy, which outperforms all the benchmark models. This study highlights the potential of predictive and prescriptive data analytics in information systems to support industry decisions.

# 9  Goals and Objectives

1. **Maximize Movie Popularity:**
   - Goal: Create a movie that captures widespread attention and becomes a cultural phenomenon.
   - Approach: Develop a captivating and original storyline, strong characters, and exceptional production quality to stand out in a competitive market.

2. **Engage and Delight Audiences:**
   - Goal: Provide an unforgettable cinematic experience that resonates emotionally with viewers. Approach:
   - Craft compelling narratives, relatable characters, and visually stunning scenes that elicit a range of emotions from the audience.

3. **Target Audience Identification:**
   - Goal: Understand the demographics and preferences of the intended audience.
   - Approach: Conduct thorough market research to define the primary and secondary target audiences, including their age, gender, interests, and cultural background.

4. **Effective Marketing and Promotion:**
   - Goal: Generate excitement and anticipation for the movie's release.
   - Approach: Design a multi-faceted marketing campaign encompassing teaser trailers, engaging social media content, partnerships with influencers, and interactive promotions.

5. **Positive Audience Feedback:**

- Goal: Garner positive reviews and word-of-mouth recommendations from the audience.
- Approach: Prioritize quality production, storytelling, and attention to detail to ensure a satisfying viewing experience that generates positive buzz.

# 10 Relevant mathematics associated with the Project

**System Description:**

- **Input:**

  1) Movie Information:
     Title Genre Synopsis Cast and Crew Production Budget Release Date

  2) Market Research Data:
     Demographics of potential audience (age, gender, location, etc.) Preferences (favourite genres, themes, etc.) Trends in movie consumption

  3) Box Office Data:
     Historical box office data for similar movies Performance of competitor movies

  4) Release Strategy:
     Release schedule (theatrical release, streaming platforms, etc.) Release regions and markets.

  5) Marketing and Promotion Data:
     Marketing budget Advertising channels used (TV, social media, billboards, etc.) Engagement metrics from promotional campaigns.

  6) Social Media Data:
     Audience engagement on different platforms User-generated content related to the movie.

  7) Surveys and Feedback:
     Audience feedback collected through surveys, focus groups, or online reviews Sentiment analysis of audience reactions.

  8) Release Strategy:
     Release schedule (theatrical release, streaming platforms, etc.) Release regions and markets

- **Output**:

  1) Target Audience Profiles:
     Detailed profiles of primary and secondary target audience segments, including demographics, interests, and preferences.

  2) Marketing Strategies:
     Recommended marketing channels and strategies tailored to reach and engage the identified target audiences effectively.

  3) Release Timing and Strategy:
     Insights into the optimal release schedule and regions for maximum impact based on historical data and trends.

  4) Promotional Campaign Plans:
     Detailed plans for promotional activities, including social media campaigns, influencer collaborations, and advertising efforts.

  5) Box Office Predictions:
     Predictions and forecasts for the movie's potential box office performance based on historical data, market trends, and competition.

  6) Feedback Analysis:
     Analysis of audience feedback and sentiment to understand strengths, weaknesses, and areas for improvement in the movie.

  7) Long-Term Strategy Recommendations:
     Recommendations for maintaining engagement and relevance beyond the movie's initial release, potentially including sequels, spin-offs, or related content.

- **Identify data structures, classes, divide and conquer strategies to exploit distributed/parallel/concurrent processing, constraints.**

  **1) Data Structures and Classes:**
  - User Profile Class:
    Represents individual user profiles with attributes like demographics, preferences, and engagement history.

  - Movie Class:
    Represents movies with attributes like title, genre, cast, release date, and box office performance.

  - Marketing Campaign Class:
    Represents marketing campaigns with attributes like budget, channels, and engagement metrics.

  - Social Network Graph:
    A graph data structure to represent connections between users, influencers, and their interactions.

- Predictive Model Class:
  Represents predictive models for box office predictions and audience engagement.

2) **Divide and Conquer Strategies:**
   - Audience Segmentation:
     Divide the audience into segments based on demographics and preferences. Each segment can then be targeted with tailored marketing strategies.

   - Content Creation:
     Divide the content creation process into smaller tasks like writing scripts, designing visuals, and producing trailers, allowing different teams to work concurrently.

   - Box Office Analysis:
     Analyze box office data by dividing it into time periods (weeks, months) to identify trends and patterns.

3) **Distributed/Parallel/Concurrent Processing:**

   - Social Media Engagement:
     Process social media interactions concurrently using parallel processing techniques to quickly respond to user engagement.

   - Predictive Modelling:
     Implement parallel processing for training and evaluating predictive models to speed up the analysis of box office trends.

   - Content Distribution:
     Utilize distributed systems to efficiently distribute promotional content to various platforms and regions simultaneously.

   - Market Analysis:
     Conduct distributed data processing to analyze market trends across different geographical regions and demographics.

4) **Constraints:**
   - Data Privacy:
     Ensure user data privacy when collecting and analyzing user profiles, adhering to legal and ethical constraints.

   - Resource Limitations:
     Consider budget constraints when designing marketing strategies and content creation plans.

   - Time Constraints:
     Account for time limitations in production, marketing campaign execution, and movie release schedules.

   - Technical Compatibility:
     Ensure that chosen technologies for data processing, machine learning, and content distribution are compatible and scalable.

- **Functions: Identify Objects, Morphisms, Overloading in functions, Functional relations**

  1) **Functions:**
     - calculateBoxOfficePrediction(movie):
       Calculates the predicted box office performance of a movie based on historical data, marketing strategies, and audience preferences.

     - generateUserProfiles(data):
       Generates user profiles by analyzing demographics, preferences, and engagement data.

     - segmentAudience(userProfiles):
       Segments the audience into distinct groups based on user profiles and preferences.

     - createMarketingCampaign(movie, targetAudience):
       Creates a marketing campaign tailored to specific audience segments.

     - analyzeSocialMediaEngagement(content):
       Analyzes social media interactions and engagement metrics to gauge the effectiveness of promotional content.

     - trainPredictiveModel(trainingData):
       Trains a predictive model using machine learning techniques to forecast box office performance.

     - distributeContent(content, platforms):
       Distributes promotional content across various platforms to reach a wider audience.

     - evaluateMarketingStrategy(campaignMetrics):
       Evaluates the success of marketing campaigns based on engagement and conversion metrics.

     - calculateInfluenceGraph(socialInteractions):
       Builds a social network graph to represent the influence of users and influencers on each other.

     - recommendContent(userProfile, movie):
       Recommends relevant content to users based on their preferences and the movie's characteristics.

  2) **Objects:**
     - Movie:
       An object representing a movie, with attributes like title, genre, cast, and release date.

     - User:
       An object representing a user, with attributes like demographics, preferences, and engagement history.

     - MarketingCampaign:
       An object representing a marketing campaign, with attributes like budget,

channels, and target audience.

- **SocialInteraction:**
  An object representing interactions between users on social media platforms.

- **BoxOfficePredictionModel:**
  An object representing a predictive model for box office performance.

## 3) Morphisms:

- **mapUserProfile(user):**
  A morphism from the set of users to their respective user profiles.

- **predictBoxOffice(movie):**
  A morphism from the set of movies to their predicted box office performance.

- **evaluateCampaignEffectiveness(campaign):**
  A morphism from marketing campaigns to their effectiveness metrics.

## 4) Overloading in Functions:

- **calculateBoxOfficePrediction(movie, marketingStrategy):**
  Overloaded function that calculates box office predictions using different marketing strategies.

- **generateUserProfiles(demographicsData,engagementData):**
  Overloaded function that generates user profiles using different combinations of data sources.

## 5) Functional Relations:

1) User →User Profile:
   A functional relation mapping each user to their corresponding user profile.

2) Movie →Predicted Box Office:
   A functional relation predicting the box office performance of movies based on certain factors.

3) Marketing Campaign →Engagement Metrics:
   A functional relation mapping marketing campaigns to their resulting engagement metrics.

- **Success Conditions:**

The success conditions for project, "Movie Popularity and Target Audience System," are the measurable outcomes that indicate the achievement of your project goals. Here are some potential success conditions:

1) Audience Engagement:
   High engagement metrics on social media platforms, such as likes, shares, comments, and interactions with promotional content.

2) Box Office Performance:
Box office revenue exceeding a predetermined target based on historical data and industry benchmarks.

3) Audience Satisfaction:
Positive feedback and reviews from audiences, indicating their enjoyment and emotional connection with the movie.

4) Target Audience Reach:
Reaching and attracting the identified primary and secondary target audience segments.

5) Marketing Effectiveness:
Measurable increase in website traffic, social media followers, and conversions resulting from marketing campaigns.

6) Data-Driven Decisions:
Demonstrated use of data analysis to make informed decisions about marketing strategies, release timing, and audience targeting.

7) Cultural Relevance:
Positive reception from diverse audience groups, indicating that the movie resonates across different cultures and backgrounds.

8) Influencer Engagement:
Successful partnerships with influencers leading to increased buzz and exposure.

9) Long-Term Impact:
Continued engagement, discussions, and interest in the movie even after its initial release.

10) Return on Investment (ROI):
Achieving a favorable ratio of revenue generated to the resources invested in production and marketing.

11) Critical Acclaim:
Positive reviews from critics and industry professionals, indicating the quality of the movie's production and storytelling.

12) Sustainable Community:
Establishment of a loyal fan community that continues to discuss, share, and engage with the movie and its related content.

13) Market Recognition:
Recognition and acknowledgment of the movie's impact within the industry and among peers.

- **Failure Conditions:**Here are some potential failure conditions for your project "Movie Popularity and Target Audience System":

1) Low Audience Engagement:
Minimal interaction with promotional content on social media platforms, indicating a lack of interest from the target audience.

2) Box Office Underperformance:
   Box office revenue falling significantly short of the projected targets, leading to financial losses.

   Negative Audience Reception:

   Negative reviews and feedback from audiences, indicating dissatisfaction with the movie's storyline, characters, or production quality.

3) Missed Target Audience:
   Failing to attract the identified primary and secondary target audience segments, resulting in limited reach.

4) Ineffective Marketing Strategies:
   Low conversion rates and engagement metrics from marketing campaigns, indicating poor strategy execution.

5) Limited Data Utilization:
   Neglecting data analysis in decision-making, leading to suboptimal marketing strategies and audience targeting.

6) Cultural Insensitivity:
   Offending or alienating specific cultural or demographic groups due to lack of cultural sensitivity in content or marketing.

7) Failed Influencer Collaborations:
   Influencer partnerships not resulting in increased visibility or engagement due to poor planning or execution.

8) Short-Lived Interest:
   Rapid decline in audience engagement and discussion after the initial movie release, leading to limited long-term impact.

9) Negative Critical Reception:
   Poor reviews from critics and industry professionals, affecting the movie's reputation and industry recognition.

10) Negative Return on Investment (ROI):
Revenue generated not covering the resources invested in production and marketing, resulting in financial losses.

11) Lack of Community Building:
Failing to establish an engaged and sustained fan community, hindering the movie's continued relevance.

12) Market Ignorance:
The movie not gaining recognition or attention within the industry, missing opportunities for partnerships or awards.

13) Technical Glitches:
Technical issues during movie releases or marketing campaigns affecting user experience and engagement.

14) Legal and Ethical Concerns: Violation of data privacy, copyright, or other legal and ethical considerations leading to reputational damage.

# 11  Software and hardware requirements for the implementation

1) **Software Requirements:**
   - Development Environment:
     Integrated Development Environment (IDE) such as Visual Studio, Eclipse, or JetBrains IntelliJ IDEA for coding and development.

   - Programming Languages:
     Depending on the components of your project, you might use languages like Python, Java, JavaScript, or others.

   - Database Management System:
     Database software like MySQL, PostgreSQL, or MongoDB for storing user profiles, movie data, and engagement metrics.

   - Data Analysis and Machine Learning:
     Libraries such as pandas, scikit-learn, TensorFlow, or PyTorch for data analysis, machine learning model development, and predictive modeling.

- Web Development:
  Front-end technologies like HTML, CSS, JavaScript, and front-end frameworks (React, Angular, Vue.js) for building interactive user interfaces and web applications.

- Server-side Development:
  Backend frameworks such as Django (Python), Spring Boot (Java), or Node.js for handling server-side logic and APIs.

- Version Control:
  Git for version control and collaboration among developers.

- Social Media APIs:
  APIs provided by social media platforms (e.g., Facebook Graph API, Twitter API) for retrieving engagement data and interactions.

- Deployment Tools:
  Tools like Docker for containerization and orchestration, as well as cloud platforms (AWS, Azure, Google Cloud) for deployment.

2) **Hardware Requirements:**
- Development Machines:
  Computers with sufficient processing power, memory, and storage for coding and development tasks.

- Server Hosting:
  Virtual private servers (VPS) or cloud instances for hosting the backend, databases, and other server components.

- Testing Devices:
  Devices for testing the user interfaces and functionality, including desktops, laptops, smartphones, and tablets.

- Data Storage:
  Storage solutions for housing datasets, movie files, user profiles, and engagement data.

- Networking Equipment:
  Reliable internet connection for development, testing, and deployment.

- Server Monitoring:
  Monitoring tools for tracking server performance, uptime, and potential issues.

- Backup Solutions:
  Regular data backups to ensure data integrity and recovery in case of failures.

# 12 Innovativeness & Usefulness of Project

**Innovativeness:**

The innovativeness of the "Movie Popularity and Target Audience System" project lies in its pioneering use of data-driven strategies within the realm of the entertainment industry. By integrating cutting-edge technologies such as data analytics, machine learning, and real-time engagement tracking, the project redefines how movies are marketed, released, and received by audiences. The project's innovative approach rests on its ability to harness the vast amounts of available data, ranging from audience preferences to social media interactions, to craft personalized experiences for viewers. This unique fusion of technology and creativity not only enhances the chances of a movie's success but also sets a new precedent for leveraging data insights to shape the entertainment landscape. As it bridges the gap between art and science, the project's innovativeness serves as a catalyst for transforming the movie industry into an adaptive, audience-centric realm where decisions are grounded in actionable data, propelling cinematic experiences to new heights.

**Usefulness**

The "Movie Popularity and Target Audience System" project offers a profound level of usefulness by revolutionizing how movies are conceptualized, promoted, and embraced by audiences. Its utility lies in its capacity to empower filmmakers, producers, and marketers with invaluable insights derived from data analysis, allowing them to craft strategies that resonate deeply with target audiences. This, in turn, translates to enhanced movie success rates, as marketing efforts are precisely directed towards receptive viewers. The project's personalized recommendations and tailored content not only elevate the cinematic experience but also forge stronger connections between movies and their audiences. Beyond the individual film, the project holds broader implications for the entertainment industry, fostering more sustainable and impactful business practices. By optimizing resource allocation, adapting strategies in real-time, and championing cultural sensitivity, the project showcases its utility as a transformative tool for both creativity and commerce. Ultimately, its usefulness extends far beyond the screen, heralding a new era of informed decision-making, audience engagement, and lasting cinematic impact.

# 13 Names of Conferences / Journals where papers can be published

- ACM Conference on Recommender Systems (RecSys)

- International Conference on Data Mining (ICDM)

- ACM Transactions on Interactive Intelligent Systems

- IEEE/ACM Conference/IEEE Access 10:1-1

- International Conference on Data Mining (ICDM)

- International World Wide Web Conference (WWW)

# 14 Review of Conference/Journal Papers supporting Project idea

- L. Sharma and A. Gera, ''A survey of recommendation system: Research challenges,'' Int. J. Eng. Trends Technol., vol. 4, no. 5, pp. 1989–1992, 2013.
- N. Das, S. Borra, N. Dey, and S. Borah, ''Social networking in web based movie recommendation system,'' in Social Networks Science: Design, Implementation, Security, and Challenges. Cham, Switzerland: Springer, 2018, pp. 25–45.
- P. Nagarnaik and A. Thomas, ''Survey on recommendation system methods,'' in Proc. 2nd Int. Conf. Electron. Commun. Syst. (ICECS), Feb. 2015, pp. 1603–1608.
- M. A. Hameed, O. Al Jadaan, and S. Ramachandram, ''Collaborative filtering based recommendation system: A survey,'' Int. J. Comput. Sci. Eng., vol. 4, no. 5, p. 859, 2012.
- B. Sarwar, G. Karypis, J. Konstan, and J. Reidl, ''Item-based collaborative filtering recommendation algorithms,'' in Proc. 10th Int. Conf. World Wide Web (WWW), 2001, pp. 285–295.
- Y. Koren and R. Bell, ''Advances in collaborative filtering,'' in Recommender Systems Handbook. Boston, MA, USA: Springer, 2015, pp. 77–118.
- J. L. Herlocker, J. A. Konstan, and J. Riedl, ''Explaining collaborative filtering recommendations,'' in Proc. ACM Conf. Comput. supported Cooperate. Work (CSCW), 2000, pp. 241–250.
- M. J. Pazzani, ''A framework for collaborative, content-based and demographic filtering,'' Artif. Intell. Rev., vol. 13, no. 5, pp. 393–408, 1999.
- R. Van Meteren and M. Van Someren, ''Using content-based filtering for recommendation,'' in Proc. Mach. Learn. Inf. Age, MLnet/ECML2000 Workshop, vol. 30, 2000, pp. 47–56.
- P. B. Thorat, R. M. Goudar, and S. Barve, ''Survey on collaborative filtering, content-based filtering and hybrid recommendation system,'' Int. J. Comput. Appl., vol. 110, no. 4, pp. 31–36, Jan. 2015.

# 15   Plan of Project Execution

Creating a project execution plan using a project management tool like Microsoft Planner can help you organize tasks, allocate resources, and track progress effectively. Here's a simplified outline of how you might structure your project plan using Planner:

Project: Movie Popularity and Target Audience System

1) Define Project Scope and Goals:
    Identify project objectives, success criteria, and constraints. Create a project charter outlining key deliverables and stakeholders.

2) Project Initiation:
    Set up the project management tool (Planner) and invite team members. Create buckets to organize tasks, such as "Pre-Production," "Development," "Marketing," etc.

3) Pre-Production Phase:
    Gather requirements for data collection, movie analysis, and audience segmentation. Define data sources and collection methods. - Research and select appropriate data analytics and machine learning tools.

4) Development Phase:
    Develop user profile creation logic. - Design and implement predictive models for box office predictions. Create algorithms for audience segmentation based on preferences. - Implement a social media engagement tracking mechanism.

5) Marketing and Promotion:
    Develop marketing campaign strategies for different audience segments. Plan content creation, including trailers, posters, and online material. - Collaborate with influencers and plan influencer engagement strategies.

6) Testing and Quality Assurance:
    Conduct thorough testing of the application, user interfaces, and algorithms. Verify the accuracy of predictive models and user profile generation.

7) Deployment:
    Deploy the system to a test environment for final testing. - Address any issues or bugs identified during testing. Deploy the final version to the production environment.

8) Data Collection and Analysis:
    Start collecting data on user interactions, engagement metrics, and box office performance. - Use data analytics tools to analyze trends and gather insights.

9) Continuous Improvement:
    Monitor user engagement and box office performance regularly. - Refine predictive models based on collected data. - Adapt marketing strategies based on real-time data analysis.

10) Documentation and Reporting:
    Create documentation for the project, including user manuals and technical guides. Prepare project reports for stakeholders, highlighting achievements and insights.

11) Project Review and Closure:
    Review project goals and compare with achieved outcomes. - Hold a project review meeting

to discuss successes and areas for improvement. Archive project documents, lessons learned, and other relevant information.

12) Post-Release Engagement:
    Monitor user feedback, social media discussions, and engagement.  Plan strategies for maintaining audience interest and engagement over time. Using Microsoft Planner, you can create tasks, assign them to team members, set due dates, and track progress. Each task can have subtasks and attachments, helping you manage the project efficiently. This plan provides a basic framework, and you can customize it based on your project's specific requirements and the features offered by the project management tool you choose.

# 8. Project Review (Semester I)

The group members are expected to present their work undertaken during the semester. Journey of development has to be rationally presented with thorough literature survey.

**Project Review-I: Problem Statement, Motivation, objectives and Literature Review**

Student is expected to deliver presentation covering Problem Statement, Motivation, objectives and Literature Review.

| Sr. No. | Question | Date | Remark / Grade | Sign of Guide |
|---|---|---|---|---|
| 1) | Do Research gap identified lead to find motivation of project? | 20/7/2023 | | |
| 2) | Does the statement give clear identification about what your project will accomplish? | 20/7/2023 | | |
| 3) | Is the statement short and concise? | 21/7/2023 | | |
| 4) | Do similar type of methodology / model exists? | 22/7/2023 | | |
| 5) | Is the studied literature sufficient to decide scope of the project? | 22/7/2023 | | |
| 6) | Are the objectives clearly and unambiguously listed? | 22/7/2023 | | |
| 7) | Can a person who is not familiar with the project understand scope of the project by reading the project problem statement? | 23/7/2023 | | |
| 8) | Are project objectives of study (what product, process, resource etc.) clearly defined? | 23/7/2023 | | |
| 9) | Are the objectives set helpful to achieve goal of the project? | 23/7/2023 | | |
| 10) | Does the project contribute to our society by any means? | 24/7/2023 | | |
| **Remark and Suggestions:** | | | | |

**Name and Sign of Reviewers:**
**1. Prof. Jaishri Shilpakar**

**2.**

## Project Review-II; Feasibility and Scope

Student is expected to deliver presentation covering Feasibility and Scope

| Sr. No. | Question | Date | Remark / Grade | Sign of Guide |
|---|---|---|---|---|
| 1) | Is the project's view point is understood? | 24/7/2023 | | |
| 2) | Is the project goal statement is in alignment with the organization's business goal and mission? | 24/7/2023 | | |
| 3) | Who is the project's end user? | 24/7/2023 | | |
| 4) | What is the projected cost of producing a product? | 25/7/2023 | | |
| 5) | Is project achievable in specified (Time, Cost Budget)? | 25/7/2023 | | |
| 6) | Are the requirements within the scope of the project? | 25/7/2023 | | |
| 7) | Is the scope properly defined? | 26/7/2023 | | |
| 8) | Does the clearly define scope of the project? | 26/7/2023 | | |
| 9) | Do the project requirements fit into available software hardware? | 26/7/2023 | | |
| 10) | Whether the milestones are stated completely and project timeline is given? | 27/7/2023 | | |
| 11) | Whether risks like technical risks, Operational risks, schedule business risks are identified correctly or not? | 27/7/2023 | | |
| 12) | Whether Risk prioritization is done properly or not and any back up plan is there or not? | 27/7/2023 | | |
| **Remark and Suggestions:** | | | | |

**Name and Sign of Reviewers:**
**1. Prof. Jaishri Shilpakar**

**2.**

## <u>Project Review-III: Requirement Analysis</u>

Student is expected to deliver presentation covering Requirement Analysis

| Sr. No. | Question | Date | Remark / Grade | Sign of Guide |
|---|---|---|---|---|
| 1) | Is information domain analysis complete, consistent and accurate? | 28/7/2023 | | |
| 2) | Is problem statement categorized in identified area and targeted towards specific area there in? | 28/7/2023 | | |
| 3) | Is external and internal interfacing properly defined? | 28/7/2023 | | |
| 4) | Are requirements consistent with schedule, resources and budget? | 29/7/2023 | | |
| 5) | Are all requirements traceable to system level? | 29/7/2023 | | |
| 6) | What is needed to make the product? | 30/7/2023 | | |
| 7) | Is there a demand for the product? | 31/7/2023 | | |
| 8) | Is identification of stakeholders done properly? | 2/8/2023 | | |
| 9) | Whether all requirements are captured and documented in line with scope? | 4/8/2023 | | |
| 10) | Whether all type of analysis classes are identified? | 5/8/2023 | | |
| 11) | Whether the Acceptance criteria is decided | 7/8/2023 | | |
| 12) | Is SRS document as per IEEE format complete and correct? | 8/8/2023 | | |
| **Remark and Suggestions:** | | | | |

**Name and Sign of Reviewers:**
**1. Prof. Jaishri Shilpakar**


**2.**

### Project Review-IV; Design

Student is expected to deliver presentation covering Design

| Question | | Date | Remark / Grade | Sign of Guide |
|---|---|---|---|---|
| 1) | Are requirements reflected in the system architecture? | 9/8/2023 | | |
| 2) | Does the design support both project (product) and project goals? | 11/8/2023 | | |
| 3) | Does the design address all the issues from the requirement? | 15/8/2023 | | |
| 4) | Is effective modularity achieved and modules are functionally independent? | 20/8/2023 | | |
| 5) | Are structural diagrams (class, Object, etc) well defined? | 22/8/2023 | | |
| 6) | Are all class associations clearly defined and understood?(Is it cleat which classes provide which services)? | 23/8/2023 | | |
| 7) | Are the classes in the class diagram clear? (What they represent in the architecture design document?) | 24/8/2023 | | |
| 8) | Is inheritance appropriately used? | 24/8/2023 | | |
| 9) | Are the multiplicities in the use case diagram depicted in the class diagram? | 30/8/2023 | | |
| 10) | Are all objects used in sequence diagram? | 2/9/2023 | | |
| 11) | Are the symbols used in all diagrams corresponding to UML standards? | 5/9/2023 | | |
| 12) | Are behavioral diagrams (use case, sequence, activity, etc.) well defined and understood? | 9/9/2023 | | |
| 13) | Does each case have clearly defined actors and input/ output? | 15/9/2023 | | |
| 14) | Does the sequence diagram match with class diagram? | 20/9/2023 | | |
| 15) | Is aggregation/ containment (used) clearly defined and understood? | 24/9/2023 | | |
| 16) | Whether State charts are capturing system's dynamic behavior correctly? | 27/9/2023 | | |
| 17) | Related to procedural thinking whether DFDs and CFDs along with transaction and transformation flow are done correctly ? | 2/10/2023 | | |
| **Remark and Suggestions:** | | | | |

**Name and Sign of Reviewers:**
**1. Prof. Jaishri Shilpakar**
**2.**

## 9. Internal Evaluation Sheet (Semester I)

| Sr No | Name(s) of the student in the project group | Problem Statement / Motivation / Objectives / Scope/ Feasibility Requirement (05) | Literature Survey (05) | Requirement Analysis (05), Modeling & Designing (10) | Planning & Prototyping (05) | Presentation & Question - Answer (10) | Partial Project Report (10) | Total (50) |
|---|---|---|---|---|---|---|---|---|
| 1. | Solankey Himanshu | | | | | | | |
| 2. | Dighe Akash | | | | | | | |
| 3. | Sathe Shweta | | | | | | | |
| 4. | Makode Yash | | | | | | | |

**(Refer Rubrics – page number 26)**

**Name and Signature of Evaluation Committee:**

1. **Prof. Jaishri Shilpakar**

2. **Sign.**

---

**Examiners Feedback and Suggestions:**




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**Signature of Guide**                                            **Signature of Head**
**[            ]**                                                  **Prof. Dhamdhere S.**
                                                                    **Head of Department**

## 10. <u>Project Review: (Semester II)</u>

The group members are expected to present their work undertaken during the semester. Journey of development has to be rationally presented.

### <u>Project Review-I: Modeling (Model Refinement and Algorithm development)</u>

Student is expected to deliver presentation covering Modeling

| Sr. No. | Question | Date | Remark/ Grade | Sign of Guide |
|---|---|---|---|---|
| 1) | Which software Development Process model is used? (Water fall, Incremental, RAD) How? (? at this level?) | 20/12/2023 | | |
| 2) | Are data objects, their attributes and relationships clearly identified? (All constraints fro SRS are captured or not?) | 21/12/2023 | | |
| 3) | Have the objects and respective classes and their responsibilities? | 22/12/2023 | | |
| 4) | Have you analyzed the requirements been analyzed and represented into respective models? | 23/12/2023 | | |
| 5) | Have the different system states been differentiated and depicted them in the form of state transition diagram? | 25/12/2023 | | |
| 6) | Does the mathematical model clearly imply design of the project? | 27/12/2023 | | |
| 7) | Does the mathematical model clearly states goal of project? | 28/12/2023 | | |
| 8) | Is the interface between the modules properly identified? | 29/12/2023 | | |
| 9) | Are any functional dependencies identified and described? | 30/12/2023 | | |
| 10) | Which architectural model does the system support? | 31/12/2023 | | |
| 11) | Whether Deployment diagram is in line with selected architecture? | 2/1/2024 | | |
| 12) | Whether all components are designed properly and represented in component diagram? | 3/1/2024 | | |
| 13) | Whether NP-completeness of algorithms is checked? | 4/1/2024 | | |
| **Remark and Suggestions:** | | | | |

**Name and Sign of Reviewers:**
**1.** Prof. Jaishri Shilpakar
**2.**


### Project Review-II: Coding / Implementation
Student is expected to deliver presentation covering Coding / Implementation

| Sr. No. | Question | Date | Remark/ Grade | Sign of Guide |
|---|---|---|---|---|
| 1) | Does the code completely and correctly implement the design? | 4/2/2024 | | |
| 2) | Does the code comply with the coding standard? | 5/2/2024 | | |
| 3) | Is the code well structured, consistent in style, and consistently formatted? | 7/2/2024 | | |
| 4) | Are all functions in the design coded? | 10/2/2024 | | |
| 5) | Does the code make use of object oriented concepts? | 12/2/2024 | | |
| 6) | Does the code support granularity? | 15/2/2024 | | |
| 7) | Is the language used for coding correctly chosen as per the project need? | 20/2/2024 | | |
| 8) | If any off-the-shelf components are used, Have you understood the functionalities of using it? | 23/2/2024 | | |
| 9) | Are all comments consistent with the code? | 27/2/2024 | | |
| 10) | Whether code optimization is done properly?(By using language features) | 5/3/2024 | | |

**Remark and Suggestions:**




**Name and Sign of Reviewers:**
**1. Prof. Jaishri Shilpakar**

**2.**

### Project Review-III: Validation and Testing

Student is expected to deliver presentation covering Validation and Testing

| Sr. No. | Question | Date | Remark/ Grade | Sign of Guide |
|---------|----------|------|---------------|---------------|
| 1) | Has alpha testing been done? | 9/3/2024 | | |
| 2) | Has beta testing been done? | 12/3/2024 | | |
| 3) | Have been validated the requirements, design and code as per standard? | 14/3/2024 | | |
| 4) | Has GUI testing of project been performed? How? | 15/3/2024 | | |
| 5) | Does the system comply with basic usability norms? | 15/3/2024 | | |
| 6) | Has the code been tested using standard datasets available in your area of project? | 17/3/2024 | | |
| 7) | Has the code been tested in real time environment? | 17/3/2024 | | |
| 8) | After integration of all components whether total performance of system is checked? | 17/3/2024 | | |
| 9) | Whether repository of all components along with versions is documented? | 19/3/2024 | | |
| 10) | Have social, safety, environmental, ethical and legal issues been considered while providing solution to problem? | 20/3/2024 | | |
| **Remark and Suggestions:** | | | | |

**Name and Sign of Reviewers:**
**1. Prof. Jaishri Shilpakar**


**2.**

### Project Review-III: Report Writing

Student is expected to deliver presentation covering Report Writing

| Sr. No. | Question | Date | Remark/ Grade | Sign of Guide |
|---------|----------|------|---------------|---------------|
| 1) | Is the report written as per the prescribed format? | 1/4/2024 | | |
| 2) | Is the report timely prepared? | 1/4/2024 | | |
| 3) | Is the report properly organized, spelled, grammatically correct? | 1/4/2024 | | |
| 4) | Is the report plagiarism free? | 1/4/2024 | | |
| 5) | Is the report precise and written to the point? | 4/4/2024 | | |
| 6) | Does the report contain complete results and comparative graphs? | 4/4/2024 | | |
| 7) | Are all figures and tables properly numbered and labeled? | 4/4/2024 | | |
| 8) | Are all figures and tables properly cited? | 4/4/2024 | | |
| 9) | Weather references are properly cited? | 4/4/2024 | | |

**Remark and Suggestions:**


**Name and Sign of Reviewers:**
**1. Prof. Jaishri Shilpakar**


**2.**

## 11. Internal Evaluation Sheet (Semester II)

| Sr. No. | Name(s) of the student in the project group | Modeling (10) | Coding And Implem-Entation (40) | Testing (10) | Understanding, Individual Involvem-ent / Contribut-ion in the project (10) | Team Work (10) | Demons-tration cum Present-ation (10) | Docu-ments & Repo rt (10) | Total (100) |
|---|---|---|---|---|---|---|---|---|---|
| 1. | Solankey Himanshu | | | | | | | | |
| 2. | Dighe Akash | | | | | | | | |
| 3. | Sathe Shweta | | | | | | | | |
| 4. | Makode Yash | | | | | | | | |

**(Refer Rubrics – page number 26)**
**Name and Signature of Evaluation Committee:**

1. **Prof. Jaishri Shilpakar**

2. **Sign.**

**Examiners Feedback and Suggestions:**

**Signature of Guide**          **Signature of Head**
**[                    ]**          **Prof. Dhamdhere S.**
**Head of Department**

# 12. <u>Software Engineering Code of Ethics and Professional Practices</u>

(Courtesy / Reference- http://www.acm.org/about/code-of-ethics )
Computers have a central and growing role in commerce, industry, government, medicine, education, entertainment and society at large. Software engineers are those who contribute by direct participation or by teaching, to the analysis, specification, design, development, certification, maintenance and testing of software systems. Because of their roles in developing software systems, software engineers have significant opportunities to do good or cause harm, to enable others to do good or cause harm, or to influence others to do good or cause harm. To ensure, as much as possible, that their efforts will be used for good, software engineers must commit themselves to making software engineering a beneficial and respected profession. In accordance with that commitment, software engineers shall adhere to the following Code of Ethics and Professional Practice.

The Code contains eight Principles related to the behavior of and decisions made by professional software engineers, including practitioners, educators, managers, supervisors and policy makers, as well as trainees and students of the profession. The Principles identify the ethically responsible relationships in which individuals, groups, and organizations participate and the primary obligations within these relationships. The Clauses of each Principle are illustrations of some of the obligations included in these relationships. These obligations are founded in the software engineer's humanity, in special care owed to people affected by the work of software engineers, and the unique elements of the practice of software engineering. The Code prescribes these as obligations of anyone claiming to be or aspiring to be a software engineer.

Software engineers shall commit themselves to making the analysis, specification, design, development, testing and maintenance of software a beneficial and respected profession. In accordance with their commitment to the health, safety and welfare of the public, software engineers shall adhere to the following Eight Principles:

1. PUBLIC - Software engineers shall act consistently with the public interest.
2. CLIENT AND EMPLOYER - Software engineers shall act in a manner that is in the best interests of their client and employer consistent with the public interest.
3. PRODUCT - Software engineers shall ensure that their products and related modifications meet the highest professional standards possible.
4. JUDGMENT - Software engineers shall maintain integrity and independence in their professional judgment.
5. MANAGEMENT - Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance.
6. PROFESSION - Software engineers shall advance the integrity and reputation of the profession consistent with the public interest.
7. COLLEAGUES - Software engineers shall be fair to and supportive of their colleagues.
8. SELF - Software engineers shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession.

**Environment and Computing-**
Information and communication technologies (ICTs) have been contributing to environmental problems: computers, electronic devices and ICT infrastructure consume significant amounts of electricity, placing a heavy burden on our electric grids and

contributing to greenhouse gas emissions. In 2007, the total footprint of the ICT sector – including personal computers (PCs) and peripherals, telecoms networks and devices and data centers – was 830 Mt $CO_2$ emission, about 2% of the estimated total emissions from human activity released that year (a figure equivalent to aviation). ICT hardware poses severe environmental problems both during its production and its disposal. Each stage of a computer's life, from its production, throughout its use, and into its disposal, presents environmental problems. Manufacturing computers and their various electronic and non - electronic components consumes electricity, raw materials, chemicals, and water, and generates hazardous waste. All these directly or indirectly increase carbon dioxide emissions and impact the environment and the trend is to increase in the BAU (Business As Usual) scenario.

## Green Computing-

Hence you all our students are requested to follow green computing practices. Green computing is the study and practice of designing, manufacturing, using, and disposing of computers, servers, and associated subsystems — such as monitors, printers, storage devices, and networking and communications systems —efficiently and effectively with minimal or no impact on the environment. Green computing includes the dimensions of environmental sustainability, the economics of energy efficiency, and the total cost of ownership, which includes the cost of disposal and recycling. Green computing benefits the environment by improving energy efficiency, lowering greenhouse gas emissions, using less harmful materials, and encouraging reuse and recycling. Green design, Green manufacturing, Green use, Green disposal are complementary paths of green ICT. Only focusing on these four fronts we can achieve total environmental sustainability from the IT side and make IT greener throughout its entire lifecycle.

## Social Life and Computing-

Each IT professional must keep in mind the three key components of a corporate Green IT best practices policy -Environment, Economy and Social aspect. The invention of the computer has completely changed the way we live our lives. Nearly everything is controlled by a computer; cars, satellites, phones, etc. Computers have made our lives easier. Computers can also have positive effects on a person's social life when their power to connect over great distances is harnessed fully. Computers have both positive and negative impact in our society. While technology is a wonderful thing it is almost likely that it can be used in an immoral or wrong way. There is a price to pay for everything even if it appears it's making life easier on people.

While proper lifecycle management can greatly boost a IT company's ecological and environmental sustainability position, it can also contribute to achieving goals on the social front. Hardware retirement practices are the primary concern in this regard. In addition to seeking carbon neutrality, a proper asset retirement strategy should seek sustainability in the communities where companies operate.

## The following social objectives should be considered:

1. To optimize sustainability in their IT infrastructure, companies should focus on each state of the IT lifecycle
2. Setting the Appropriate Corporate Sustainability Policy
3. Avoiding unethical labor practices and Controlling unethical exports
4. Accountability in the Recycling e-waste and Sustainability Metrics and Reporting
5. Greater Transparency Regarding Material Analysis and Extraction
6. Compliance with stringent, evolving security regulations

## 13. Contest Participation Details.

### A. Participation in project Competition / Contest

| Sr. No. | Name and Place of Project Competition and Exhibition | Date | Certificates prizes won if any |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |

Attach attested copy of certificate(s)

### B. Paper Publication/ Presentation/IPR

| Sr. No. | Name of Organizer | Date | Certificates/ Prizes |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |

Attach attested copy of certificate(s)

## 14. Rubrics

### A. Idea Inception

| Grade (Grade Point) Parameter | Excellent (10-9) | Very Good (6-8) | Fair (3-5) | Poor (1-2) |
|---|---|---|---|---|
| Problem Definition and Scope of the Project | | | | |
| Literature Survey | | | | |
| Software Engineering Approach | | | | |
| Requirement Analysis | | | | |

### B. Implementation

| Grade (Grade Point) Parameter | Excellent (10-9) | Very Good (6-8) | Fair (3-5) | Poor (1-2) |
|---|---|---|---|---|
| Implementation- Design, platform, coding, | | | | |
| Optimization considerations(Memory, time, Resources, Costing) | | | | |
| Thorough Testing of all modules | | | | |
| Integration of modules and project as whole | | | | |

### C. Documents

| Grade (Grade Point) Parameter | Excellent (10-9) | Very Good (6-8) | Fair (3-5) | Poor (1-2) |
|---|---|---|---|---|
| Synopsis | | | | |
| Project Report | | | | |
| Quick references | | | | |
| System manual | | | | |
| Installation Guide | | | | |
| Work Book | | | | |

**D. Demonstration**

| Grade (Grade Point) | Excellent (10-9) | Very Good (6-8) | Fair (3-5) | Poor (1-2) |
|---|---|---|---|---|
| **Parameter** | | | | |
| Project Presentation and Demonstration(User Interface, ease of use, usability) | | | | |
| Understanding individual capacity & involvement in the project | | | | |
| Team Work (Distribution of work, intra-team communication and togetherness) | | | | |
| Outcomes / Usability | | | | |

**E. Contest Participation / Awards, Publications and IPR**

| Grade (Grade Point) | Excellent (10-9) | Very Good (6-8) | Fair (3-5) | Poor (1-2) |
|---|---|---|---|---|
| **Parameter** | | | | |
| Participation in various contests | | | | |
| Appreciation and Awards | | | | |
| Publications | | | | |
| Copyright | | | | |
| Patent | | | | |
| Commercial value /product conversion of Work | | | | |

## Bibliography

1. Roger S. Pressman, "Software Engineering: A Practitioner's Approach", 6th Edition McGraw- Hill, ISBN978–0–07–337597–7.
2. Joseph Phillips, "IT Project Management", Tata McGraw-Hill 2003 Edition, ISBN 13: 978-0071700436
3. www.csc.villanova.edu/~tway/courses/csc4181/s2010/srs_template-1.doc
4. http://unipune.ac.in/Syllabi_PDF/revised-2015/engineering/BE-Computer-2012-course-27-8-15.pdf

**Annexure i: Final Synopsis (after approval of the project work)**

**Title Page**

Project Group ID/ group
Details Title of the project
Domain such as databases, image processing, network based, web technology based etc.
Team Members (List with Signatures)
Sponsorship details if any (Name, External Guide name and Designation with Signature, e- Mail ID)
Internal Guide (with signature of approval)

**Inner Pages:**

Keywords (ACM Keywords)
Problem Definition
List of modules/ functionalities
Current market survey: This should include list of similar products available, if any and also their pros and cons.
Scope of the project
Literature survey (List of references only): This should include the list of books, magazines, research papers, web links etc. referred by the students.
Software and hardware requirements of the project
Probable date of completion
Outcomes

**Annexure ii: Partial Project Report (Semester I)**

A preliminary report of project work (Partial Project Report) is to be prepared as per the guideline given below using **Latex** and is to be submitted at the end of semester I.
**Title Page**

First page containing Name, Topic Name, Guide Name, Year, Branch, and
College Name etc. (see format displayed herewith)
**Certificate**

Certificate (provided by college)

Project approval sheet (see format displayed herewith)

Certificate certifying the project work done approved by the sponsoring authority,
if any.
**Acknowledgements (if any)**

Thanking any person / staff member / friend if to be done so.

**Abstract**

A minimum of 100 words briefing the topic in consideration.
**Keywords**

A minimum of 5 and maximum of 10
**Introduction**

Introduction should be minimum of 200 words, briefing of the details to follow. It should cover details of project work, objectives, scope of the project and organization of report.
**Literature Survey**

The purpose of the literature survey is to identify information relevant to project work and the potential and known impacts of it within the project area. This section should include a comprehensive report of current market survey done with respect to problem. Include study of similar systems available, if any along with their pros and cons. identify those areas where there is an absence or scarcity.

**Design Details (Phase I to IV)**

Phase I: Requirements Analysis
The Group is to submit a detailed write – up indication the requirements that the project demands, viz.

Actual detailed problem definition.

The definition is to include all that is to be done and is to be put up in the final software and / or

Hardware (product) that is to be generated from the years' work (User's point of view).

Requirement may not be final and provision should be available to add features dynamically without affecting the actual flow and design of the document.
Modified Requirements (After doing feasibility study) are to be prepared under all the 3 categories listed above from the developer's point of view. The requirement listed herein should be feasible technically from the software / Hardware point of view. The new list is also be categorized in the 3 categories listed above.
Follow the standard format of SRS.

**Phase II: Analysis Phase**
The group (based on Phase I) is to suggest the paradigm followed by them in the project. The paradigm should be justifiable from Phase I. The various stages and work to be completed under them is to be indicted in detail.

**Phase III: Design Phase**

ERDs (Optional, decide in consultation with guide)

> The group is to draw the ERD (Entity Relationship Diagram) for the project. (This should be justifiable with regard to Phase I & II)
> The ERD after getting evaluated (by dry running) is to be analyzed for incompleteness from any point of view.
> The ERD thus validated should be made fair in a presentable fashion.
> This ERD is to be included in the Report.

**IF**

The project group is to follow an "Object Oriented" Approach for their Project.

**THEN**

> The group will draw all (all the nine) UML (Unified Modeling Language) diagrams for the project.
> These diagrams are to be refined in every aspect for this report (as per requirements finalized in phase I)
> Proper notations are to be used in all the figures drawn.
> Proper Color-coding if required is to be used.

Extensions to diagrams / customizations may be done and represented (if the project demands it)

**ELSE (groups following Structured Approach)**

> The group will draw the DFD-s (Data Flow Diagrams) for the Project. (These should be justifiable with respect to Phase I, II and the ERD)
> DFD Level 0, Level 1, Level 2 should be drawn in an evolutionary fashion (No entries to appear in Level 2 unless they are in Level 1, which in turn are in Level 0)
> The DFD's are to be validated and made final in a presentable fashion. Proper Color- coding is expected

Extensions to DFD-s may be represented (if the project demands it)

**Phase – IV: Planning Phase**

> The group is to finalize the Front End/ Back End required for the project as per the demands of the project (Software and / or hardware)
> The Front End/ Back End should be justifiable depending on the complexity of the project.
> The structure of the database to be finalized depending on the complexity of the project.
> Any Normalization required on the database is done so as to ensure correctness for the future phase.
> Coding Language / Methodology should be finalized/
> Time requirement to be finalized and indicated

Actual project plan including major milestones should be decided and finalized

Rough estimates of lines of code / functions / routines to be made.

Rough estimates of lines of code / Objects / Classes to be made (for Groups following OO Paradigm)

Software Reuse /Re – Engineering possibilities are to be expected and indicated

Software and Hardware requirement.

Probable date of completion.

Scope of the project.

## Phase – V: Prototyping

A prototype is expected which basically includes all the MAJOR features in the project.

The GUI/ Front end is to be prepared.

The structure of the database / back end (if any) to be indicated.

The prototype is built basically to give a feel of the actual software and / or hardware (Product) that is expected

Major routines / Functions are expected.

## Conclusions

Include conclusions from the work done with a minimum of 50 words

## References

List out Books, Magazines, Thesis, Journals, Web links etc. referred in IEEE format

## Plagiarism Check Report

## Format of SRS

Software requirement Specification is a detailed write-up indicating the requirements that the project demands. it contains actual detailed problem definition. The definition is to include all that is to be done and is to be developed in the final software and / or Hardware (product) that is to be generated form the years' work (User's point of view). The entries under this section are to be categorized under the categories,

1. Necessary functions,
2. Desirable functions, and others

Requirement may not be final and provision should be available to add features dynamically without affecting the actual flow and design of the document. Modified requirements (after doing feasibility study) are to be prepared under all the 3 categories listed above form the developer's point of view. The requirements listed herein should be feasible technically form the software/ Hardware point of view.

It should include following important requirements.

## 1. Detailed Problem Definition

## 2. External Interface Requirements

User interfaces

Hardware Interfaces

Software Interfaces

Communication Interfaces

## 3. System Features

Feature 1

Feature 2 etc.

## 4. Other Non- functional requirements.

Performance requirements

Safety requirements

Software Quality attributes

**Annexure iii: Project Report (Semester II)**

A report of project work is to be prepared as per the guidelines given below using Latex and is to be submitted at the end of semester II along with CD containing (copy of Partial Project Report, Final Project Report along with .tex files, Power point presentation, copy of base paper and reference papers, executable Project Code, supportive software platform for the project execution).

**First page as per standard college reports**

First page containing Name, Topic Name, Guide Name, Year, Branch, and College Name etc. (see format displayed herewith)

**Certificate** (will be provided by college)

Dissertation approval sheet (see format displayed herewith) Also attach certificate certifying the project work done approved by the sponsoring authority, if any.

**Abstract**

A minimum of 100 words briefing the topic in consideration.

**Keywords**

A minimum of 5 and maximum of 10

**Index**

Details of various Topics, Sub-Topics, with Page No. Figure Index, giving details of page number, figure number and figure caption Table Index, giving details of page number, table number and table caption (If any) Index of Pseudo-code / Sample code (If any)

**I) Introduction**

Minimum of 200 words, giving some briefing of the details to follow.

· Detailed problem definition

· Justification of problem

· Need for the new system

· Advances/additions/updating the previous system

· Presently available systems for the same

· Purpose of your system

· Organization of the report

This section should be relevant to the Literature Survey done and reported in the partial project report. The purpose of the literature survey is to identify information relevant to project work and the potential and known impacts of it within the project area. This section should include a comprehensive report of current market survey done with respect to problem. Include study of similar systems available, if any along with their pros and cons. identify those areas where there is an absence or scarcity.

**II) Analysis**

· Project plan
· Requirement analysis
· Team structure

The Group is to submit a detailed write-up indicating the requirements that the project demands-

**Actual detailed problem definition**

The definition is to include all that is to be done and is to be developed in the final software and / or Hardware (product) that is to be generated from the years' work (User's point of view).

The entries under this section are to be categorized under the categories,
1. Necessary functions,
2. Desirable functions,
3. Others

Requirement may not be final and provision should be available to add features dynamically without affecting the actual flow and design of the document. Modified Requirements (after doing feasibility study) are to be prepared under all the 3 categories listed above from the developer's point of view. The requirements listed herein should be feasible technically from the Software / Hardware point of view. The new list is also be categorized in the 3 categories listed above. (Follow the IEEE format of SRS)

The group is to suggest the Paradigm followed by them in the Project. The Paradigm should be justifiable from Phase I. The various stages and work to be completed under them is to be indicted in detail.

**III) Design**
  · Software Requirement Specification(SRS) format is as given below.
  · Risk assessment
  · Brief discussion on Project plan submitted in semester I including major milestones
  and the work done as per it.

**IV) Modelling**
  · UML diagrams (all 9)
  · ERD & Normalization (NF) for database (if any)

**ERDs (Optional, decide in consultation with guide)**
  · The group is to draw the ERD (Entity Relationship Diagram) for the Project. (This should be justifiable with regard to Phase I & II)
  · The ERD after getting evaluated (by dry running) is to be analyzed for incompleteness from any point of view
  · The ERD thus validated should be made fair in a presentable fashion
  · This ERD is to be included in the Report

**IF**
The project group is to follow an "Object Oriented "Approach for their Project.
**THEN**
  · The group is to draw all (all the nine) UML (Unified Modeling Language) diagrams for the
    project
  · These diagrams are to be refined in every aspect for this report (as  per requirements
    finalized in phase I)
  · Proper notations are to be used in all the figures drawn
  · Proper Color-coding if required is to be used

· Extensions to diagrams / customizations may be done and represented (if the project demands it)

**ELSE (groups following Structured Approach)**

· The group is to draw the DFD-s (Data Flow Diagrams) for the Project.  (These should be justifiable with respect to Phase I, II and the ERD)

· DFD Level 0, Level 1, Level 2 should be drawn in an evolutionary fashion (No entries to     appear in Level 2 unless they are in Level 1, which in turn are in Level 0)

· The DFD-s are to be validated and made final in a presentable fashion.

· Proper notations are to be used in all the figures drawn

· Proper Color-coding is expected

· Extensions to DFD-s may be represented (if the project demands it)

## V) Coding

. Algorithms/ Flowcharts
· Software used
· Hardware specification
· Programming language
· Platform
· Components
· Tools
. Coding Style Format

## V) Result Sets

## VI) Testing

· Format technical reviews
· Test plan
· Test cases
· Test results
(Unit, integration, regression, system, α, β)

## VII) Configuration Management Plan

## VIII) Software Quality Assurance Plan

* Costing (Time, Money and Resources)
(Do not include costing in the project report; submit to the guide)

## Conclusion
Your conclusions from the topic dealt with a minimum of 50 words.

## References
List out Books, Magazines, Thesis, Journals, Web links etc referred in IEEE format

## Glossary
In Keyword Alphabetical Order Ascending along with Page numbers

## Plagiarism Check Report

**Annexure iv: Project Report Formatting Guidelines**

1) **Report Size:** Limit your Project report to preferably 25- 40 pages for partial project report. Limit your Project report to preferably 80-100 pages for final project report.
2) **Footer:** The footer "Department of Computer Engineering, SKNCOE Pune." should be included. It should be TIMES NEW ROMAN 10 pt. and centrally justified.
3) **Header:** Project Title centered and page nos. on right should be included. **Start numbering from introduction.**
4) **Paper Size:** A4 Size, bond paper.
5) **Margins: Mirrored.**
   1. **Top         : 1 inch**
   2. **Bottom    : 1 inch**
   3. **Inside :1.25 inch**
   4. **Outside    :1 inch**
6) **Line Spacing:** 1. 5 lines
7) **Title of Chapter:**
   1. **Font  : Arial (Bold face, Capital, )**
   2. **Size   :16 pt.  Alignment:** centered
8) **All Topics heading:**
   i.     First order Heading: (for example -**1. Introduction**)
       1.       Font   : Times New Roman(Bold Face)
       2.       Size    : 14 pt.
   ii.       Second order Heading: (for example -**1.1 Evolution)**
       1.       Font    : Times New Roman(Bold Face)
       2.       Size    : 12 pt.

   iii.       Third order Heading: for example -1.1.1 Image Processing
       **1.**       Font       : Times New Roman(Normal Face)
       **2.**       Size       : 12 pt.

9) **Text:**
   1.       Font      : Times New Roman(Bold Face)
   2.       Size    : 12 pt
10)       **Figures and Tables:**
       **1.Caption:**(for figures below the figure and for tables above the table)
       **2.** Font: Garamond(Bold)
       **3.** Size:11 pt.
       **4.** Alignment: Center
11)       **References:**
       **. Book**
       Author name(s), Book Title, Publisher, Copyright Year, page nos. if any.
       **. Journal/ Magazine/ Periodical**
       Author name(s), paper name, Journal/ Magazine/ Periodical name, issue no., page nos.
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**Annexure V: Project Report Cover page/ Title page**

(Partial) Project Report
On

**Movie Popularity Content-based System**

*by*

Solankey Himanshu Rajesh (Exam NO: B190494)
Dighe Akash Yashwant (Exam NO: B190494220)
Sathe Shweta Tushar (Exam NO: B190494)
Makode Yash Vikram (Exam NO: B190494)

*Under the guidance of*

Prof. Jaishri Shilpakar



Department of Computer Engineering
**Parvatibai Genba Moze College of Engineering**

**SAVITRIBAI PHULE PUNE UNIVERSITY
2023-2024**

**Annexure vi: Project Approval sheet**

PROJECT APPROVAL SHEET

A

**Project**

on

**"Movie Popularity Content-
based System"**

Is successfully completed by

Solankey Himanshu Rajesh (Exam NO: B190494)
Dighe Akash Yashwant (Exam NO: B190494220)
Sathe Shweta Tushar (Exam NO: B190494)
Makode Yash Vikram (Exam NO: B190494)

at

**Department of Computer Engineering
Pravatibai Genba Moze College of Engineering
Savitribai Phule Pune University
2019-2020**

Prof. Jaishri Shilpakar
  (Project Guide)                                                          (Project Coordinator)
                                      (HOD)

# Report Documentation

| Report Code: CS-BE-Project 2019-20 | **Report Number: 7** |
|---|---|

Report Title: Movie Popularity Content-based database system

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**Year:** 2019 -20
**Branch:** Computer Engineering

**Key Words:** <Keywords in the Report>

| Type of Report: FINAL | | Report Checked Date: | **Guides Complete Name:** **Jaishri Shilpakar** | Total Copies |
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**Abstract: <A Brief Abstract of the Seminar>**

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