Project Problem

Future Scope

Requirements and Analysis

Testing

Coding

Software Design

Problem Definitions for July 2023 & Onwards

Important Notes
1. **Viva-voce of this project is compulsory.**
2. **Please follow MCS-044 guidelines for the process of solving the project problem and for the presentation format for submission of the mini-project report.**
3. **Please do not attempt the problems given in the course material of MCS-044, Block -1 or any other old problems. You must attempt one of the problems given in this section, if you submit the mini-project during July 2023 session and onwards.**

INTRODUCTION

The mini project is designed to help you develop practical ability and knowledge about practical tools/techniques in order to solve real-life problems related to the industry, academic institutions and computer science research. The course Mini Project is one that involves practical work for understanding and solving problems in the field of computing. In this booklet, the list of the problem definitions for the July 2023 sessions and onwards, are given. Every year, the list of problem definitions will change. **Please do not attempt the problems given in the booklet (MCS-044, Block-1) received by you along with your course material.**

PROBLEM DEFINITIONS

We have divided different projects into four broad areas/categories of computer science as given below so that you can select any one of these categories for your Mini project.

- Application development

- Networking project

- System software

- Website development.

An initial list of project definitions will be given below in the following sections. However, students can elaborate on the project definitions after discussing them with the project counsellor. Students should **select one project from the given categories only** as per their interest, experience and knowledge in that area. Students should evaluate themselves and then should choose the project. Students may propose modifications/suggestions in the given project specification and finalize it in consultation with the MCS-044 counsellor.

APPLICATION DEVELOPMENT PROJECTS

Here we focus on investigating ideas in application development through different projects. A set of possible project name and their details will be presented; however, students are encouraged to be creative and develop their own ideas in the given project descriptions.

1) **Project Name: Tournament Management System of a Tennis Tournament**

Description

Assume that you are required to manage a Tennis tournament whose schedule has been drawn. You are required to manage the officiating referees, players, and other staff for every match of the tournament. You may note that the duration of the match is not fixed, only the start time of the first match of the day and matches expected to be played that day are known. Sometimes, if a match takes a very long time, the other scheduled matches may be postponed to the next day. The matches are played on a knockout basis and the winner of the match goes on to play future matches in the tournament. The result of every match is recorded, and on that basis, players are allotted to future matches.
Analyse the requirements for such a system. You may add more functionality to the system. Design and implement this system by using suitable data structure/database and programming language. Make and state suitable assumptions, if any.

2) **Project Name: A Handheld Project Manager**

Description

A handheld project assistant is proposed to be designed for the Project Manager of a company. It should keep track of the following information:
- Start date of a project and date of completion of different milestones
- The presentation schedule of various reports of the Project management. The schedule includes the detail of the venue, date and time of the presentation and people who would be attending the presentation. A reminder about the presentation should be sent to all the attendees.
- Keeping a sheet of all the tasks that are to be completed on that day and a check on how many of those are completed.
- Keeping track of ongoing projects and their deadlines.

Analyse the system requirements and design such a system. You may add more functionality to the system. Use a suitable data structure/database and programming language to implement this system.

NETWORKING PROJECTS

We will focus on simulating some of the basic protocols on 8-10 nodes to make a networking project. Two of the possible project topics are presented here, however, students are encouraged to be creative and develop their own ideas in the given project domains.

1) **Project Name: Simulation of File storage for a distributed file system**

Description

You may demonstrate the use of a file storage system that may be used to implement a distributed file system. You may assume that the distributed file system is to be implemented for one master node and 4 worker nodes. For storing a file in this distributed file system, the file is divided into several blocks (You may assume a suitable block size). Each block is stored in two worker nodes using the standard file system. The master node

maintains the information about how the file is stored on different worker nodes. You should also demonstrate how the file can be accessed in a fault-tolerant manner. The request for file access should be placed at the master node. You may use an object-oriented programming language like Java to simulate and demonstrate the system.

2) **Project Name: Simulation of Integrated Networking Resource Management**

Description

Design and develop an integrated networking resource Management system, where several workstations, say 4, are managed by a single server computer. The server computer should maintain the list of resources available with each workstation. These resources may include – the processor (speed and type), memory (size and type), cache memory (size and type) and any peripheral devices attached to the workstation. The server will automatically identify any change in the configuration when it occurs. You may use Linux or Windows Server to manage these workstations.

SYSTEM SOFTWARE DEVELOPMENT PROJECTS

Here we will focus on implementing some of the basic system software applications. Two of the possible projects and their details are given here, however, you are encouraged to be creative and develop your own ideas in the given project domains.

1) **Project Name: Version Control Manager**

Description

You may develop this version control manager to maintain two versions of a file using a file system. You may develop this system either for the Linux OS or for the Windows OS. This system should maintain two versions of the file – the latest version and the last stored version. A user should be able to retrieve the latest version only, however, s/he may request the stored version of a file by issuing a service request. The user can duplicate the last saved version of the file as a new file.

2) **Project Name: Text-Based Editor Software**

Description

You may create a text-based editor software having features closer to the vi editor of the UNIX operating system. The editor should have commands for creating a file, saving a file, entering text, editing text and deleting text. It should display the text on the screen along with the character and word count of the file being displayed. You may use an object-oriented programming language for implementing this project.

WEB DEVELOPMENT PROJECTS

Here, we will focus on investigating new ideas in application development through different projects. A set of possible project name and their details will be presented; however, students are encouraged to be creative and develop their own ideas in the given project descriptions.

1)   **Project Name: Online Course Material Management System**

Description

An Open University maintains the stock of its course material in an online warehouse system. The university has many programmes. Each programme has a set of courses which are offered in a semester mode. A student registers for a semester and the course material of the courses of that semester are sent to the student. This system, therefore, maintains the list of students and the materials that have been sent to them. The course material is also sold by this online warehouse. For this purpose, the warehouse maintains the accounts of the books sold and the sales proceeds. You must study the problem domain and analyse the requirements for the online warehouse system in detail. You should also design and develop this online system.

2)   **Project Name: Online Bookstore**

Description

A publisher sells its publications through an online bookstore. This system maintains the list of books published by the publisher. Each book has an ISBN number, title, set of authors, price etc. The publisher also gives some discounts on the books. In addition, the stock information of various books along with the sales proceeds is recorded in this online bookstore. The purchased books are sent to the address of the buyers through postal mail. You must study the problem domain and analyse the requirements for the online bookstore system in detail. You should also design and develop this online system.

GUIDELINES

The MCS-044 block covers the majority of the guidelines regarding the formulation of the project proposal, formulation of the project report and the format to the followed for the project report. However, the following are the detailed guidelines with respect to the counseling sessions and evaluation scheme.

Practical Counseling sessions

Students can discuss their topic with the counsellors at study centres and the counsellors will give suggestions on project specification at the study centre during the practical sessions. There are total 10 practical sessions, as given below:

Name of the Topic	No. of Practical Sessions (3 hrs each)
Project specification	1
Coding / Implementation	5
Testing	2
Documentation	2

Role of the Counsellor

The MCS-044 Mini-project counsellor is the person who motivates and helps students during the development of the project. The counsellor should take responsibility for guiding and approving different project processes, including Analysis, Design, Coding, Testing, and also the editing of project reports. Moreover, the main responsibilities of a counsellor are:

- Dedicating adequate time to the student for providing effective supervision and encouragement,

- Making sure that the student chooses a manageable project topic,

- Providing critical comments on the student's work and progress,

- Ensuring the student has access to necessary data,

- Encouraging the student to proceed in the intended direction and to agreed time limits, and

- Making sure that the project is the student's own work.

PROJECT SUBMISSION

Project Proposal

Project proposal should be presented to, reviewed by and agreed upon in consultation with the project counsellor to provide constructive feedback on the proposal and planned programme of the project work. **No need of any formal approval to be taken on any proforma**.

Project Report

The project report will contribute to the assessment and your marks. The format of this report will follow the format, guidelines and suggestions given in the block, but details should also be discussed with your counsellor. The final reports of students doing **the project in a group should not be identical. Each student should emphasise on his/her role and responsibilities in the project work.**

Submission of the Project Report

One copy of the original project report is to be submitted to the Study Centre concerned. A photocopy of the same project report must be retained by the student and should carry with him/her at the time of the viva voce.

EVALUATION SCHEME

MCS-044 course has three main evaluation components consisting of assignment (25 marks), project report (50 marks) and viva-voce (25marks). **A student is required to score 40% marks in each of these components separately for successful completion of the course.**

The project will be assessed by a written report and a combined presentation and viva voce (viva voce). To help the students we have given some guidelines about evaluation and assessment in

the next section. If, the examiner finds that the project is lacking in any key areas then, the student will be asked to re-submit the project by selecting a new topic in the next session.

Resubmission of the project by the failed students

If the student fails in project report evaluation or viva-voce or in both, the students need to redo the entire process by selecting a new problem from the list of problems which will be updated every year.

Assignment/Continuous Evaluation

25% of total marks are allotted to assignment/continuous evaluation. The assignment questions are given in the MCA 4th semester assignment booklet.

If the student failed only in assignment component and successfully passed in project report evaluation and viva-voce, s/he needs to submit the fresh assignment of the current year, as is done in the normal courses.

Final Evaluation

The Term End Practical Examination of Mini Project will be conducted at the study centre concerned. 75% of total marks are evaluated in the final evaluation. Out of these 75 marks, 50 marks are allotted for the project report evaluation and 25 marks are allotted for viva voce.