

MASTER OF COMPUTER APPLICATIONS (MCA)

MCA/ASSIGN/SEMESTER-IV

Assignments of MCS-041, MCS-042, MCS-043, MCSP-044 & MCSL-045

For

July 2017 & January 2018

And

MCSP-044: Problem Definitions for July 2017 & January 2018



**SCHOOL OF COMPUTER AND INFORMATION SCIENCES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
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Important Notes

1. Submit your assignments to the Coordinator of your Study Centre on or before the due date.
2. Assignment submission before due dates is compulsory to become eligible for appearing in corresponding Term End Examinations. For further details, please refer to MCA Programme Guide.
3. To become eligible for appearing the Term End Practical Examination for the lab courses, it is essential to fulfill the minimum attendance requirements as well as submission of assignments (on or before the due date). For further details, please refer to the MCA Programme Guide.
4. The viva voce is compulsory for the assignments. For any course, if a student submitted the assignment and not attended the viva-voce, then the assignment is treated as not successfully completed and would be marked as ZERO.

Course Code : **MCS-041**
Course Title : **Operating Systems**
Assignment Number : **MCA(4)/041/Assignment/17-18**
Maximum Marks : **100**
Weightage : **25%**
Last Dates for Submission : **15th October, 2017 (For July 2017 Session)**
: **15th April, 2018 (For January 2018 Session)**

This assignment has five questions which carries 80 marks. Rest 20 marks are for viva voce. Answer all the questions. You may use illustrations and diagrams to enhance the explanation. Please go through the guidelines regarding assignments given in the Programme Guide.

1. With the aid of a diagram, describe what happens during the “fetch-
execute” cycle. Include a description of how interrupts are
detected. List various types of interrupts. Also explain in detail what
happens when an interrupt occurs? *(10 Marks)*

2. (a) Explain the meaning and importance of the following terms with *(6 Marks)*
respect to CPU scheduling of processes: CPU bound, I/O bound,
Pre-emptive, non-pre-emptive, turnaround time, normalised
turnaround time and response ratio.

- (b) Consider the following set of processes with arrival time and
CPU execution time given in milliseconds. A process with a
larger priority number has a higher priority. If any assumptions
made by you, state them.

Process	Arrival Time	Execution Time	Priority
P1	0	03	1
P2	2	07	2
P3	3	04	3
P4	3	11	4
P5	7	05	5

- (i) Draw the Gantt charts illustrating the execution of these *(10 Marks)*
processes using the FCFS, SJF, Round Robin(with quantum = 2).

- (ii) Also calculate the average turn around time, average waiting
time, processor utilization and throughput for each of the
algorithms mentioned in (i).

- (c) Explain the trade-offs involved in choosing the size of a time *(4 Marks)*
slice for a round robin algorithm

3. Describe the following disk scheduling policies: First Come First Serve (FCFS), Shortest Seek Time First, SCAN, C-SCAN, Look and C-Look. Show the disk arm movement and calculate the number of tracks traversed using all of the policies if the disk has 200 tracks and the requested tracks, in the order received, are 55, 58, 39, 18, 90, 160, 150, 38, 184. *(20 Marks)*

4. Write an interactive C/C++ program for implementing the Banker's Algorithm. *(10 Marks)*

5. Discuss in detail the features, Process management, Memory management, I/O Management, File management and Security and Protection in Linux Operating System. *(20 Marks)*

Course Code	:	MCS-042
Course Title	:	Data Communication and Computer Network
Assignment Number	:	MCA(4)/042/Assignment/17-18
Maximum Marks	:	100
Weightage	:	25%
Last Date of Submission	:	15 th October, 2017 (for July 2017 batch)
	:	15 th April, 2018 (for January 2018 batch)

This assignment has thirteen questions. Answer all questions. The rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

1. Draw a figure showing congestion window Size as a function of transmission round (time) and briefly describe how does the slow start algorithm work? From the figure do the following tasks: *(6 Marks)*
 - Identify the interval of time when TCP slow start is operating.
 - Identify the interval of time when TCP congestion avoidance is operating.
 - What is the value of the threshold?
2. Compare and contrast link state and distance vector routing algorithms. *(6 Marks)*
3. Discuss how a hierarchical organization of the internet has helped to scale to million of users? *(6 Marks)*
4. Why are different Inter AS and Intra AS protocols used in the Internet ? *(6 Marks)*
5. Compare & contrast IPV4 & IPV6 header fields. Do they have any field in common? *(6 Marks)*
6. What is the 32-bit binary equivalence of IP address 225.1.3.271? *(6 Marks)*
7. What are some of the possible services that a link layer protocol can offer to the network layer? Which of these link-layer services have corresponding services in IP and TCP? *(6 Marks)*
8. Give an overview of how DNS works? What are the services provided by DNS? How is DNS different from an e-mail application? *(6 Marks)*
9. What is a handshake mechanism? With the help of an illustration describe how does 3-way handshake mechanism work? *(6 Marks)*

10. How does TCP determine the round trip time and time out interval? (6 Marks)
Discuss the algorithm.
11. How do you define QoS? Why do you require it? How stringent the QoS requirements are for the following applications in terms of reliability, delay, jitter and bandwidth parameters? Draw a table showing the QoS requirements for each application and explain: (10 Marks)
- Applications: e-mail, file transfer, web- access, remote login, audio on demand, video on demand, videoconferencing.
12. How does the IEEE 802.11 address the problem of a noisy channel? (6 Marks)
Explain with the help of a diagram
13. How does the Triple DES algorithm work? (4 Marks)

Course Code	:	MCS-043
Course Title	:	Advanced Database Management Systems
Assignment Number	:	MCA(4)/043/Assignment/17-18
Maximum Marks	:	100
Weightage	:	25 %
Last Dates for Submission	:	15th October, 2017 (For July 2017 session) 15th April, 2018 (For January 2018 session)

This assignment has ten questions, which carries 80 marks. Answer all the questions. Rest 20 marks are for viva voce. You may use illustrations. Place go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

1. An organization undertakes manufacturing projects. There are (25 Marks) different kinds of employees (full time and part time). Each employee can move on one or more projects. Each project is undertaken on the request of a client. A client can be a public sector company or a private sector company. A project can use a number of items from a different manufacturers and an item may be used by several projects. Clearly indicate the entities, attributes, relationship between entities, keys and cardinalities and make suitable assumptions.
 - (a) Draw the EER (extended ER) diagram for the above organization showing all entities , relationship, aggregation, generalization /specialization and convert it into relational schemas
 - (b) Draw the appropriate tables and relationship among the tables for the above diagram and normalize the tables up to 3NF
 - (c) Identify weak entity sets in the above diagram if any. How will you convert a weak entity set to a strong entity set? Illustrate.
 - (d) Identify multivalued dependency in the above diagram.
 - (e) Using the manufacturing example, write relational – algebra expressions to do the the following queries:
 - Find out how many employees working on P1 and P2 projects
 - How many projects are using items I1 and I2.

2. What is meant by the term view in context of DBMS? Why is it used? (5 Marks)
 Consider the following student schema:
 Student(S-ID, S-Name, S-Program)
 Course(C-Code, C-Name)
 Enrolled(S-ID, C-Code)
 Create a view for a student who's S-ID is 2017001 which show the list of all the courses registered by the student in a program. The list should show C-Code, C-Name and S-Program.
 Explain any four constraints for updating a tuple in a view.
3. Consider the following relations:
 Employee (E-ID, Name, P-ID)
 Project (P-ID, E-ID, P- Cost, P-Profit)
 Consider the following query on these relations:
 List the E-ID, Name, P-Code and P-Profit whose E-ID is 2017001
- (a) Represent the above query using SQL (1 Marks)
- (b) Convert the SQL query into equivalent relational algebraic query (2 Marks)
- (c) Draw the query tree for the above relational algebraic query (3 Marks)
- (d) Using the query tree, transform the relational algebraic query to an equivalent relational algebraic query which may reduce the query evaluation cost. (4 Marks)
4. How will you enforce the referential integrity construct in Oracle? (5 Marks)
 Explain with the help of an example.
5. Define simple Hash Join and explain the process and cost calculation of Hash Join with the help of an example. (10 Marks)
6. Create an XML schema for the list of 3 books available in the library with their details like : ISBN, Title, Author's name, Year of Publication, Publishers and Cost) (5 Marks)
7. What is an assertion? Give an example of an assertion? (5 Marks)
8. Elaborate the recovery mechanism with concurrent transaction? (5 Marks)
9. How does Oracle manage database security? Discuss. (5 Marks)
10. How can multidimensional data be represented in data warehouse? (5 Marks)
 Explain through an example.

Course Code	:	MCSP-044
Course Title	:	Mini Project
Assignment Number	:	MCA (4)/P-044/Assignment/17-18
Assignment Marks	:	100
Maximum Marks	:	25 %
Last Date of Submission	:	15th October, 2017 (for July, 2017 session) 15th April, 2018 (for January, 2018 session)

There are five questions in this assignment carrying 80 marks. Rest 20 marks are for viva-voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Program Guide for the format of presentation. Assumptions made if any, should be stated.

Background and Project Specifications:

A University library maintains the records of issue of books, magazines and journals to its members. The members of the library are the students and the staff of the university. Every member has to renew his/her membership at the beginning of a semester. Members can be issued a maximum of 10 books, 2 magazines and 1 journal. The books are issued for a period of 15 days; magazines for a period of 7 days and journals for a period of 3 days. If a member does not return any of the items after due date, s/he is charged a fine of Rs10 per day. The library maintains the stock of these items using a computerized system. The members are issued renewal notice at the end of each semester. The list of books, magazines and journals which are overdue is prepared every week. In case an item is overdue for more than two weeks then the membership of that person is put on hold. A person whose membership is put on hold twice in a semester is debarred from the library for a period of 6 months. The library also keeps track of the items that are in high demand. An item is in high demand if it is issued once in a month. More copies of the books are ordered in case it is in high demand. The books, magazines and journals that are not at all issued for two continuous years are put in an archival hold.

You may study the requirements of a library for more details. Perform the following tasks for the system given above:

1. (a) Which Systems Development Life Cycle (SDLC) will you propose for the specification given above? *(5 Marks)*
- (b) Justify your selection by evaluating suitability of at least two SDLCs. *(5 Marks)*
2. (a) What would be major costs of the system? *(2 Marks)*
- (b) What may be the financial benefits of installing such a system? *(2 Marks)*
- (c) Perform a cost-benefit analysis for the proposed software and report its findings. *(2 Marks)*

- (d) List the major tasks and milestones of the Project and make a project schedule. You schedule must include both GANTT and PERT charts. Explain the two charts drawn by you. *(4 Marks)*
3. (a) Study the system and create a software requirement specification. You must identify either the processes or objects while analyzing. During the analysis give consideration to possible input and output of the processes. *(10 Marks)*
- (b) After identifying the requirements, create Analysis Models. You may either use the classical approach and draw Entity relationship diagram and data flow diagrams (DFD's) up to level 2-3; or you may take object oriented analysis approach and create class diagram, use case diagram, use cases etc. *(15 Marks)*
4. (a) Design the system architecture and the database as per the needs of the system. You must perform normalization on tables up to 3rd normal form. The table design must include Primary and Foreign keys and constrains. *(15 Marks)*
- (b) Create the system flow chart or detailed process design and state transition diagrams. Also design the user input screens and output report formats. *(10 Marks)*
5. Design various unit test cases for different testing techniques/strategies. *(10 Marks)*

Course Code	:	MCSL-045
Course Title	:	UNIX and DBMS Lab
Assignment Number	:	MCA(4)/045/Assignment/17-18
Maximum Marks	:	100
Weightage	:	25 %
Last Date of Submission	:	15th October, 2017(for July, 2017 session) 15th April, 2018 (for January, 2018 session)

The assignment has two parts A and B. Answer all the questions. Each part is for 20 marks. UNIX and DBMS lab record carries 40 Marks. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the MCA Programme Guide for the format of presentation. If any assumptions made, please state them.

PART-I: MCS-041

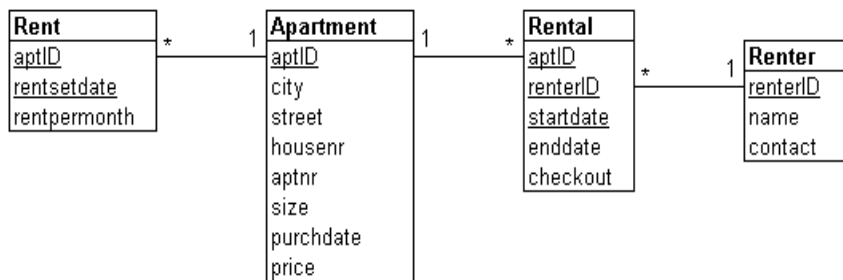
1. Write and execute the following UNIX commands: *(5 Marks)*
 - (a) To change the password.
 - (b) To search files in the current directory/subdirectory for lines that match a particular string pattern given as input.
 - (c) To print the first 5 lines of a file.
 - (d) To print the number of processes run by a particular user.
 - (e) To kill a process that is running at the background.
 - (f) To display the count of no. of blank spaces in a given file.
 - (g) To sort alphabetically, a list of numbers stored in a data file in an ascending order.
 - (h) To convert the upper case letters to corresponding lower case letters in a text file.
 - (i) To count the number of users currently logged on.
 - (j) To display the calendar for a given month and year.

2. Write shell programs for the following: *(15 Marks)*
 - (a) To find second largest number among the 5 numbers given.
 - (b) To find sum of all the alternate digits in a given 7 digit number.
 - (c) To count number of vowels in a given string.
 - (d) To take 2 strings as input, concatenate them and display the length of the resultant string.
 - (e) To display the reverse of a given number.

PART-II: MCS-043

1. (a) Design a database for a Property Dealer who deals in Flat Rentals, (10 Marks) including:

- **Apartment data:** city, street, house number, apartment number, size (square feet), purchase date and price, rent per month
- **Renter data:** name, contact information, which apartments she/he has rent (one renter may have several) and for which time periods, agreed start date, agreed end date (if fixed), check out date



The relational schema is as follows:

Apartment(aptID, city, street, housenr, aptnr, size, purchdate, price).

Rent(aptID, rentsetdate, rentpermonth).

Renter(renterID, name, contact).

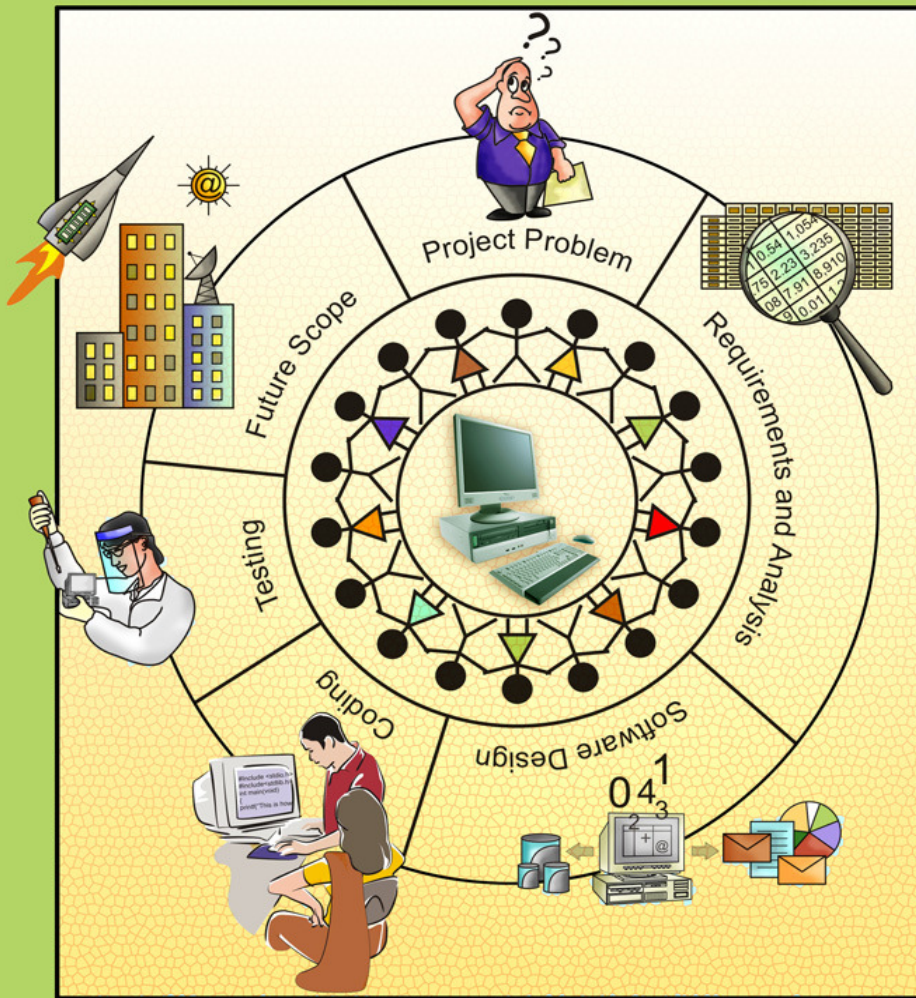
Rental(aptID, renterID, startdate, enddate, checkout)

Note: Assumptions can be made wherever necessary.

(b) Perform following queries using SQL: (5 Marks)

- To find the total rent earned during certain time interval (input to be given by the user) for a particular **aptID**.
- To display all the **aptIDs** if the street ID and City are given.
- To display the list of all the renters who have more than one **apt**.
- To display the list of all **aptIDs** whose rent is equal to or more than Rs.15,000/- per month in a particular street with **apt size** more than 850sq feet.
- To display all the details of the apartment which were bought before year 2000 in a particular city and street.

(c) Write appropriate triggers, exceptions and functions for the above said system database schema and describe them briefly. (5 Marks)



Problem Definitions for July 2017 & January 2018

Important Notes

1. Viva-voce of this project is compulsory.
2. Please follow MCS-044 guidelines for process of solving project problem and for the presentation format for submission of 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 mini project during July, 2017 or January, 2018 session.

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, 2017 and January, 2018 sessions 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 definition will be given below in the following sections. However, student can elaborate the project definitions after discussing it 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 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: Assignment Submission and Result Management**

Description

A University uses assignments as one of the tool for formative evaluation. A student who enrolls for a programme of the University needs to submit one assignment for every subject that s/he enrolls in every semester. The assignments are submitted at a centre (called Learning Centre) where student attend theory and practical counseling sessions. You need to design and develop an Assignment Submission and Result Management system for the Learning Centre. Every subject has an assignment; the last date of submission of assignments of different subjects may be different. When assignments are submitted by the students, they are bundled in the lots of 50 each. An evaluator is allotted a maximum of 100 assignments (2 lots). The assignments are evaluated in two stages – in stage one evaluator is given the assignments and asked to evaluate them in a maximum duration of 2 weeks, in case an evaluator does not evaluate the assignment in two week time s/he is sent a reminder. In case an evaluator fails to submit the evaluated assignments in the duration of 3 weeks s/he is debarred for any further evaluation work. In such case these assignments are evaluated on request by another evaluator. The second stage of assignment evaluation is viva or presentation by the student. This is done in the presence of the evaluator who had evaluated the assignment. The comments of the evaluator are communicated to the student and marks are awarded to the student on completion of both the stages of evaluation by the evaluator. The marks of all the students are compiled as results of different assignments – programme wise and in programme, subject wise and sent to the University office in printed form (duly signed by evaluator and centre coordinator) as well as electronic form. The soft copy and hard copy data of marks of the student must be kept at the study centre for a period of 10 years, after which the marks are achieved in electronic form.

Analyse the system requirements and do good system design. Use suitable data structure/database to create this system. You may add more functionality into the system.

2) **Project Name: Resource Maintenance and Management**

Description

An Organisation has a single office in a town. The organisation has a number of resources that are used by its office staff. These resources include non-technological resources like conference rooms, transport vehicles etc., electrical devices like AC, Fans, Electric kettle, etc. and ICT equipment like Computer and printers. All these equipments are under servicing contract. In addition, equipments whose price is less than INR 10,000/- are purchased in surplus. The organization stores the maintenance history of each of its resource. Also every year all the stock which was purchased 5 years back is auctioned. New machines are purchased to replace these machines. The company also maintains the stock register and every year a depreciation of 20% is recorded in the book value of equipment. The company also tracks all its revenue which is due to monthly sale of its services- like hiring of conference rooms, holding an event etc. Every weekend engineers of the maintenance agencies visit the Organisation, take away all the damaged equipment for repair and return them by Monday. Some equipments are not taken away but preventive maintenance is performed of those equipment at the site. The company must keep track of status of all the equipments as a policy. You need to develop a computer based MIS about the uses and maintenance of equipment. This MIS system should be able to predict the future purchases, usage and maintenance history of all equipments. It should also inform the efficiency of the maintenance agencies. You must do proper analysis of the requirements and do a good design. Use suitable data structure/database to create this system. You may add more functionality into the system.

NETWORKING PROJECTS

We will focus on investigating new ideas in networking research through different networking projects. A set of possible project topics which will be presented, however, students are encouraged to be creative and develop their own ideas in the given project descriptions.

1) **Project Name: Simulation of ALOHA protocol**

Description

Simulate the ALOHA protocol. You may use random number generators to create load. Also find the throughput and transmission of frames for random nodes. You may assume 4-8 nodes for this simulation.

2) **Project Name: Simulation of Static Routing Algorithm**

Description

Design and develop a network of 4-8 computers and simulate the shortest path static routing algorithm from the server to all other nodes of the network. You may use any server.

SYSTEM SOFTWARE DEVELOPMENT PROJECTS

Here we will focus on investigating new ideas in application development through different projects. A set of possible projects 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: Creating a library Utility**

Description

Create a library utility preferably using UNIX, that accepts a text file, calculates the frequency of every word in that file. This information is output to an array. The output should be in the following form:

Word	Count
a	25
buy	5
cart	2
day	5

Use this utility to perform the word count on two different files, creating two arrays. Further, compare these two arrays word by word and create a combined word count array. Please note that all the words present in one array may not be present in other array you must merge these two arrays. You must use an object oriented programming language for implementing this project.

2) **Project Name: Implementation Concurrency Related Problems**

Description

Assume there is a fixed size (say 4 blocks) memory area shared by 20 processes which may either read or write on those areas. Each process can seek access of one block for either reading or writing. A reader process can only read the data but it does not modify it, whereas, a writer process modifies the data of a given block. Thus, many reader processes can lock a data block in READ only mode whereas, a writer can lock the data block only if it is not locked by any other process in READ

or WRITE mode. A process can write on the area if it obtains the WRITE lock on the data block. You must ensure the correctness of the updates of shared blocks. Also many processes may be allowed to access the shared block for reading at the same time. Write a program using semaphores that ensures proper reading and writing, you should also make sure that no process starves for a long time for reading or writing. You may make suitable assumptions for the implementation. You may use any programming language for this implementation.

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 Appointment Management**

Description

A hospital provides health care appointment facility through an online portal. You can book an OPD appointment of a Doctor at the time s/he is available in the hospital. You can also book for an Appointment for a Diagnostic Test. In order to do so, a patient first needs to register for the website. Registration process involves recording patient name, address, blood group, past medical history including height, weight, blood pressure, past diseases, allergies, current medications, etc. All these information is shown to the doctor at the time of visit of the patient. Analyse the requirements in details and design & develop the online system for the appointments. You may visit similar hospital portals for analysis of the problem domain.

2) **Project Name: Online Loan Management system**

Description

A Bank allow different types of loans to its customers. One of the prerequisite for loan is that the customer should have an account with the bank. The customer can take housing loan, vehicle load or personal loan from the bank. The interest rate as well as maximum periods for these loans are different. The process of loan approval is done offline, but once loan is approved then all the services are offered online. A customer can request for installment of loan, or can prepay some loan through this website. The website also displays the transactions related to loan account including interest changed and amount deducted from the customer account. Study the various requirements for such a system from an actual bank. Analyse the requirements in details and design & develop the online loan management 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 be 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.