Semester: 1st Semester
Course: MCA
Subject: Data Structure Using C Lab

Sl. No.	List Experiments	Remark
1	Implementation of Stack Using Array.	
2	Implementation of Queue Using Array.	
3	Implementation of Infix to Postfix Conversion using Stack.	
4	Evaluation of Postfix Expression using Stack.	
5	Implementation of Singly Linked List.	
6	Implementation of Doubly Linked List.	
7	Implementation of Stack Using Linked List.	
8	Implementation of Queue Using Linked List.	
9	Implementation of Binary Tree Traversal : Preorder, Inorder and Postorder.	
10	Implementation of Binary Search Tree.	
11	Implementation of sorting algorithms : Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort and Heap sort.	
12	Implementation of Searching Algorithms : Linear Search and Binary Search	
13	Implementation of Breadth First Search (BFS) in a Graph.	
14	Implementation of Depth First Search (DFS) in a Graph.	
15	Implementation of Hashing using hash functions	

Semester: 1st Semester
Course: MCA
Subject: Operating System Lab

Sl. No.	List Experiments	Remark
1	1. Write a C program to simulate the following non-preemptive CPU scheduling algorithms to find turnaround time and waiting time. a) FCFS b) SJF c) Round Robin (pre-emptive) d) Priority	
2	Write a C program to simulate Multi-level Feedback Queue Scheduling algorithm considering the following scenario. All the processes in the system are divided into two categories – System processes and User processes. System processes are to be given higher priority than user processes. Use FCFS scheduling for the processes in each queue.	
3	Write a C program to simulate the MVT and MFT memory management techniques.	
4	Write a C program to simulate the following Contiguous Memory allocation techniques a) Worst-fit b) Best-fit c) First-fit	
5	Write a C program to simulate Paging technique of Memory management.	
6	Write a C program to simulate Banker's algorithm for the purpose of deadlock avoidance.	
7	Write a C program to simulate Disk scheduling algorithms a) FCFS b) SCAN c) CSCAN	
8	Write a C program to simulate Page replacement algorithms a) FIFO b) LRU c) LFU	

9	Write a C program to simulate Page replacement algorithms a) Optimal	
10	Write a C program to simulate Producer-Consumer problem using semaphores.	
11	Write a C program to simulate the concept of Dining-Philosopher's problem.	

Semester: 1st Semester
Course: MCA
Subject: Database Engineering Lab

Sl. No.	List Experiments	Remark
1	Execute a single line and group functions for a table.	
2	Execute DCL and TCL Commands.	
3	Create and manipulate various DB objects for a table.	
4	Create views, partitions and locks for a particular DB	
5	Write PL/SQL procedure for an application using exception handling	
6	Write PL/SQL procedure for an application using cursors.	
7	Write a DBMS program to prepare reports for an application using functions.	
8	Write a PL/SQL block for transaction operations of a typical application using triggers.	
9	Write a PL/SQL block for transaction operations of a typical application using package.	
10	Design and develop an application using any front end and back end tool (make use of ER diagram and DFD).	
11	Create table for various relation.	
12	Implement the query in sql for a) insertion b) retrieval c) updating d) deletion.	
13	Creating Views	
14	Writing Assertion	
15	Writing Triggers	
16	Implementing operation on relation using PL/SQL	
17	Creating Forms	
18	Generating Reports	

Semester: 3rd Semester

Course: MCA

Subject: Software Engineering Lab

Sl. No.	List Experiments	Remark
1	Prepare the SRS document for a given problem, such as the below mentioned problems. You should identify the appropriate requirements for the given problem; Draw the E-R Diagram using any available tool, Draw the DFD for the given problem using any available tool, Draw the Use Case diagram, Domain Models, and Class Diagram, Sequence Diagrams and Collaboration Diagrams for each Use Case, State Chart Diagram and Activity Diagram, (if necessary) using any available tool; Develop the corresponding software using any programming language such as Java, Python, etc. with an interactive GUI and appropriate Database. a) Develop software to automate the bookkeeping activities of a 5 star hotel b) The local newspaper and magazine delivery agency wants to automate the various clerical activities associated with its business. Develop a software for this. c) A small automobile spare parts shop sells the spare parts for vehicles of several makes and models. Each spare part is typically manufactured by several small industries. To streamline the sales and supply ordering, the shop owner wants to automate the activities associated with his business. Develop a software for this. d) Develop a software for the automation of the dispensary of your college. e) Develop a software for automating various activities of the Estate Office of your college. f) Develop a word processing software with some limited number of facilities such as making bold italics, underline, cut, copy and paste etc. g) Develop a graphics editor software package, using which one can create / modify several common types of graphics entities. h) Develop a software for automating various activities of the departmental offices of your college.	
2	Estimate the size of a given software using Function Point Metric.	
3	Write a C function for searching an integer value from a large sorted sequence of integer values stored in array of size 100, using the binary search method. Build the control flow graph (CFG) of this function using any compiler writing tool. Write a program in Java to determine its cyclomatic complexity. Identify the linearly independent paths and generate the test cases using path coverage based strategy.	
4	To perform various testing operations using the available testing tools for a given system.	
5	Write a program in Java to determine the number of defects still remaining after testing, using error seeding methodology.	
6	Draw the GANT chart for a given software project using any available tool such GanttProject.	
7	Draw the network diagram, find out the critical path and critical activities, and calculate the project duration for a given problem using CPM. You may use any available tool for this such as Ganttproject, ProjectLibre etc.	
8	Draw the network diagram, find out the critical path and critical activities, and calculate the project duration for a given problem using PERT. You may use any available tool for this such as Ganttproject, ProjectLibre etc.	

Semester: 3rd Semester

Course: MCA

Subject: Web Programming Lab

Sl. No.	List Experiments	Remark
1	Web design environment : HTML elements coding and testing	
2	Implementation of frames and frame elements	
3	Write a JavaScript to design a simple calculator to perform the following operations: sum, product, difference and quotient.	
4	Write a JavaScript that calculates the squares and cubes of the numbers from 0 to 10 and outputs HTML text that displays the resulting values in an HTML table format.	
5	Write a JavaScript code that displays text "TEXT-GROWING" with increasing font size in the interval of 100ms in RED COLOR, when the font size reaches 50pt it displays "TEXTSHRINKING" in BLUE color. Then the font size decreases to 5pt.	
6	Develop and demonstrate a HTML file that includes JavaScript script that uses functions for the following problems: a. Parameter: A string Output: The position in the string of the leftmost vowel b. Parameter: A number Output: The number with its digits in the reverse order	
7	Design an XML document to store information about a student in an engineering college affiliated to BPUT. The information must include USN, Name, Name of the College, Brach, Year of Joining, and e-mail id. Make up sample data for 3 students. Create a CSS style sheet and use it to display the document.	
8	Write a PHP program to keep track of the number of visitors visiting the web page and to display this count of visitors, with proper headings.	
9	Write a PHP program to display a digital clock which displays the current time of the server.	
10	Write the PHP programs to do the following: a. Implement simple calculator operations. b. Find the transpose of a matrix. c. Multiplication of two matrices. d. Addition of two matrices.	
11	Write a PHP program named states that declares a variable states with value "Mississippi Alabama Texas Massachusetts Kansas". write a PHP program that does the following: a. Search for a word in variable states that ends in xas. Store this word in element 0 of a list named statesList. b. Search for a word in states that begins with k and ends in s. Perform a caseinsensitive comparison. [Note: Passing re.Ias a second parameter to method compile performs a caseinsensitive comparison.] Store this word in element1 of statesList. c. Search for a word in states that begins with M and ends in s. Store this word in element 2 of the list. d. Search for a word in states that ends in a. Store this word in element 3 of the list	
12	12. Write a PHP program to sort the student records which are stored in the database using selection sort.	
13	Web Technology Lab with Mini Project	

Semester: 2nd Semester

Course: MCA

Subject: Java and Python Programming Lab

Sl. No.	List Experiments	Remark
1	Write a program in Java to find the set of prime numbers from 1 to 100.	
2	Write a program to compare two objects. Create two objects representing two complex number and find the larger one.	
3	Write a Java Program to convert a Number to Word.	
4	Write a Java Program to copy all elements of one array into another array	
5	Write a Java Program to sort the elements of an array in ascending order	
6	Write a Java Program to find the frequency of odd & even numbers in the given matrix	
7	Write a Java Program to determine whether a given string is palindrome	
8	Write a Java program to draw a pattern such as 2 4 3 6 9 4 8 12 16 000*000* 0*00*00*0 00*0*0*00 000***000	
9	Write a Java program to convert Decimal to Binary in Java	
10	Write a program to add two times given in hour minutes and seconds using class and object.	
11	Write a Java program to find the combination c(n,r) by inheriting from a class that computes the factorial of a number.	
12	Write a Java program to find the area of different geometrical shapes using polymorphism.	
13	Write a Java program to create a user defined package that finds the largest among an array of n numbers. Use this package to sort an array of n numbers using insertion/selection sort.	
14	Create three threads and print 1 to 10 in each thread.	
15	Write a Java program to illustrate the concept of some exceptions such as divide by zero or array index out of bound etc	
1	Write a Program to read and print values of variables of different data types.	
2	Write a program to perform addition, subtraction, multiplication, division and modulo division on two integers.	
3	Write a program to input two numbers and check whether they are equal or not.	
4	4. Write a program that prompts user to enter a character (O, A, B, C, F). Then using ifelseif-else construct display Outstanding, Very Good, Good, Average and Fail respectively.	
5	Write a program to print Fibonacci series using recursion.	
6	Write a program that prints absolute value, square root and cube root of a number. (import math package).	
7	Write a program that finds the greatest of three given numbers using functions. Pass three arguments.	
8	Write a program to get a string made of the first 2 and last 2 characters from a given string. If the string length is less than 2, return empty string.	
9	Write a program that fetches data from a specified url and writes it in a file	
10	Write a program to find the resolution of an image	

Semester: 2nd   Semester
Course: MCA
Subject: Computer Networks Lab

Sl. No.	List Experiments	Remark
1	Error detection in a packet using Checksum	
2	Simplex stop-and-wait protocol with positive acknowledgement and retransmission	
3	Error detection using CRC-CCITT (16-bits)	
4	Token-Bus medium access scheme	
5	Selective repeat sliding window protocol	
6	Congestion control using leaky bucket algorithm.	
7	Find all pair shortest path between vertices using bellman-ford algorithm	
8	Client/Server message passing, where a client1 send a character to a server, which on receiving the character increment it to the next letter in the alphabet, and sends the character to client2. The client2 on receiving the value from server, print it and all process terminates.	
9	Client/Server message passing, where a client1 send a message that is structure containing values of type character, integer and float to the server. The server should print the message using the format "char value %c integer value %d float value %f" before passing it to the next client. The server should change the value of each element of the structure before passing it to client2. The client2 should print the structure values it receives from the server using the above format	

Semester: 2nd   Semester
Course: MCA
Subject: Algorithm Design Lab

Sl. No.	List Experiments	Remark
1	Implementation of Stack and Queue – Operations and Applications.	
2	Implementation of different searching algorithms.	
3	Implementation of different sorting algorithms.	
4	Problem solving using Divide and Conquer technique.	
5	Problem solving using Dynamic Programming technique.	
6	Problem solving using Greedy technique.	
7	Problem solving using Backtracking technique.	
8	Problem solving using disjoint-set data structure operations.	
9	Problem solving using Branch and Bound technique.	
10	Problem solving for the Maximum Flow problem.	
11	Implementation of Graph Traversal algorithms – Breadth-First-Search (BFS) and DepthFirst-Search (DFS).	
12	Implementation of Minimum Spanning Tree construction algorithms – Kruskal and Prim.	
13	Implementation of different String-Matching algorithms.	
14	Problem solving for the Shortest Path problem using different algorithms.	
15	Problem solving using Approximation algorithms	