2024-25

جب کوئی قوم فن اور علم
سے عاری ہو جاتی ہے
تو وہ غربت کو دعوت
دیتی ہے اور جب غربت
آتی ہے تو وہ ہزاروں
جرائم کو جنم دیتی ہے۔

"When a nation becomes devoid of art and learning, it invites poverty and when poverty comes it brings in its wake thousands of crimes."
-Sir Syed Ahmad Khan

B.Sc. (CA) I Semester Lab Manual

Lab-I

Course Code- CABSMJ1P01

DEPARTMENT OF COMPUTER SCIENCE

ALIGARH MUSLIM UNIVERSITY, ALIGARH

2024-2025

Credits

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Department of Computer Science, A.M.U., Aligarh (U.P.) India

Lab Manual: Lab – I (CABSMJ-1P01)

LIST OF CONTENTS (WEEK WISE)

COURSE TITLE: Lab-I

COURSE CODE: CABSMJ1P01

CREDIT: 2

PERIODS PER WEEK: 3

CONTINUOUS ASSESSMENT: 60

EXAMS: 40

COURSE DESCRIPTION

This course introduces to fundamental 'computer literacy' concepts. The objectives of the course are to explore the practical use of word processing program (MS-Word), a spread sheet program (MS-Excel), a presentation program (MS- Power point) and database (MS-Access). Besides these, it helps to understand the fundamental concepts of programming language.

CONTENT

This course is designed to provide the students the opportunity of learning both – MS- Office Package and the fundamental concepts of C. This course is indented to develop a deep understanding of various techniques of programming.

OBJECTIVES

This course is designed to help students in:

- ❒ To help the students in learning the MS-Office package.
- ❒ To help the students how to write a sample program in C.
- ❒ To help the students in understanding the use of different variables.
- ❒ To help the students in understanding the use of decision-making statement.
- ❒ Be able to debug and test C programs;
- ❒ Understand how to read C library documentation & reuse library code.

OUTCOMES

After completing this course, the students would be able to:

- ❒ Use and handle the various office-based tasks.
- ❒ Write, debug and run a sample program in C.
- ❒ Differentiate the variables and constants.
- ❒ Understand how decision-making statements are written.
- ❒ Create a simple real-life application based on the decision-making statements.
- ❒ Understand and use the basic programming constructs of C.
- ❒ Learn C data types, memory allocation/de-allocations, functions and pointers.

RULES AND REGULATIONS

Students are required to strictly adhere to the following rules.

- ❒ The students must complete the weekly activities/assignments well in time (i.e., within the same week).
- ❒ The students must maintain the Lab File of their completed problems in the prescribed format (Appendix-1).
- ❒ The students must get the completed weekly problems checked and signed by the concerned teachers in the Lab in the immediate succeeding week. Failing which the activities/assignments for that week will be treated as incomplete.
- ❒ At least TEN (10) such timely completed and duly signed weekly activities/assignments are compulsory, failing which students will not be allowed to appear in the final Lab Examination.
- ❒ Late submission would not be accepted after the due date.
- ❒ Cooperate, collaborate and explore for the best individual learning outcomes but copying is strictly prohibited.

APPENDIX–I

Template for the Index of Lab File

WEEK NO.	PROBLEMS WITH DESCRIPTION		PAGE NO.	SIGNATURE OF THE TEACHER WITH DATE
1	1#			
	2#			
	3#			
2	1#			
	2#			
	3#			
3	1#			
	2#			
	3#			

Note: The students should use Header and Footer mentioning their roll no. & name in footer and page no in header.

WEEK #1

OBJECTIVES

To set up accounts on GitHub and LinkedIn, which are essential platforms for professional networking and project collaboration.

OUTCOMES

After completing this, the students would be able to:

- ❒ Enhanced Professional Presence.
- ❒ Basic Familiarity with Key Platforms.
- ❒ Network Building

Tasks

GitHub

1. **Sign Up for GitHub.**
2. **Personalize Your Profile.**
3. **Create Your First Repository.**
4. **Explore GitHub Features.**

LinkedIn

1. **Sign Up for LinkedIn.**
2. **Build Your Professional Profile:**
    - Add a professional profile picture.
    - Write a compelling headline and summary that highlights your career goals and key skills.
    - Add your educational background and work experience.
3. **Download Resume built by LinkedIn**

Coding/Data Platforms

Explore LeetCode, HackerRank, CodeChef, Udemy, Udacity, SWAYAM, Kaggle, etc

WEEK #2

OBJECTIVES

- ❒ To learn using Office packages.
- ❒ To learn about different C compilers and editors.

OUTCOMES

After completing this, the students would be able to:

- ❒ Installing and running Office packages.
- ❒ Installing and running C compilers and editors.

PROBLEMS

Introduction about the software that are uses in the lab

1. Introduction todifferent Office suites, MS Office, Libre Office, Google Office suite etc.
2. To know how to run the C programs in different C/C++ editors such as DevC++, CodeBlocks etc.
3. To know how to install theC/C++ editors on your computer.

WEEK #3

OBJECTIVES

- ❒ To learn using MS-Word.
- ❒ To learn the practical use of MS-Word and MS-Power Point.
- ❒ To learn the practical use of writing skills, formatting, Word Art, page layout, picture.

OUTCOMES

After completing this, the students would be able to:

- ❒ Edit, format (bullet, size, colour, underline etc) document
- ❒ Use Word Art, pagination, inserting pictures, using subscript, superscript, Auto sum and applying formula, creating table, creating presentations etc.

PROBLEMS

1# Type the passage below as it is. Use font size 12.

Mathematics?

To master the basics of mathematics, it is crucial to understand and correctly use a variety of symbols. For example, the plus sign (+) denotes addition, while the minus sign (−) represents subtraction. The multiplication operation can be shown using the asterisk (*) or the multiplication sign (×). Division is typically represented by the forward slash (/) or the division sign (÷).

In algebra, variables are commonly denoted by letters such as x, y, and z. The equal sign (=) shows that two expressions are equivalent. Inequality symbols include the less than (<) and greater than (>) signs, as well as the less than or equal to (≤) and greater than or equal to (≥) signs.

When dealing with equations, parentheses (()), brackets ([]), and braces ({}) are used to group parts of the equation and indicate the order of operations. Exponents are denoted by the caret symbol (^) or by superscript numbers, such as x^2 for x squared.

Understanding these symbols is essential for solving equations and performing mathematical operations correctly. Additionally, the percent sign (%) is used to represent percentages, while the dollar sign ($) is commonly used in financial contexts.

In geometry, the angle symbol (∠) indicates angles, and the degree symbol (°) is used to measure angles. Pi (π) is a special mathematical constant representing the ratio of a circle's circumference to its diameter.

By familiarizing themselves with these symbols, students can enhance their mathematical literacy and problem-solving skills.

a) Save the document as maths.docx.
b) Change the case of the main heading to Title Case, Font size 16, double underline & Centre it.
c) Put a border right round the passage & not the page.
d) Justify all the paragraphs excluding the main heading.
e) Change the font type of paragraph 2 to Bookman Old Style, font size 14.
f) Divide the passage into 2 columns with a line between.
g) Drop cap all the paragraphs in your document excluding the headings.
h) Change the line spacing of the entire document to 1.5 lines.
i) Save the document as math2.
j) Upload both in your github account using add, commit, push etc command of Git.

2# Create a table in word as shown below:

Roll No	Name	Marks in Physics	Marks in Chemistry	Total Marks
1	Sakshi	80	70	
2	Rohit	70	80	
3	Amit	60	50	
4	Rakesh	40	60	
5	Komal	30	70	

6	Garima	80	80

Do the following:

(a) In the total marks column, entries should be calculated using formulas and it is the sum of marks in physics and marks in chemistry.
(b) Insert a new row at the end of the table and also find grand total using formula.
(c) Sort the table based on total marks.
(d) The date and heading should be center aligned.
(e) Heading should be in bold and underlined.

3# Create a 5-slide presentation on any topic. Use Images, Graphs, Chart, Tables, Animation, Time, Bullets, Transition, Sound, Hyperlink, Background template, Header and Footer.

WEEK #4

OBJECTIVES

- ❒ To learn the MS-Excel.
- ❒ To learn the practical use of MS-Excel.
- ❒ To learn the practical use of formatting, mathematical tools, data entries etc.

OUTCOMES

After completing this, the students would be able to:

- ❒ Use entries data, formatting data(bullet, size, colour, underline etc.)
- ❒ Mathematical calculation (sum, division, percentages etc.)

PROBLEMS

1# Create a spreadsheet with the following entries:

A2 = CHICKEN INN	B5 = 3
A4 = FOOD ITEM	B6 = 1
A5 = PORTION CHIPS	B7 = 1
A6 = SADZA & STEW	B8 = 2
A7 = RICE & CHICKEN	B9 = 3
A8 = HAMBURGER	C4 = UNIT COST
A9 = SOFT DRINKS	C5 = $135.00
C10 = SUB TOTAL	C6 = $180.00
C11 = SUB TAX @ 15%	C7 = $200.00
C12 = TOTAL COST	C8 = $170.50
B4 = QUANTITY	C9 = $65.00
	D4 = COST

Perform The Following:

a) Make B2 bold, underlined and size 16.

b) Make all headings, i.e. A4 – D4, bold.

c) Put borders on all entries of the sheet.

d) Save document as Qn2data and print it.

e) Input the formulae for the cost price of each item D5 – D9

f) Input the formulae for the calculated amounts for subtotals, sales tax and total cost in D10 – D12 respectively.

g) Create the Pie Graph for the Food Item and Quantity Columns. The pie chart should have an appropriate title, legend, and each portion should show the percentage occupied by each item.

h) Save the document as Qn2chicken and print it.

i) Show formulas you have used in a new sheet and save it as formulas.

WEEK #5

OBJECTIVES

- ❒ To learn how to design an algorithm and draw a flowchart.
- ❒ To learn the concept of variables and constants.
- ❒ To learn the different data types used in C programming.
- ❒ To learn using the operators in C.
- ❒ To learn using if-else statement in C.

OUTCOMES

After completing this, the students would be able to:

- ❒ Understand how to write, debug and run a simple C program.
- ❒ Know the memory occupied by different data types.
- ❒ Write an algorithm and draw flow charts of real-life applications.
- ❒ Understand how the decision-making statement are handled in C programming.

PROBLEMS

1# Write a program to print the no. of bytes used by the different data type using the *sizeof()* operator.

2# Develop a flow chart/algorithm and write an interactive program to find Simple Interest and Compound Interest, where Principle, Rate and Time are taken from the keyboard.

3# Develop a flow chart/algorithm and write an interactive program to interchange the value of two variables. Note :- (both ways using temporary variable and not using any other value)

4# Write a program in C that reads the length of the three side of a triangle (a, b, c) and determine what type of triangle it is, based on the following cases:

i) If a >b+c no triangle is formed

ii) If $a^2 = b^2+c^2$ a right-angled triangle is formed

iii) If $a^2> b^2+c^2$a obtuse angled triangle is formed

iv) If $a^2< b^2+c^2$a acute angled triangle is formed

5# Write a c Program to find the area and perimeter of the different Shapes

a. Rectangle
b. Circle
c. Triangle
d. Cube

6# C Program to find out the ASCII value of a character.

7# C Program to check whether an alphabet is vowel or consonant.

WEEK #6

OBJECTIVES

- ❒ To learn using statements such as if-else and switch case in C.
- ❒ To learn using different types of loops (do-while loop and while loop) in C.

OUTCOMES

After completing this, the students would be able to:

- ❒ Write program consisting different control statements and loops.

PROBLEMS

1# Develop a flow chart/algorithm and write an interactive program in C to find the week day by entering corresponding digit from the keyword (from 1 to 7) using switch case.

2# Develop a flow chart/algorithm and write a program to reverse and to sum of digits of a number which you entered from the keyboard.

3# Armstrong numbers are those numbers whose sum of cubes of each digit is equal to that number. For example: $153 = 1^3 + 3^3 + 5^3$. Write a program to find all Armstrong Number in the range of 0 and 999.

4# Write a program to check the entered numbered is palindrome or not. Noted that palindrome means a number and its reverse number is same. For example: 1221.

5# Write a c program to print Fibonacci series:
0,1,1,2,3,5,8,13,……..

WEEK #7

OBJECTIVES

- ❒ To learn using different types of loops (do-while loop and while loop) in C.
- ❒ To learn the concepts related to arrays.

OUTCOMES

After completing this, the students would be able to:

- ❒ Write program consisting different control statements and loops.

PROBLEMS

1# C Program to check leap year. All test cases should be present in the in the program.

2# Program to convert string from upper case to lower case and Lower to upper case.

3# Find largest element of given array.

4# C program to find sum of array elements.

5# C Program to find number of elements in an array.

WEEK #8

OBJECTIVES

- ❒ To learn using for loop.
- ❒ To understand difference between different types of loops available.

OUTCOMES

After completing this, the students would be able to:

- ❒ Write program consisting for loop and nested for loop.

PROBLEMS

1# If a 5-digit number is entered from keyboard. Write a program to print a new number by adding one to each of its digit. For example, for digit 12991 we get the output 23002.

2# Write a program to print a list of prime numbers between a given ranges which you entered from the keyboard.

3# Write an interactive program in C to find the factorial of a given integer.

4# Write a C program that prints shape giving below by using nested loop:

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

5# Write a program to find the LCM (lowest common divisor) and HCF (Highest Common Factor) of entered two numbers.

WEEK #9

OBJECTIVES

- ❒ To learn using for loop.
- ❒ To understand difference between different types of loops available.
- ❒ To learn the concept of function.

OUTCOMES

After completing this, the students would be able to:

- ❒ Write program consisting for loop and nested for loop.

PROBLEMS

1# Write a C program that prints shape giving below by using nested loop

```
    1
   1 2
  1 2 3
 1 2 3 4
1 2 3 4 5
 1 2 3 4
  1 2 3
   1 2
    1
```

2# Write a C function to calculate the factorial of a number.

3# Write a C function to print Fibonacci series.

4# Write a C function to check whether a number is prime or not.

5# Write a C function to implement binary search.

WEEK #10

OBJECTIVES

- ❒ To learn the concept of One-Dimensional Arrays in C.
- ❒ To learn the concept of Two-Dimensional Arrays in C.

OUTCOMES

After completing this, the students would be able to:

- ❒ Understand how to handle one- Dimensional and two-dimensional arrays handled in C.

PROBLEMS

1# Program to sort array in ascending order.

2# Write a program in C to add two matrices of order N. You should also mention the necessary condition for matrix addition.

3# Write a program in C to find the transpose of a given matrix.

4# Write a program in C to print the lower triangular and upper triangular matrix of a given matrix.

WEEK #11

OBJECTIVES

- ❒ To learn the concept of Structure in C.

OUTCOMES

After completing this, the students would be able to:

- ❒ Use the concept of Structure in the real-life applications.

PROBLEMS

1# Write an interactive program in C to store the record of the N students of a class and print them. The record consists of Name, Class, Roll No, Enrolment, Marks.

2# Write an interactive program in C to store the record of the N students of a class and arrange them rank wise. The record consists of Name, Roll no, Marks.

3# Write a C program to add two distances entered by user. Measurement of distance should be in inch and feet. (Note: 12 inches = 1 foot). Use the concept of structure.

4# Write a Program to accept five records of employee. The Structure is:

```
struct
{
char name [25];
int age;
int Basic;
}
```

Calculate the total salary of employees as:

Total Salary = Basic + DA + HRA

DA = 10% of Basic

HRA = 5% of Basic

Display the name, age and total salary of the employees in descending order on the basis of total salary?

WEEK #12

OBJECTIVES

- To learn the concept of file handling in C.

OUTCOMES

After completing this, the students would be able to:

- Store and manipulate simple records in a file and fetch some meaningful information from them.

PROBLEMS

1# Write an interactive program in C to create a file & store some information (name class roll no) into it.

2# Write an interactive program in C to read the data from the file.

3# Write an interactive program in C to count the no. of lines, characters, blank spaces from the text file.

4# Write an interactive program in C to convert the all the content of a text file to uppercase.

WEEK #13

OBJECTIVES

- ❒ To learn the concept of recursion.
- ❒ To learn the concept of Pointers in C.
- ❒ To learn using string operations.

OUTCOMES

After completing this, the students would be able to:

- ❒ Write recursive program rather than iterative program.
- ❒ Distinguish between recursive approach and iterative approach for writing C program.
- ❒ Use pointers in C.

PROBLEMS

1# Write a user defined function *swap()* in C to exchange the values of two variable with using third variable and also without using third variable. (use the concept of call be value and call by reference).

2# Write a program to find the factorial of a given number using recursion.

3# Write a program in C to print the Fibonacci series upto N terms using recursion.

4# Write a program in C to store n elements in an array and print the elements using pointer.

5# Write a function countEven (int*, int) which receives an integer array and its size, and returns the number of even numbers in the array.

WEEK #14

OBJECTIVES

- ❒ To learn USING MS-ACCESS
- ❒ To learn the practical use of MS-ACCEESS.

OUTCOMES

After completing this, the students would be able to:

- ❒ Use keys, data entry, making tables.

PROBLEMS

1# Create table and insert at least five employee detail (Emp-id, designation, salary, address, manager etc.)

Name	Emp-id	designation	Salary	Address	manager
Mohan	1001				
Ram					
Danish					
Rinki					
Faiz					

2# Write SQL queries for the following:

a) Display all records of employee details containing Emp-id =’1001’.

b) Display all records of employee details having salary greater than the minimum manager salary.

c) Display all records of employee whose name contains ‘an’.

d) Display all records of employee details whose manager =’Mohan’.

Name	Address	Contact no
Mohan		
Ram		09897650
Danish		
Rinki		
Faiz	Shamshad market,Aligarh	

(Employee Contact Table)

3# Create table and insert employee detail(Emp-id , designation ,salary, address, Contact no etc.)

(Employee record table)

Name	Emp-id	Designation	Salary
Mohan	1001		
Ram	1002		
Danish	1003		
Rinki	1004	Market executive	
Faiz	1005		

a) List the contact no of each employee.

b) List the address of employee whose Id between 1002 to 1004.

c) Make a report on that employee whose address= 'Shamshad market, Aligarh'.