

## MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS INSTITUTION - UGC, GOVT. OF INDIA)

Affiliated to JNTUH; Approved by AICTE, NBA-Tier 1 & NAAC with A-GRADE | ISO 9001:2015 Maisammaguda, Dhulapally, Komaplly, Secunderabad - 500100, Telangana State, India

## LABORATORY MANUAL & RECORD

| Name:           |  |
|-----------------|--|
| Roll No:Branch: |  |
| Year:Sem:       |  |





## MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS INSTITUTION - UGC, GOVT. OF INDIA)

Affiliated to JNTUH; Approved by AICTE, NBA-Tier 1 & NAAC with A-GRADE | ISO 9001:2015 Maisammaguda, Dhulapally, Komaply, Secunderabad - 500100, Telangana State, India

# Certificate

| Certified that this is the Bonafide Record of the Work Done | Certified | that this | is | the | Bonafide | Record | of | the | Work | Done | b |
|---|-----------|-----------|----|-----|----------|--------|----|-----|------|------|---|
|---|-----------|-----------|----|-----|----------|--------|----|-----|------|------|---|

| Mr./Ms     | Roll.Noof                    |
|------------|------------------------------|
| B.Techyear | . Semester for Academic year |
| in         | Laboratory.                  |

Date:

Faculty Incharge

HOD

Internal Examiner

External Examiner

## INDEX

| S.No | Date | Name of the Activity/Experiment | Grade/<br>Marks | Faculty<br>Signature |
|------|------|---------------------------------|-----------------|----------------------|
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
| -    |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
| -    |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |
|      |      |                                 |                 |                      |

## **PROGRAMMING WORKSHOP-1(C-PROGRAMMING)**

## LAB MANUAL (R24A0586)

## **B.TECH**



## (II YEAR – I SEM) (2025-26)



## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING (Artificial Intelligence & Machine Learning)

## MALLAREDDYCOLLEGEOFENGINEERING&TECHNOLOGY (AutonomousInstitution-UGC,Govt.ofIndia)

Recognized under 2(f) and 12(B) of UGCACT 1956

(AffiliatedtoJNTUH,Hyderabad,ApprovedbyAICTE-AccreditedbyNBA&NAAC-'A'Grade-ISO9001:2015Certified) Maisammaguda, Dhulapally(PostVia.Hakimpet),Secunderabad-500100,TelanganaState,India

#### **Department of Computer Science & Engineering**

### (Artificial Intelligence & Machine Learning)

#### Vision

To be a premier center for academic excellence and research through innovative interdisciplinary collaborations and making significant contributions to the community, organizations, and society as a whole.

#### Mission

- 1) To impart cutting-edge Artificial Intelligence technology in accordance with industry norms.
- 2) To instil in students a desire to conduct research in order to tackle challenging technical problems for industry by sustaining the ethical values.
- 3) To develop effective graduates who are responsible for their professional growth, leadership qualities and are committed to lifelong learning.

#### **Quality Policy**

- 4) To provide sophisticated technical infrastructure and to inspire students toreach their full potential.
- 5) To provide students with a solid academic and research environment for a comprehensive learning experience.
- 6) To provide research development, consulting, testing, and customized training to satisfy specific industrial demands, thereby encouraging self-employment and entrepreneurship among students.

#### Programme Educational Objectives (PEO):

Graduates of the program will be able to

PEO1: Build successful careers in AI & ML and related fields by applying fundamental

concepts of computer science, maths and specialized knowledge of intelligent systems.

PEO2: Design and implement AI-based solutions to real-world problems, demonstrating creativity, critical thinking.

PEO3: Leverage the professional expertise to enter the workforce, seek higher education, and conduct research on AI-based problem resolution.

PEO4: Uphold ethical values and consider societal, legal, and environmental consequences while developing intelligent systems, safeguarding responsible AI development.

#### Programme Specific Outcomes (PSO):

After successful completion of the program a student is expected to have specific abilities to:

**PSO1:** Analyze and examine the fundamental issues with AI and ML applications.

**PSO2:** Apply machine learning, deep learning, and artificial intelligence approaches to address issues in social computing, healthcare, computer vision, language processing, speech recognition, and other domains.

**PSO3:** Use cutting-edge AI and ML tools and technology to further your study and research.

#### **PROGRAM OUTCOMES (POs)**

**PO1: Engineering Knowledge:** Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)

PO3: Design/Development of Solutions: Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)

PO4: Conduct Investigations of Complex Problems: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).

PO5: Engineering Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)

PO6: The Engineer and The World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).

PO7: Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)

PO8: Individual and Collaborative Team work: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.

**PO9:** Communication: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences

PO10: Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.

PO11: Life-Long Learning: Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change.

C-PROGRAMMING

#### KNOWLEDGE AND ATTITUDE PROFILE (WK)

- a) **WK1:** A systematic, theory-based understanding of the natural sciences applicable to the discipline and awareness of relevant social sciences.
- b) **WK2:** Conceptually-based mathematics, numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed analysis and modelling applicable to the discipline.
- c) **WK3:** A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline.
- d) **WK4:** Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.
- e) **WK5:** Knowledge, including efficient resource use, environmental impacts, whole-life cost, reuse of resources, net zero carbon, and similar concepts, that supports engineering design and operations in a practice area.
- f) **WK6:** Knowledge of engineering practice (technology) in the practice areas in the engineering discipline.
- g) **WK7:** Knowledge of the role of engineering in society and identified issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development.
- h) **WK8:** Engagement with selected knowledge in the current research literature of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues.
- i) WK9: Ethics, inclusive behaviour and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes.



#### MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY Maisammaguda, Dhulapally Post, Via Hakimpet, Secunderabad – 500100 DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING (Artificial Intelligence & Machine Learning)

#### GENERAL LABORATORY INSTRUCTIONS

- 1. Students are advised to come to the laboratory at least 5 minutes before (to the starting time), those who come after 5 minutes will not be allowed into the lab.
- 2. Plan your task properly much before to the commencement, come prepared to the lab with the synopsis / program / experiment details.
- 3. Student should enter into the laboratory with:
- Laboratory observation notes with all the details (Problem statement, Aim, Algorithm, Procedure, Program, Expected Output, etc.,) filled in for the lab session.
- b. Laboratory Record updated up to the last session experiments and other utensils (if any) needed in the lab.
- c. Proper Dress code and Identity card.
- 4. Sign in the laboratory login register, write the TIME-IN, and occupy the computer system allotted to you by the faculty.
- 5. Execute your task in the laboratory, and record the results / output in the lab Observation note book, and get certified by the concerned faculty.
- 6. All the students should be polite and cooperative with the laboratory staff, must Maintain the discipline and decency in the laboratory.
- 7. Computer labs are established with sophisticated and high end branded systems, which should be utilized properly.
- 8. Students / Faculty must keep their mobile phones in SWITCHED OFF mode during the lab sessions. Misuse of the equipment, misbehaviors with the staff and systems etc., will attract severe punishment.
- 9. Students must take the permission of the faculty in case of any urgency to go out ; if anybody found loitering outside the lab / class without permission during working hours will be treated seriously and punished appropriately.
- 10 Students should LOG OFF/ SHUT DOWN the computer system before he/she leaves the lab after completing the task (experiment) in all aspects. He/she must ensure the system / seat is kept properly

#### HEAD OF THE DEPARTMENT

#### PRINCIPAL

C-PROGRAMMING

#### Lab Objectives:

- a) To prepare students to become familiar with the Standard Java technologies of J2SE
- b) To prepare students to excel in Object Oriented programming and to succeed as a Java Developer through global rigorous education.
- c) To provide Students with a solid foundation in OOP fundamentals required to solve programming problems and also to learn Advanced Java topics like J2ME, J2EE,JSP,JavaScript
- d) To train Students with good OOP programming breadth so as to comprehend, analyze, design and create novel products and solutions for their al life problems.
- e) To inculcate in students professional and ethical attitude, multi disciplinary approach and an ability to relate java programming issues to broader application context.
- f) To provide student with an academic environment aware of excellence, writ ten ethical codes and guidelines and life long learning needed for a successful professional career.

#### Lab Out comes:

Upon successful completion of this course, the students will be able to:

- g) Able to analyze the necessity for Object Oriented Programming paradigm and over structured programming and become familiar with the fund a mental concepts in OOP.
- b) Demonstrate an ability to design and develop java programs, analyze, and interpret object-oriented data and report results.
- Demonstrate an ability to design an object-oriented system ,AWT components or multi threaded process as per needs and specifications.
- j) Demonstrate an ability to visualize and work on laboratory and multi disciplinary tasks like console and windows applications both for stand lone and Applets programs

#### Introduction about lab

System configurations are as follows:

- k) Hardware/Software's installed: Intel®CORE™i3-3240CPU@3.40GHZRAM:4GB/C,C++Compiler,JAVAJDK1.8,EditPlus.
- I) Systemsareprovidedforstudentsinthe1:1ratio.
- m) Systemsareassignednumbersandsamesystemisallottedforstudentswhentheydothelab.
- n) All Systems are configured in LINUX, it is open source and students can use any different programming environments through package installation.

#### **Guidelines to students**

- **1.** Standard operating procedure
- a) Explanationontoday's experiment by the concerned faculty using PPT covering the following aspects:
  - 1. Name of the experiment
  - 2. Aim
  - 3. Software/Hard ware requirements
  - 4. Writing the java programs by the students
  - 5. Commands for executing programs

#### Writing of the experiment in the Observation Book

The students will write the today's experiment in the Observation book as per the following format:

- 1. Name of the experiment
- 2. Aim
- 3. Writing the program
- 4. Viva-Voce Questions and Answers
- 5. Errors observed(if any)during compilation/execution

#### **6.** Guide Lines to Students in Lab

#### Disciplinary to be maintained by the students in the Lab

7. Studentsarerequiredtocarrytheirlabobservationbookandrecordbookwithcompletedexperiments whileenteringthelab.

- 8. Studentsmustusetheequipmentwithcare.Anydamageiscausedstudentispunishable.
- 9. Students are not allowed to use their cell phones/pen drives/CDs in labs.
- 10. Students need to be maintain proper dress code along with ID Card
- 11. Students are supposed to occupy the computers allotted to them and are not supposed to talk or make noise in the lab.

12. Students, after completion of each experiment they need to be updated in observation notes C-PROGRAMMING MRCETCAMPUS

and same to be updated in the record.

- 13. Lab records need to be submitted after completion of experiment and get it corrected with the concerned lab faculty.
- 14. If a student is absent for any lab, they need to be completed the same experiment in the free time before attending next lab.

Steps to perform experiments in the lab by the student

Step1:Students have to write the date,aim and for that experiment in the observation book.

**Step2:**Students have to listen and understand the experiment explained by the faculty and note down the important points in the observation book.

Step3:Students need to write procedure/algorithm in the observation book.

Step4:Analyze and Develop/implement the logic of the program by the student in respective platform

**Step5:**After approval of logic of the experiment by the faculty then the experiment has to be executed on the system.

**Step6**:After successful execution the results are to be shown to the faculty and noted the same in the observation book.

**Step7:**Students need to attend theViva-Voce on that experiment and write the same in the observation book.

**Step8:**Update the completed experiment in the record and submit to the concerned faculty in-charge.

#### **Instructions to maintain the record**

- b) Before start of the first lab they have to buy the record and bring the record to the lab.
- c) Regularly (Weekly) update the record after completion of the experiment and get it corrected with concerned lab in-charge for continuous evaluation. In case the record is lost inform the same day to the faculty in charge and get the new record within 2 days the record has to be submitted and get it corrected by the faculty.
- d) If record is not submitted in time or record is not written properly, the evaluation marks (5M)will be deducted.

#### Awarding the marks for day to day evaluation

Total marks for day to day evaluation is 15 Marks as per Autonomous (JNTUH). These 15 Marks are distributed as:

| Regularity         | 3Marks |
|--------------------|--------|
| Program written    | 3Marks |
| Execution & Result | 3Marks |
| Viva-Voce          | 3Marks |
| Dress Code         | 3Marks |

#### Allocation of Marks for Lab Internal

Total marks for lab internal are 40 Marks as per Autonomous (JNTUH.)

These 40 Marks are distributed as:

Average of day to day evaluation marks:15 Marks

Lab Mid exam:40 Marks

VIVA&Observation:10 Marks

#### **Allocation of Marks for Lab External**

Total marks for lab Internal and External are 60Marks as per Autonomous/ (JNTUH).

These 60 External Lab Marks are distributed as:

| Program Written              | 15Marks |
|------------------------------|---------|
| Program Execution and Result | 25Marks |
| Viva-Voce                    | 10Marks |
| Record                       | 10Marks |

#### 1. General laboratory instructions

- 1. Students are advised to come to the laboratory at least 5minutes before (to the starting time), those who come after 5minutes will not be allowed in to the lab.
- 2. Plan your task properly much before to the commencement, come prepared to the lab with the synopsis/ program/experiment details.
  - 3. Student should enter in to the laboratory with:
    - Laboratory observation notes with all the details (Problem statement, Aim, Algorithm, Procedure, Program, Expected Output, etc.,) filled in for the lab session.
    - 2. Laboratory Record updated up to the last session experiments and other utensils (if any) needed in the lab.
      - 3. Proper Dress code and Identity card.
  - 4. Sign in the laboratory login register, write the TIME-IN, and occupy the computer system allotted to you by the faculty.
  - 5. Execute your task in the laboratory, and record the results / output in the lab observation note book, and get certified by the concerned faculty.
  - 6. All the students should be polite and cooperative with the laboratory staff, must maintain the discipline and decency in the laboratory.
  - 7. Computer labs are established with so phisticated and high end branded systems, which should be utilized properly.
  - 8. Students / Faculty must keep their mobile phones in SWITCHED OFF mode during the lab sessions. Misuse of the equipment, misbehaviors with the staff and systems etc., will attracts evere punishment.
  - 9. Students must take the permission of the faculty in case of any urgency to go out ; if any body found loitering outside the lab / class without permission during working hours will be treated seriously and punished appropriately.
  - 10. Students should LOG OFF/ SHUT DOWN the computer system before he/she leaves the lab after completing the task (experiment) in all aspects. He/she must ensure the system / seats kept properly.

#### Head of the Department

#### Principal

|    | Program No | List of Programs   |
|----|------------|--|
| 1  |            | Ubuntu and Linux Commands  |
|    | a.         |  |
| 2  |            | Write an Algorithm and Flowchart for following programs.   |
|    |            | a) Write a C program using scanf() and printf()  |
|    |            | b) write a c program using operators   |
|    |            | c) write a C program to find the Areas of Polygons   |
|    |            | d) Write a C program to find the Simple and Compound<br>Interest   |
|    |            | a) C program to implement Swapping Two Numbers   |
|    |            | <ul> <li>c) program to implement Swapping Two Numbers</li> <li>f) C program to Implement Sum of First (n? Natural</li> </ul>           |
|    |            | Numbers  |
|    |            | g) Write a c program to check a number whether it is   |
|    |            | divisable by any given number  |
|    |            | h) Write a c program to evaluate the Mathematical  |
|    |            | Expression   |
|    |            |  |
|    | a.         | Write a program to find whether the given number is even or odd.   |
| 3  | b.         | Write a program to demonstrate the use of nested if structure.   |
|    |            |  |
| 4  | a.         | Write a C program to find the greatest of three numbers.   |
|    | b          | Write a C program to enter a number from 1-7 and be display the  |
|    | 2          | Corresponding day of the week using to switch case statement.<br>Write a C program to Implement Manu-Driven Calculator by using Do-Whi |
| 5  | a.         | Loop.  |
|    | b.         | Write a C program to Print Multiplication Table by using For Loop  |
|    | а          | Write a C program by using Function to check whether a number is   |
| 6  | u.         | even or odd.   |
| 0  | b.         | Write a C Program by using Function to calculate factorial using   |
|    |            | loop.  |
| _  | a.         | Write a C program by Using continue to skip an iteration   |
| /  | b.         | C program to implement Menu with Retry Option Using Goto<br>Statement  |
|    | С.         |  |
| 0  | a.         | C Program to Find the Maximum and Minimum Element in an Array  |
| 8  | b.         | Program to Search for an Element in an Array   |
|    | С.         | Program to Reverse an Array  |
| Q  | a.         | 1 ranspose of a Matrix   |
|    | b.         | Multiplication of Two Matrices   |
| 10 | a.         | Write a C program to implement String functions without built in   |

| B.Te | ch-CSE(AIM | L) R24  |
|------|------------|---|
|      | a.         | Write a C program to display multiple student details using Nested structure.         |
| 11   | b.         | Write a C program to Display Employee Details Using Pointer in Structures.            |
| 12   | a.         | C Program to Store Information (Book name, Price and Pages) of a<br>Book Using union. |
|      | b.         | Write a C program to implement enumeration(enum) data type .                          |
| 13   | a.         | Write a C program to implement calloc().  |
| 15   | b.         | Write a C program to implement relloc().  |
| 14   | a.         | Implement C program to read and write data to files.                                  |
|      | b.         | Write a C Program to Copy Contents of One File to Another.                            |

Week-1

Date:

Aim: Ubuntu and Linux Commands

#### Week-2:

#### Date:

#### Aim: Write a C program using scanf() and printf()

Strp1:start

Step2:input A

Step3:input B

Step 4:set Sum=A+B

Step5:Print Sum

Step 6: End

#### Folw Chart:

PRINT SUM OF 2 NUMBERS



Program: #include <stdio.h>

int main()

{

int a,b sum;

printf("Enter a and b values: ");

scanf("%d%d", &a,&b);

sum=a+b;

printf("Sum of Two Numbers are:",sum);

return 0;

}

#### **OUTPUT:**

Enter a and b values: 20 30 Sum of Two Numbers are:50

#### B.Tech-CSE(AIML) Aim: write a c program using operators

#### Algorithm:

- a) Start
- b) Declare variables: a, b, sum, diff, product, quotient,avg
- c) Input a and b
- d) Use arithmetic operators: +, -, \*, /
- e) Display the results
- f) End

Flowchart:



#include <stdio.h>

int main()

{

#### // Arithmetic operators

int a = 10, b = 3; printf("a + b = %d\n", a + b); // Output: 13 printf("a - b = %d\n", a - b); // Output: 7 printf("a \* b = %d\n", a \* b); // Output: 30 printf("a / b = %d\n", a / b); // Output: 3 printf("a %% b = %d\n", a % b); // Output: 1 // Relational operators printf("a == b is %d\n", a == b); // Output: 0 (false) printf("a != b is %d\n", a != b); // Output: 1 (true) printf("a > b is %d\n", a > b); // Output: 1 (true)

printf("a < b is %d\n", a < b); // Output: 0 (false)
printf("a >= b is %d\n", a >= b); // Output: 1 (true)

printf("a <= b is %d\n", a <= b); // Output: 0 (false)

#### // Logical operators

int x = 1, y = 0; printf("x && y is %d\n", x && y); // Output: 0 (false) printf("x || y is %d\n", x || y); // Output: 1 (true) printf("!x is %d\n", !x); // Output: 0 (false)

#### // Assignment operators

int c = 5; printf("c = %d\n", c); // Output: 5 printf("c += 3 is %d\n", c += 3); // Output: 8 printf("c -= 2 is %d\n", c -= 2); // Output: 6 printf("c \*= 4 is %d\n", c \*= 4); // Output: 24 printf("c /= 3 is %d\n", c /= 3); // Output: 8 printf("c %%= 5 is %d\n", c %= 5); // Output: 3 // Increment/decrement operators

#### int i = 5, j = 5;

printf("i++ is %d\n", i++); // Output: 5 (then i becomes 6)
printf("++j is %d\n", ++j); // Output: 6 (j becomes 6 first)
printf("i-- is %d\n", i--); // Output: 6 (then i becomes 5)
printf("--j is %d\n", --j); // Output: 5 (j becomes 5 first)

return 0;

}

#### **OUTPUT:**

| a + b = 13                   |
|------------------------------|
| a - b = 7                    |
| a * b = 30                   |
| a / b = 3                    |
| a % b = 1                    |
| a == b is 0                  |
| a != b is 1                  |
| a > b is 1                   |
| a < b is 0                   |
| a >= b is 1                  |
| a <= b is 0                  |
| x && y is 0                  |
| x    y is 1                  |
| !x is 0                      |
| c = 5                        |
| c += 3 is 8                  |
| c -= 2 is 6                  |
| c *= 4 is 24                 |
| c /= 3 is 8                  |
| c %= 5 is 3                  |
| i++ is 5                     |
|                              |
| ++j 18 6                     |
| ++J 18 6<br>i is 6           |
| ++j is 6<br>i is 6<br>j is 5 |

#### **Exercise:**

3. write a C program to find the Areas of Polygons

4. Write a C program to find the Simple and Compound Interest

5. C program to implement Swapping Two Numbers

6. C program to Implement Sum of First 'n' Natural Numbers

7. Write a c program to check a number whether it is divisable by any given number

8. Write a c program to evaluate the Mathematical Expression

#### Week-3

#### Date:

Aim: Write a program to determine whether a person is eligible to vote.

Program: #include <stdio.h> #include <conio.h>

{

}

int main()

int age; printf("\n Enter the age: "); scanf("%d", &age); if (age >= 18) printf("\n You are eligible to vote"); getch(); return 0;

**OUTPUT:** 

Enter the age: 28 You are eligible to vote

**Exercise:** 

- a) Write a program to find whether the given number is even or odd.
- b) Write a program to demonstrate the use of nested if structure.

Week 4:

Ι

Date:

Aim: . Write a program to test whether a number entered is positive, negative or equal to zero.

| Program: | <pre>#include <stdio.h></stdio.h></pre>         |  |  |  |  |  |  |
|----------|---|--|--|--|--|--|--|
|          | int main()                                      |  |  |  |  |  |  |
|          | {   |  |  |  |  |  |  |
|          | int num;  |  |  |  |  |  |  |
|          | <pre>printf("\n Enter any number: ");</pre>     |  |  |  |  |  |  |
|          | scanf("%d", #);                                 |  |  |  |  |  |  |
|          | f (num==0)                                      |  |  |  |  |  |  |
|          | printf("\n The number is equal to zero");       |  |  |  |  |  |  |
|          | else if (num>0)                                 |  |  |  |  |  |  |
|          | <pre>printf("\n The number is positive");</pre> |  |  |  |  |  |  |
|          | else  |  |  |  |  |  |  |
|          | printf("\n The number is negative");            |  |  |  |  |  |  |
|          | return 0;                                       |  |  |  |  |  |  |
|          | }   |  |  |  |  |  |  |

#### **OUTPUT:**

Enter any number: 0

The number is equal to zero

**Exercise:** 

- a) Write a C program to find the greatest of three numbers.
- b) Write a C program to enter a number from 1-7 and be display the corresponding day of the week using to switch case statement.
Week 5:

#### Date:

# Aim: Write a C program to check whether the given number is Prime or Not

| Program: | <pre>#include <stdio.h> int main()</stdio.h></pre>                   |
|----------|--|
|          | int num, $i = 2$ , isPrime = 1;                                      |
|          | <pre>printf("Enter a positive integer: ");<br/>scanf("%d", #);</pre> |
|          | if (num <= 1)<br>{   |
|          | printf("Not a prime number.\n");<br>return 0:                        |
|          | }<br>}   |
|          | while (1 <= num / 2)<br>{  |
|          | $\inf_{f} (num \% i == 0)$   |
|          | isPrime = 0;   |
|          | break;   |
|          | }<br>i++:  |
|          | }  |
|          | if (isPrime)   |
|          | <pre>printf("%d is a prime number.\n", num);</pre>                   |
|          | else   |
|          | <pre>printf("%d is not a prime number.\n", num);</pre>               |
|          | return 0;  |
|          | }  |

#### **OUTPUT:**

Enter a positive integer:5

5 is a prime number

## **Exercise:**

- a) Write a C program to Implement Menu-Driven Calculator by using Do-While Loop.
- b) Write a C program to Print Multiplication Table by using For Loop.

| B.Tech-CSE(AIML) | ) |
|------------------|---|
|------------------|---|

# Week 6:

Date:

# a) Aim: Write a C program using Function to find the square of a number

**Program:** 

#include <stdio.h>

```
int square(int num)
{
    return num * num;
}
int main()
{
    int n;
    printf("Enter a number: ");
    scanf("%d", &n);
    printf("Square = %d\n", square(n));
    return 0;
}
```

}

## **OUTPUT:**

Entera number: 9 Square = 81

**Exercise:** 

a) Write a C program by using Function to check whether a number is even or odd.

b) Write a C Program by using Function to calculate factorial using loop.

```
B.Tech-CSE(AIML)
```

Week 7:

Date:

# c) Aim: Write a C program Using break to exit a loop early

| Program:             | <pre>#include <stdio.h></stdio.h></pre>    |
|----------------------|--|
|                      | int main()                                 |
|                      | {  |
|                      | int i;                                     |
|                      | for $(i = 1; i \le 10; i++)$               |
|                      | {  |
|                      | if (i == 5)                                |
|                      | break;                                     |
|                      | printf("%d ", i);                          |
|                      | }  |
|                      | printf("\nLoop exited at $i = %d n$ ", i); |
|                      | return 0;                                  |
|                      | }  |
| OUTPUT:              | 1234                                       |
| Loop exited at i = 5 |  |

**Exercise :** 

a) Write a C program by Using continue to skip an iteration

b) C program to implement Menu with Retry Option Using Goto Statement

Week-8:

Program:

Date:

# Aim: Write a C Program to Find the Sum and Average of Array Elements

|  | <pre>#include <stdio.h></stdio.h></pre>          |  |
|--|--|--|
|  | int main()                                       |  |
|  | {  |  |
|  | int arr[100], n, i, sum = 0;                     |  |
|  | float average;                                   |  |
|  | <pre>printf("Enter number of elements: ");</pre> |  |
|  | scanf("%d", &n);                                 |  |
|  | <pre>printf("Enter %d integers:\n", n);</pre>    |  |
|  | for(i = 0; i < n; i++)                           |  |
|  | {  |  |
|  | <pre>scanf("%d", &amp;arr[i]);</pre>             |  |
|  | <pre>sum += arr[i];</pre>                        |  |
|  | }  |  |
|  | average = (float)sum / n;                        |  |
|  | <pre>printf("Sum = %d\n", sum);</pre>            |  |
|  | <pre>printf("Average = %.2f\n", average);</pre>  |  |
|  |  |  |
|  | return 0;  |  |
|  | }  |  |
|  |  |  |
| OUTPUT:<br>Enter number of elements: 2<br>Enter 2 integers:<br>5 6 |  |  |
| Sum = 11<br>Average = 5.50   |  |  |

**Exercise:** 

- a) C Program to Find the Maximum and Minimum Element in an Array
- b) **Program to Search for an Element in an Array**
- c) **Program to Reverse an Array**

# Week-9:

## Date:

Aim: Write a C program to perform Matrix Addition Operation.

```
Program:
                    #include <stdio.h>
                    int main()
                    {
                    int a[2][2], b[2][2], sum[2][2];
                    printf("Enter elements of first 2x2 matrix:\n");
                    for (int i = 0; i < 2; i++)
                    for (int j = 0; j < 2; j++)
                    scanf("%d", &a[i][j]);
                    printf("Enter elements of second 2x2 matrix:\n");
                    for (int i = 0; i < 2; i++)
                    for (int j = 0; j < 2; j++)
                    scanf("%d", &b[i][j]);
                    printf("Sum of matrices:\n");
                    for (int i = 0; i < 2; i++)
                    {
                    for (int j = 0; j < 2; j++)
                    {
                    sum[i][j] = a[i][j] + b[i][j];
                    printf("%d ", sum[i][j]);
                     }
                    printf("\n");
                     }
                    return 0;
                    }
    OUTPUT:
                    Enter elements of first 2x2 matrix:
                    1234
                    Enter elements of second 2x2 matrix:
                    5678
                    Sum of matrices:
                    68
                    10 12
```

#### **Exercise:**

a) Transpose of a Matrix

b) Multiplication of Two Matrices

C-PROGRAMMING

#### **Week-10:**

Aim: Write a C program to implement String functions with built in Functions
 (i).strlen() (ii).strcpy() (iii).strcmp (iv).strcat() (v).strrev()
Program:

```
#include <stdio.h>
#include <string.h>
int main() {
char str[] = "Hello";
printf("Length = %lu\n", strlen(str));
char src[] = "World";
char dest[20];
strcpy(dest, src);
printf("Copied String: %s\n", dest);
char str1[] = "abc";
char str2[] = "abc";
printf("Compare = %d\n", strcmp(str1, str2));
char str3[20] = "Hello ";
char str4[] = "World";
strcat(str3, str4);
printf("Concatenated: %s\n", str3);
char str5[] = "Hello";
int len = strlen(str5);
for (int i = 0; i < len / 2; i++)
{
char temp = str5[i];
str5[i] = str5[len - i - 1];
str5[len - i - 1] = temp;
}
printf("Reversed: %s\n", str5);
return 0;
}
```

Date:

R24

# **OUTPUT:**

Length = 5 Copied String: World Compare = 0 Concatenated: Hello World Reversed: olleH

**Exercise**:

a) Write a C program to implement String functions without built in Functions

Week-11:

#### Aim: Write a C program to to display student details using structures.

#### **Program:**

#include <stdio.h> // Define a structure for a student struct Student { int rollNo; char name[50]; float marks: }; int main() { struct Student s1; // Input student information printf("Enter roll number: "); scanf("%d", &s1.rollNo); printf("Enter name: "); scanf(" %[^\n]", s1.name); // Read string with spaces printf("Enter marks: "); scanf("%f", &s1.marks); // Display student information printf("\n--- Student Details ---\n"); printf("Roll No: %d\n", s1.rollNo); printf("Name: %s\n", s1.name); printf("Marks: %.2f\n", s1.marks); return 0; }

# **OUTPUT:**

Enter roll number: 123 Enter name: mahesh Enter marks: 95

--- Student Details ---Roll No: 123 Name: mahesh Marks: 95.00

## Date:

#### Exercise:

- a) Write a C program to display multiple student details using Nested structure.
- b) Write a C program to Display Employee Details Using Pointer in Structures.

Week-12:

Date:

Aim: C Program to Store Information (name, roll and marks) of a Student Using union.

## **Program:**

#include <stdio.h> union student { char name[50]; int roll; float marks; } s; int main() { printf("Enter information:\n"); printf("Enter name: "); scanf("%s", s.name); printf("Enter roll number: "); scanf("%d", &s.roll); printf("Enter marks: "); scanf("%f", &s.marks); printf("Displaying Information:\n"); printf("Name: "); puts(s.name); printf("Roll number: %d\n",s.roll); printf("Marks: %.1f\n", s.marks); return 0; }

## **OUTPUT:**

Enter information: Enter name: Jack Enter roll number: 23 Enter marks: 34.5 Displaying Information: Name: Jack Roll number: 23 Marks: 34.5

Exercise: C Program to Store Information (name, roll and marks) of a Student Using union

- a) C Program to Store Information (Book name, Price and Pages) of a Book Using union.
- b) Write a C program to implement enumeration(enum) data type .
## Week-13:

Date:

#### Aim: Write a C program to implement malloc().

#### **Program:**

#include <stdio.h>
#include <stdlib.h>

int main() { int \*ptr; int n; printf("Enter number of integers: "); scanf("%d", &n); ptr = (int \*)malloc(n \* sizeof(int)); // allocating memory if (ptr == NULL) { printf("Memory not allocated.\n"); return 1; } printf("Enter %d integers:\n", n); for (int i = 0; i < n; ++i) { scanf("%d", ptr + i); } printf("You entered:\n"); for (int i = 0; i < n; ++i) { printf("%d ", \*(ptr + i)); } free(ptr); // freeing memory return 0; }

# **OUTPUT:**

Enter number of integers: 2 Enter 2 integers: 10 20 You entered: 10 20

## **Exercise:**

- a)
- Write a C program to implement calloc(). Write a C program to implement relloc(). b)

# Week-14:

#### Aim: Write a C program to creat and write data to a file

#### **Program:**

#include<stdio.h> void main() { FILE \*fptr; char name[20]; int age; float salary; /\* open for writing \*/ fptr = fopen("emp.txt", "w"); if (fptr == NULL) { printf("File does not exists \n"); return; } printf("Enter the name n"); scanf("%s", name); fprintf(fptr, "Name = %s\n", name); printf("Enter the age\n"); scanf("%d", &age); fprintf(fptr, "Age = %d n", age); printf("Enter the salary\n"); scanf("%f", &salary); fprintf(fptr, "Salary = %.2f\n", salary); fclose(fptr); }

Date:

# **OUTPUT:**

**Exercise:** 

- a)
- **Implement C program to read and write data to files.** Write a C Program to Copy Contents of One File to Another. b)

