Class: B. Tech. 2nd Semester Branch: Computer Science and Engineering

Course Title: Computer Programming Course Code: ESC-201

Lab Exercise scheduled on 31/05/2025(ESC201.2)

1. ***Sequence Control Instruction***

*#include <stdio.h>*

*int main()*

*{*

*printf("Step 1: Start\n");*

*printf("Step 2: Process\n");*

*printf("Step 3: End\n");*

*return 0;}*

1. **Decision-Making Statements**

#include <stdio.h>

int main()

{ int num = 10;

if (num > 0)

{ printf("Number is positive.");

} return 0;}

**if-else Statement**

#include <stdio.h>

int main()

{ int num = -5;

if (num > 0)

{ printf("Positive number."); }

else { printf("Negative number.");

}

return 0;}

1. **switch-case Statement**

#include <stdio.h>

int main()

{

int choice = 2;

switch (choice)

{ case 1:

printf("Option 1 selected.");

break;

case 2:

printf("Option 2 selected.");

break;

default:

printf("Invalid choice."); }

return 0;}

1. Write a C program to find the sum of the individual digits of a positive integer.

#include <stdio.h>

int sumOfDigits(int num) {

int sum = 0;

while (num > 0) {

sum += num % 10; // Extract last digit and add to sum

num /= 10; // Remove last digit

}

return sum;

}

int main() {

int num;

printf("Enter a positive integer: ");

scanf("%d", &num);

printf("Sum of digits: %d\n", sumOfDigits(num));

return 0;

}

1. **for Loop**

#include <stdio.h>

int main()

{

for (int i = 1; i <= 5; i++)

{ printf("%d ", i); }

return 0;}

1. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.

#include <stdio.h>

void generateFibonacci(int n) {

int a = 0, b = 1, next;

printf("Fibonacci sequence: %d %d ", a, b);

for (int i = 2; i < n; i++) {

next = a + b;

printf("%d ", next);

a = b;

b = next;

}

printf("\n");

}

int main() {

int n;

printf("Enter the number of terms: ");

scanf("%d", &n);

generateFibonacci(n);

return 0;

}

1. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

#include <stdio.h>

int isPrime(int num) {

if (num < 2) return 0;

for (int i = 2; i \* i <= num; i++) {

if (num % i == 0) return 0;

}

return 1;

}

void generatePrimes(int n) {

printf("Prime numbers up to %d: ", n);

for (int i = 2; i <= n; i++) {

if (isPrime(i)) printf("%d ", i);

}

printf("\n");

}

int main() {

int n;

printf("Enter the value of n: ");

scanf("%d", &n);

generatePrimes(n);

return 0;

}

1. A character is entered through keyboard. Write a C program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol using if-else and switch case. The following table shows the range of ASCII values for various characters. Characters ASCII values A – Z 65 – 90 a – z 97 – 122 0 – 9 48 – 57 Special symbols 0 – 47, 58 – 64, 91 – 96, 123 – 127

#include <stdio.h>

void identifyCharacter(char ch) {

if (ch >= 65 && ch <= 90)

printf("Capital Letter\n");

else if (ch >= 97 && ch <= 122)

printf("Small Letter\n");

else if (ch >= 48 && ch <= 57)

printf("Digit\n");

else

printf("Special Symbol\n");

}

int main() {

char ch;

printf("Enter a character: ");

scanf(" %c", &ch); // Space before %c prevents issues with newline characters

identifyCharacter(ch);

return 0;

}

1. If cost price and selling price of an item is input through the keyboard, write a program to determine whether the seller has made profit or incurred loss. Write a C program to determine how much profit or loss incurred in percentage

#include <stdio.h>

void calculateProfitLoss(float cost, float selling) {

float profitLoss = selling - cost;

float percentage = (profitLoss / cost) \* 100;

if (profitLoss > 0)

printf("Profit: %.2f%%\n", percentage);

else if (profitLoss < 0)

printf("Loss: %.2f%%\n", -percentage);

else

printf("No Profit, No Loss\n");

}

int main() {

float cost, selling;

printf("Enter Cost Price: ");

scanf("%f", &cost);

printf("Enter Selling Price: ");

scanf("%f", &selling);

calculateProfitLoss(cost, selling);

return 0;

}