**MODULE: SE – Fundamentals of Programming**

**Topics Covered**

* **Looping Statements**
* **Conditional Statements**

**Que.1 WAP to print 972 to 897 using for loop**

#include <stdio.h>

int main() {

int i;

for ( i = 972; i >= 897; i--) {

printf("%d ", i);

}

return 0;

}

**Que.2 WAP to accept 5 numbers from user and display all numbers**

#include <stdio.h>

int main() {

int n[5];

for (int i = 0; i < 5; i++) {

printf("Enter number %d: ", i + 1);

scanf("%d", &n[i]);

}

printf("You entered:\n");

for (int i = 0; i < 5; i++) {

printf("%d\n", n[i]);

}

return 0;

}

**Que.3 WAP to take 10 no. Input from user find out below values**

**a. How many Even numbers are there**

**b. How many odd numbers are there**

**c. Sum of even numbers**

**d. Sum of odd numbers**

#include <stdio.h>

int main() {

int num, evenCount = 0, oddCount = 0;

int evenSum = 0, oddSum = 0;

for (int i = 1; i <= 10; i++) {

printf("Enter number %d: ", i);

scanf("%d", &num);

if (num % 2 == 0) {

evenCount++;

evenSum += num;

} else {

oddCount++;

oddSum += num;

}

}

printf("Total even numbers: %d\n", evenCount);

printf("Total odd numbers: %d\n", oddCount);

printf("Sum of even numbers: %d\n", evenSum);

printf("Sum of odd numbers: %d\n", oddSum);

return 0;

}

**Que.4 WAP to print table up to given numbers**

#include <stdio.h>

int main() {

int num, n;

printf("Enter the number up to which you want to print the tables: ");

scanf("%d", &n);

for (num = 1; num <= n; num++) {

printf("\nTable of %d:\n", num);

for (int i = 1; i <= 10; i++) {

printf("%d x %d = %d\n", num, i, num \* i); }

}

return 0; }

**Que.5 WAP to print factorial of given number**

#include <stdio.h>

int main() {

int num;

int fact = 1;

printf("Enter a number: ");

scanf("%d", &num);

for (int i = 1; i <= num; i++) {

fact \*= i;

}

printf("Factorial of %d = %llu\n", num, fact);

return 0;

}

**Que.6 WAP to print Fibonacci series up to given numbers**

#include <stdio.h>

int main() {

int i;

int first = 0, second = 1, next;

printf("Enter the upper limit for Fibonacci series: ");

scanf("%d", &i);

if (i >= 0) {

printf("%d ", first);

}

if (i >= 1) {

printf("%d ", second);

}

next = first + second;

while (next <= i) {

printf("%d ", next);

first = second;

second = next;

next = first + second;

}

return 0;

}

**Que.7 WAP to print number in reverse order e.g.: number = 64728 ---> reverse = 82746**

#include <stdio.h>

int main() {

int num, rev = 0;

printf("Enter a number: ");

scanf("%d", &num);

while (num != 0) {

int digit = num % 10;

rev = rev \* 10 + digit;

num = num / 10;

}

printf("Reversed number: %d\n", rev);

return 0;

}

**Que.8 Write a program to find out the max from given number (E.g., No: -1562 Max number is 6)**

#include <stdio.h>

int main() {

int n, max = 0;

printf("Enter a number: ");

scanf("%d", &n);

if (n < 0) {

n = -n;

}

while (n != 0) {

int digit = n % 10;

if (digit > max) {

max = digit;

}

n = n / 10;

}

printf("The maximum digit is: %d\n", max);

return 0;

}

**Que.9 Write a program make a summation of given number (E.g., 1523 Ans: -11)**

#include <stdio.h>

int main() {

int n, sum = 0, i=0;

printf("Enter a number: ");

scanf("%d", &n);

if (n < 0) {

i = 1;

n = -n; }

while (n != 0) {

int digit = n % 10;

sum += digit;

n = n / 10;

}

if (i) {

sum = -sum;

}

printf("The summation of digits is: %d\n", sum);

return 0;

}

**Que.10 Write a program you have to make a summation of first and last Digit. (E.g., 1234 Ans: -5)**

#include <stdio.h>

int main() {

int n, first, last,sum;

printf("Enter a number: ");

scanf("%d", &n);

if (n < 0) {

n = -n; }

last = n % 10;

first = n;

while (first >= 10) {

first = first / 10;

}

sum = first + last;

if (n < 0) {

sum = -sum; }

printf("The summation of the first and last digit is: %d\n", sum);

return 0; }

**Que.11 Accept 5 names from user at run time.**

#include <stdio.h>

int main() {

char names[5][100];

for (int i = 0; i < 5; i++) {

printf("Enter name %d: ", i + 1);

scanf("%s", names[i]);

}

printf("\nYou entered:\n");

for (int i = 0; i < 5; i++) {

printf("Name %d: %s\n", i + 1, names[i]);

}

return 0;

}

**Que.12 Program of Armstrong Number in C Using For Loop & While Loop**

**Using For Loop**

#include <stdio.h>

#include <math.h>

int main() {

int num, originalNo, remainder, result = 0, n = 0;

printf("Enter an integer: ");

scanf("%d", &num);

originalNo = num;

for (int temp = num; temp != 0; n++) {

temp /= 10;

}

for (int temp = num; temp != 0; temp /= 10) {

remainder = temp % 10;

result += pow(remainder, n);

}

if (result == originalNo) {

printf("%d is an Armstrong number.\n", originalNo);

} else {

printf("%d is not an Armstrong number.\n", originalNo);

}

return 0;

}

**Using While Loop**

#include <stdio.h>

#include <math.h>

int main() {

int num, originalNo, remainder, result = 0, n = 0;

printf("Enter an integer: ");

scanf("%d", &num);

originalNo = num;

int temp = num;

while (temp != 0) {

temp /= 10;

n++;

}

temp = num;

while (temp != 0) {

remainder = temp % 10;

result += pow(remainder, n);

temp /= 10;

}

if (result == originalNo) {

printf("%d is an Armstrong number.\n", originalNo);

} else {

printf("%d is not an Armstrong number.\n", originalNo);

}

return 0;

}

**Que.13 calculate the Factorial of a Given Number using while loop**

#include <stdio.h>

int main() {

int number;

unsigned long long factorial = 1;

printf("Enter a positive integer: ");

scanf("%d", &number);

if (number < 0) {

printf("Factorial of a negative number doesn't exist.\n");

} else {

int i = number;

while (i > 0) {

factorial \*= i;

i--;

}

printf("Factorial of %d = %llu\n", number, factorial);

}

return 0;

}

**Que.14 Accept 5 numbers from user and find those numbers factorials**

#include <stdio.h>

unsigned long long fact(int n);

int main() {

int num[5];

printf("Enter 5 numbers:\n");

for (int i = 0; i < 5; i++) {

printf("Enter number %d: ", i + 1);

scanf("%d", &num[i]);

}

for (int i = 0; i < 5; i++) {

printf("Factorial of %d is %llu\n", num[i], fact(num[i]));

}

return 0;

}

unsigned long long fact(int n) {

unsigned long long fact = 1;

while (n > 0) {

fact \*= n;

n--;

}

return fact;

}

**Que.15 Calculate sum of 10 numbers using of while loop**

#include <stdio.h>

int main() {

int i = 1, n, sum = 0;

while (i <= 10) {

printf("Enter number %d: ", i);

scanf("%d", &n);

sum += number;

i++;

}

printf("The sum of the 10 numbers is: %d\n", sum);

return 0;

}

**Que.16 Calculate the Sum of Natural Numbers Using the While Loop**

#include <stdio.h>

int main() {

int n, sum = 0, i = 1;

printf("Enter a positive integer: ");

scanf("%d", &n);

if (n < 1) {

printf("Please enter a positive integer.\n");

return 1;

}

while (i <= n) {

sum += i;

i++;

}

printf("The sum of natural numbers up to %d is: %d\n", n, sum);

return 0;

}

**Que.17 Calculate 5 numbers from user and calculate number of even and odd using of while loop**

#include <stdio.h>

int main() {

int i = 0, num, even = 0, odd = 0;

while (i < 5) {

printf("Enter number %d: ", i + 1);

scanf("%d", &num);

if (num % 2 == 0) {

even++;

} else {

odd++;

}

i++;

}

printf("Even numbers: %d\n", even);

printf("Odd numbers: %d\n", odd);

return 0;

}

**Que.18 Write a C Program to Print the Multiplication Table of N**

**i. E.g. 5 \* 1 = 5**

**ii. 5 \* 2 = 10**

**1. .**

**2. .**

**iii. 5 \* 10 = 50**

#include <stdio.h>

int main() {

int num;

printf("Enter a number: ");

scanf("%d", &num);

printf("Multiplication table of %d:\n", num);

for (int i = 1; i <= 10; i++) {

printf("%d \* %d = %d\n", num, i, num \* i);

}

return 0;

}

**Que.19. Patterns:**



**Pattern-1:**

**1**

**1 0**

**1 0 1**

**1 0 1 0**

**1 0 1 0 1**

#include <stdio.h>

int main() {

int i, j, row=5;

for (i = 1; i <= row; i++) {

for (j = 1; j <= i; j++) {

if (j % 2 == 1) {

printf("1 ");

} else {

printf("0 ");

}

}

printf("\n");

}

return 0;

}

**Pattern-2:**

**A**

**B C**

**D E F**

**G H I J**

**K L M N O**

**#include <stdio.h>**

**int main() {**

**int i, j, row=5;**

**char ch = 'A';**

**for (i = 1; i <= row; i++) {**

**for (j = 1; j <= i; j++) {**

**printf("%c ", ch);**

**ch++;**

**}**

**printf("\n");**

**}**

**return 0;**

**}**

**Pattern-3:**

\*

\* \* \*

\* \* \* \* \*

\* \* \* \* \* \* \*

\* \* \* \* \* \* \* \* \*

#include <stdio.h>

int main() {

int i, j, row=5;

for (i = 1; i <= row; i++) {

for (j = i; j < row; j++) {

printf(" ");

}

for (j = 1; j <= (2 \* i - 1); j++) {

printf("\* ");

}

printf("\n");

}

return 0;

}

**Pattern-4:**

1

2 3

4 5 6

7 8 9 10

11 12 13 14 15

#include <stdio.h>

int main() {

int i, j, row=5;

int num = 1;

for (i = 1; i <= row; i++) {

for (j = 1; j <= i; j++) {

printf("%d ", num);

num++;

}

printf("\n");

}

return 0;

}

**Pattern-5:**

A

A B

A B C

A B C D

A B 1 C D

#include <stdio.h>

int main() {

int i, j, row=5;

char ch;

for (i = 1; i <= row; i++) {

ch = 'A';

for (j = 1; j <= i; j++) {

if (i == row && j == i / 2 + 1) {

printf("1 ");

} else {

printf("%c ", ch);

ch++;

}

}

printf("\n");

}

return 0;

}

**Pattern-5:**

\*

\* \*

\* \* \*

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\* \* \* \* \*

\* \* \* \* \* \*

\* \* \* \* \*

\* \* \* \*

\* \* \*

\* \*

\*

#include <stdio.h>

int main() {

int i, j, row=6, n;

for (i = 1; i <= row; i++) {

n = 1;

for (j = 1; j <= i; j++) {

printf(" \* ");

n++;

}

printf("\n");

}

for (i = row - 1; i >= 1; i--) {

n= 1;

for (j = 1; j <= i; j++) {

printf(" \* ");

n++;

}

printf("\n");

}

return 0;

}

**Que.20 WAP program to print below output using for loop**

1. **02 03 04 05 06 07 08 09 10**

**11 12 13 14 15 16 17 18 19 20**

#include <stdio.h>

int main() {

int i, j, k=1;

for (i = 0; i < 2; i++)

{

for (j = 0; j < 10; j++)

{

printf("%02d\t", k);

k++;

}

printf("\n");

}

return 0;

}

**Que.21 42 43 44 45 46 47 48 49 50**

#include <stdio.h>

int main() {

int i,st=42,end =50;

for (i = st; i <= end; i++) {

printf("%d ", i);

}

printf("\n");

return 0;

}

**Que.22 Accept 3 numbers from user using while loop and check each numbers palindrome**

#include <stdio.h>

int main(){

int num, temp, rem, rev = 0,i =0;

while (i < 3)

{

printf("\nenter a number:");

scanf("%d", &num);

i++;

temp = num;

while ( temp > 0)

{

rem = temp %10;

rev = rev \*10+ rem;

temp = temp /10;

}

printf("reversed number is = %d ", rev);

if ( num == rev ){

printf("\n%d is Palindrome Number.", num);

}

else

{

printf("\n%d is not the Palindrome Number.", num);

}

}

return 0;

}

**Que.23 C Program to Reverse a Number Using FOR Loop**

**Series Program:**

#include <stdio.h>

int main() {

int num, revNo = 0, i;

printf("Enter a number: ");

scanf("%d", &num);

for (; num != 0; num /= 10) {

i = num % 10;

revNo = revNo \* 10 + i;

}

printf("Reversed number: %d\n", revNo);

return 0; }

**Que.24 1 + 2 + 3 + 4 + 5 + ... + n**

#include <stdio.h>

int main() {

int n,sum;

printf("Enter a integer: no ");

scanf("%d", &n);

sum = n \* (n + 1) / 2;

printf("The sum of %d natural numbers is %d\n", n, sum);

return 0;

}

**Que.25 (1\*1) + (2\*2) + (3\*3) + (4\*4) + (5\*5) + ... + (n\*n)**

#include <stdio.h>

int main() {

int n, i, sum=0;

printf("Enter a No ");

scanf("%d", &n);

for (i = 1; i <= n; i++) {

sum += i \* i;

}

printf("The sum of squares 1 to %d is %d\n", n, sum);

return 0;

}

**Que.26 (1)+ (1+2) + (1+2+3) + (1+2+3+4) + ... + (1+2+3+4+...+n)**

#include <stdio.h>

int main() {

int n, i, j;

int totalSum = 0, sum;

printf("Enter a positive integer: ");

scanf("%d", &n);

for (i = 1; i <= n; i++) {

sum = 0;

for (j = 1; j <= i; j++) {

sum += j;

}

totalSum += sum;

}

printf("The sum of the series is %d\n", totalSum);

return 0;

}

**Que.27 1/2 - 2/3 + 3/4 - 4/5 + 5/6 .......... n**

#include <stdio.h>

int main() {

int n;

double sum = 0.0;

printf("Enter the number ");

scanf("%d", &n);

for (int i = 1; i <= n; i++) {

if (i % 2 == 0) {

sum -= (double)i / (i + 1);

} else {

sum += (double)i / (i + 1);

}

}

printf("The sum of the series is %.6f\n", sum);

return 0;

}