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. .

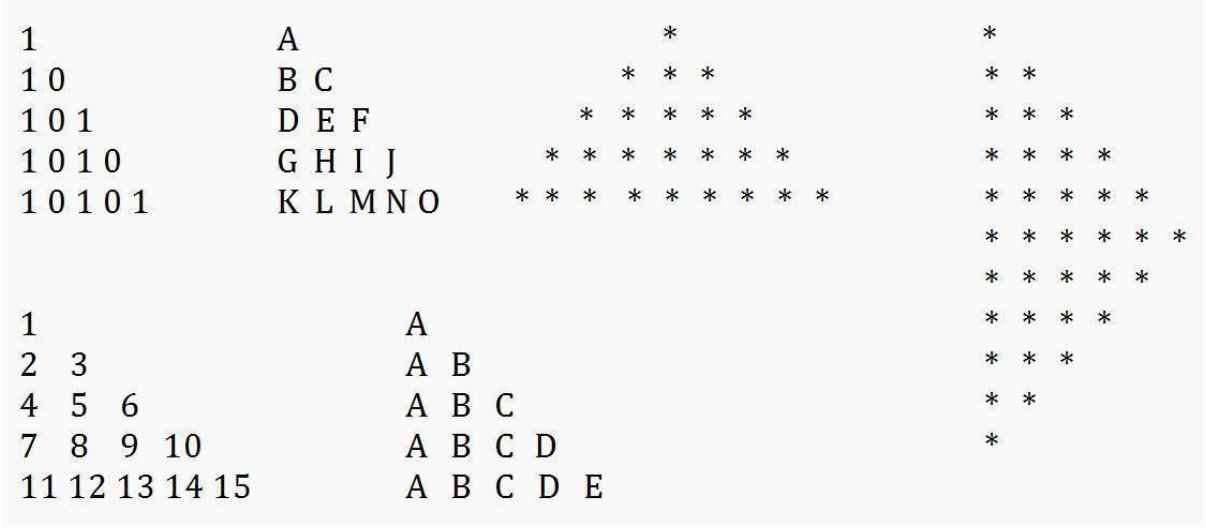
iii. 5 * 10 = 50

```
#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:

```
*
 * *
 * * *
 * * * *
 * * * * *
 * * * * * *
 * * * * *
 * * * *
 * * *
 * *
 *
```

```
#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

01 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;
}
```