//q1)Print numbers from 1 to 10 using while loop

```c
#include<stdio.h>
void
  main(){int
  i=1;
  while(i<=10){ print
    f("%d\t",i);i=i+1;
  }
  printf("\n");
}
```

Output-

1   2   3   4   5   6   7   8   9   10

//q2)Print numbers in reverse order with a difference of 2

```c
#include<stdio.h>
void main()
{
  int i=10;
  while (i>=2)
  {
    printf("%d ",i);
    i-=2;
  }

}
```

Output-

10 8 6 4 2

//q3)Print sum of digits of any number

```c
#include<stdio.h>
void main(){
    int n,sum=0,rem;
    printf("Enter the number");
    scanf("%d",&n);
    while(n>0){
        rem=n%10;
        sum+=rem;
        n/=10;
    }
    printf("Sum of the digits=%d\n",sum);
}
```

Output-

Enter the number123

Sum of the digits=6

Lab 4 (Loop)
Abhinav Anand   **Roll-22052611**   **Section-B16**

//q4)Print products of digits of any number

#include<stdio.h>

void main(){

  int n,prod=1,rem;

  printf("Enter the number : ");

  scanf("%d",&n);

  while(n>0){ r

    em=n%10;

    prod*=rem;

    n/=10;

  }

  printf("Product of the digits: %d\n",prod);

}

Output-

Enter the number : 123

Product of the digits: 6

//q5)Find the factorial of a number

#include<stdio.h>

void

```c
  main(){ int
  n,num;
  long fact=1;
  printf("Enter the number :");
  scanf("%d",&n);
  num=n;
  if(n<0){
    printf("No factorial of negative number.");
  }
  else{
    while(n>1){
      fact*=n;
      n--;
    }
    printf("Factorial of %d = %ld\n", num, fact);
  }
}
```

Output-

Enter the number :6

Factorial of 6 = 720

//q6)Convert binary to decimal number

```c
#include<stdio.h>
void main(){
    int n,nsave,rem,d;
    int j=1;
    int dec=0;
    printf("Enter the number in binary: ");
    scanf("%d",&n);
    nsave=n;
    while(n>0){
        rem=n%10;
        d=rem*j;
        dec+=d;
        j*=2; n/=10;
    }
    printf("Binary number = %d, Decimal number = %d\n", nsave, dec);
}
```

Output-

Enter the number in binary: 100101

Binary number = 100101, Decimal number = 37

//q7) Print the numbers from 1 to 15 with a step size of 3.

```c
#include <stdio.h>

int main() {
  int i = 1;
  do {
    printf("%d ", i);
    i += 3;
  } while (i <= 15);
  return 0;
}
```

Output-
1 4 7 10 13

//q8)Count the digits in number using do while loop

```c
#include<stdio.h>

void main(){
  int n,count=0,rem;
  printf("Enter the number: ");
  scanf("%d",&n);
  do{
    n/=10;
    count++;
  }while(n>0);
  printf("Number of digits = %d\n", count);
}
```

Output-

Enter the number: 49873

Number of digits = 5

//q9)Find the sum of numbers entered using do...while loop

```c
#include<stdio.h>
void main()
{
  int n,sum=0;
  do
  {
    printf("Enter The Number (0 to Stop) \n");
    scanf("%d",&n);
    sum+=n;
  }
  while (n!=0);
  printf("Sum of the Numbers \n%d",sum);
}
```

Output-

Enter The Number (0 to Stop)

4

Enter The Number (0 to Stop)

9

Enter The Number (0 to Stop)

10

Enter The Number (0 to Stop)

2

Enter The Number (0 to Stop)

0

Sum of the Numbers

25

H.W

//p1)Multiply two positive numbers without using * operator.

```c
#include <stdio.h>
int
 main(){i
 nt x, y;
 int product = 0;
 printf("Enter two integers:\n");
 scanf("%d%d",  &x, &y);
 while(y != 0)
 {
   product += x;
    y--;
 }
 printf("Product = %d\n", product);
}
```

Output-

Enter two integers:

5 7

Product = 35

//p2)Find the sum of this series up to n terms 1+2+4+7+11+16+…

```c
#include <stdio.h>
int main() {
  int n;
  printf("Enter the value of n: ");
  scanf("%d", &n);

  int sum = 0;
  int term = 1;
  int i = 1;

  while (i <= n) {
    sum += term;
    term += i;
    i++;
  }

  printf("The sum of the series up to %d terms is: %d", n, sum);

  return 0;
}
```

Output-
Enter the value of n: 4
The sum of the series up to 4 terms is: 14

//p3)Convert a decimal number to its equivalent binary number.

```c
#include<stdio.h>
int main()  {
    int num, bin = 0, rem = 0, place = 1;
    printf("Enter a decimal number\n");
    scanf("%d", &num);
    printf("\nBinary equivalent of %d is ", num);
    while(num)
    {
        rem = num % 2;
        num  = num / 2;
        bin = bin + (rem * place);
        place = place * 10;
    }
    printf("%d\n", bin);
    return 0;
}
```

Output-

Enter a decimal number

67

Binary equivalent of 67 is 1000011

//p4)Generate the fibonacci series 1,1,2,3,5,8,13,21,34,55,89

```c
#include<stdio.h>
void main(){
 int t1 = 0, t2 = 1, nextTerm = 0, n;
 printf("Enter a positive number: ");
 scanf("%d", &n);

 // displays the first two terms which is always 0 and 1
 printf("Fibonacci Series: %d, %d, ", t1, t2);
 nextTerm = t1 + t2;

 while (nextTerm <= n)
  { printf("%d, ",
  nextTerm);t1 = t2;
  t2 = nextTerm;
  nextTerm = t1 + t2;
 }

}
```

Output-

Enter a positive number: 89

Fibonacci Series: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89,

//p5)Find the LCM and HCF of two numbers.

```c
#include<stdio.h>
void main(){
  int num1, num2, a, b, temp, hcf,lcm;
  printf("Enter two Numbers: ");
  scanf("%d %d", &num1, &num2);
  a=num1;
  b=num2;
  while(b!=0)
  {
    temp = b;
    b  = a%b;
    a = temp;
  }
  hcf = a;
  lcm = (num1*num2)/hcf;
  printf("\nHCF(%d,%d) = %d and LCM(%d,%d) = %d", num1, num2, hcf,num1, num2, lcm);
}
```

Output-

Enter two Numbers: 4 12

HCF(4,12) = 4 and LCM(4,12) = 12

//p6)Develop a program to display each digit, starting with the rightmost digit. Your program should also determine whether or not the number is divisible by 9.

#include<stdio.h>

int main(){

  int num,sum=0;

  printf("Enter the number: ");

  scanf("%d",&num);

  while(num > 0){

    int mod = num % 10;

    printf("%d\n",mod);

    sum+=mod;

    num = num / 10;

  }

  if(sum%9==0)

    printf("It is divisible by 9");

  else{

    printf("It is not divisible by 9");

  }

  return 0;

}

Output-

Enter the number: 108

8

0

1

It is divisible by 9

//p7)Write a program to process a collection of daily high temperatures. Your program should count and print the number of hot days, the number of pleasant days, and the number of cold days.

```c
#include <stdio.h>

void main(){
    float temp;
    int a=0,b=0,c=0;
    while (temp!=0){
        printf("Enter the temperature: / Press 0 to exit \n");
        scanf("%f",&temp);
        if(temp>85){
            a++;
        }
        else
            if(temp>60){b
            ++;
        }
        else{
            c++;
        }

    }
    printf("The number of hot, pleasant & cool days are: %d,%d,%d\n",a,b,c);
}
```

Output-

Enter the temperature: / Press 0 to exit

90

Enter the temperature: / Press 0 to exit

60

Enter the temperature: / Press 0 to exit

91

Enter the temperature: / Press 0 to exit

0

The number of hot, pleasant & cool days are: 2,0,2

//q8)Write a program to process weekly employee time cards for all employees of an organization. Each employee will have three data items: an identification number, the hourly wage rate, and the number of hours worked during a given week. Each employee is to be paid time and a half for all hours worked over 40. A tax amount of 3.625% of gross salary will be deducted. The program output should show the employee's number and net pay. Display the total payroll and the average amount paid at the end of the run.

```c
#include <stdio.h>

int main() {
    int id, hours;
    float rate, gross_pay, tax, net_pay, total_payroll = 0.0;
    int count = 0;
    printf("Enter employee ID (or -1 to exit): ");
    scanf("%d", &id);
    while (id != -1) {
        printf("Enter hourly wage rate: ");
        scanf("%f", &rate);
        printf("Enter number of hours worked: ");
        scanf("%d", &hours);
        if (hours > 40) {
            gross_pay = 40 * rate + (hours - 40) * rate * 1.5;
        } else {
            gross_pay = hours * rate;
        }
        tax = 0.03625 * gross_pay;
        net_pay = gross_pay - tax;
        printf("Employee %d net pay: %.2f\n", id, net_pay);
        total_payroll += net_pay;
        count++;
        printf("Enter employee ID (or -1 to exit): ");
        scanf("%d", &id);
    }
    printf("Total payroll: %.2f\n", total_payroll);
    printf("Average amount paid: %.2f\n", total_payroll / count);
    return 0;
}
```

Lab 4 (Loop)
Abhinav Anand   **Roll-22052611**   **Section-B16**

Output-

Enter employee ID (or -1 to exit): 10

Enter hourly wage rate: 120

Enter number of hours worked: 25

Employee 10 net pay: 2891.25

Enter employee ID (or -1 to exit): 8

Enter hourly wage rate: 100

Enter number of hours worked: 45

Employee 8 net pay: 4577.81

Enter employee ID (or -1 to exit): 2

Enter hourly wage rate: 115

Enter number of hours worked: 42

Employee 2 net pay: 4765.74

Enter employee ID (or -1 to exit): -1

Total payroll: 12234.81

Average amount paid: 4078.27