MODULE: 3.1 (C Language Fundamental)

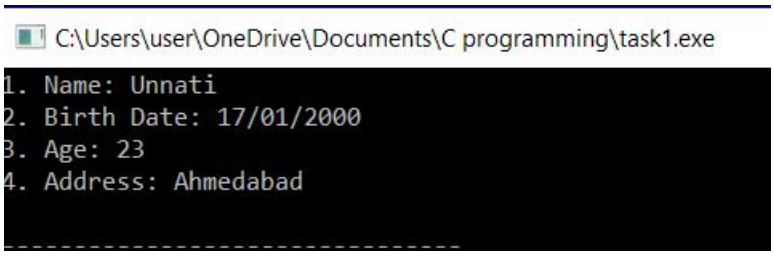
1. Display This Information using printf

1. Your Name
2. Your Birth date
3. Your Age
4. Your Address

Code:

```
#include <stdio.h>

int main() {
   char name[] = "Unnati";
   char birthDate[] = "17/01/2000";
   int age = 23;
   char address[] = "Ahmedabad";

   printf("1. Name: %s\n", name);
   printf("2. Birth Date: %s\n", birthDate);
   printf("3. Age: %d\n", age);
   printf("4. Address: %s\n", address);

   return 0;
}
```

Output:



2. Write a program to make Simple calculator (to make addition, subtraction,multiplication, division and modulo)

Code:

```
#include <stdio.h>
int main()
{
   int number1, number2, addition, subtraction, multiply;
   float divide;

   printf("Enter Number 1\n");
   scanf("%d", &number1);
   printf("Enter Number 2\n");
   scanf("%d", &number2);
   addition       = number1 + number2 ;
   subtraction = number1 - number2;
   multiply = number1 * number2;
   divide     = number1 / (float)number2;   //typecasting
   printf("Addition = %d\n",addition);
   printf("Subtraction = %d\n",subtraction);
   printf("Multiplication = %d\n",multiply);
   printf("Division = %.2f\n",divide);

   return 0;
}
```

Output:


C:\Users\user\OneDrive\Documents\C programming\calculator1.exe
Enter Number 1
34
Enter Number 2
56
Addition = 90
Subtraction = -22
Multiplication = 1904
Division = 0.61

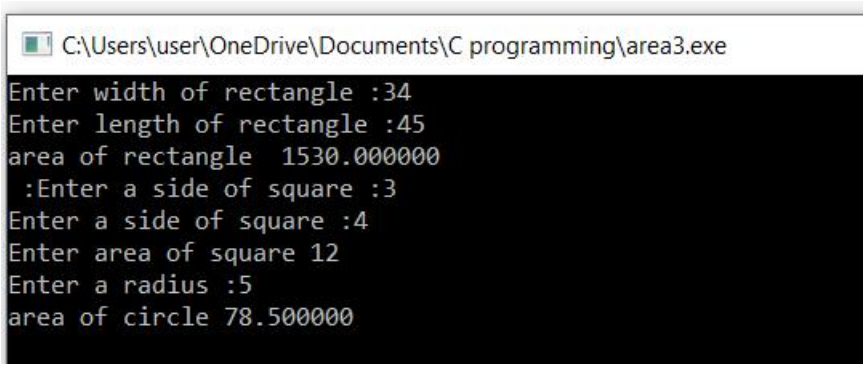
3. WAP to find area of circle, rectangle and triangle

Code:

```
#include <stdio.h>
main()
{
	float aoc,width,length,area;
	int r,side1,side2,aos;

	printf("Enter width of rectangle :");
	scanf("%f",&width);

	printf("Enter length of rectangle :");
	scanf("%f",&length);

	area = width*length;
	printf("area of rectangle  %f\n :",area);

	printf("Enter a side of square :");
	scanf("%d",&side1);

	printf("Enter a side of square :");
	scanf("%d",&side2);

	aos = side1*side2;
	printf("Enter area of square %d\n",aos);

	printf("Enter a radius :");
	scanf("%d",&r);

	aoc = 3.14*r*r;
	printf ("area of circle %f\n",aoc);
```

```
}
```

Output:

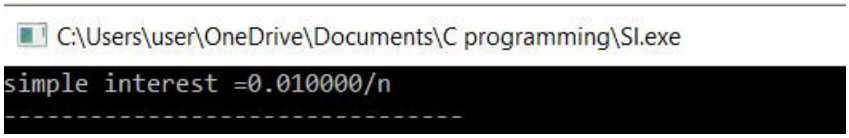

C:\Users\user\OneDrive\Documents\C programming\area3.exe
Enter width of rectangle :34
Enter length of rectangle :45
area of rectangle 1530.000000
 :Enter a side of square :3
Enter a side of square :4
Enter area of square 12
Enter a radius :5
area of circle 78.500000

4. WAP to find simple interest

CODE:

```
#include<stdio.h>
main()
{
        float P=1,T=1,R=1;
        float SI = P*T*R/100;
        printf("simple interest =%f/n",SI);
}
```

OUTPUT:

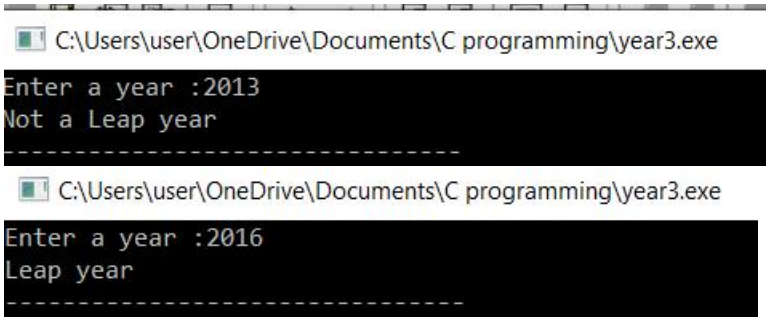


5. WAP to check if the given year is a leap year or not.

CODE:

```
#include<stdio.h>
main()
{
	int y;
	printf("Enter a year :");
	scanf("%d",&y);
	(y%4==0 && printf("Leap year"))|| printf("Not a Leap
year");
}
```

OUTPUT:

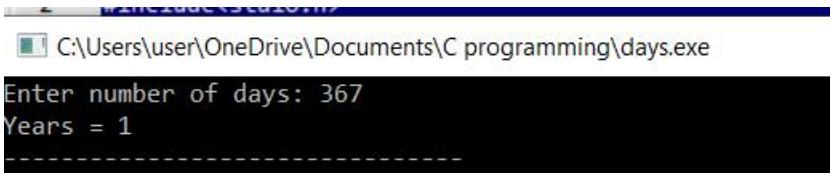


6. WAP to convert years into days and days into years

CODE:

```
#include<stdio.h>

int main()
{
   int number_of_days, years;

   printf("Enter number of days: ");

   scanf("%d", &number_of_days);

   years = number_of_days / 365;

   printf("Years = %d", years);

   return 0;
}
```

OUTPUT:



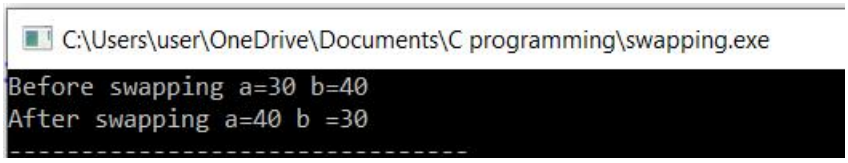
MODULE: 3.2 (C Language Programing with C)

7. WAP to swap two numbers without using third Variable

Code:

```
#include<stdio.h>
main()
{
        int a=30,b=40;
        printf("Before swapping a=%d b=%d",a,b);
        a = a+b;
        b = a-b;
        a = a-b;
        printf("\nAfter swapping a=%d b =%d",a,b);

}
```

Output:

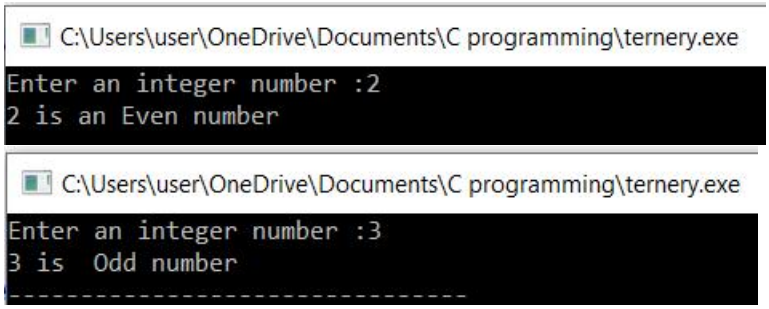


8. WAP to find number is even or odd using ternary operator

Code:

```
#include<stdio.h>
main(){
        int n;
        printf("Enter an integer number :");
        scanf("%d",&n);
        (n%2==0)?
        (printf("%d is an Even number",n)):
        (printf("%d is  Odd number",n));
}
```

Output:



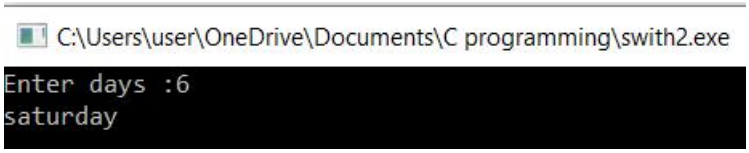
9. WAP to show
1. Monday to Sunday using switch case

Code:

```
#include<stdio.h>
main(){
	int days;
	printf("Enter days :");
	scanf("%d",&days);
	switch(days){

	case 1:
		printf("Monday");
		break;
	case 2:
		printf("tuesday");
		break;
	case 3:
		printf("wednesday");
		break;
	case 4:
		printf("thursday");
		break;
	case 5:
		printf("friday");
		break;
	case 6:
		printf("saturday");
		break;
	case 7:
		printf("Sunday");
		break;
	defualt:
```

```
            printf("Invalid input");
            break;
        }

}
```

Output:



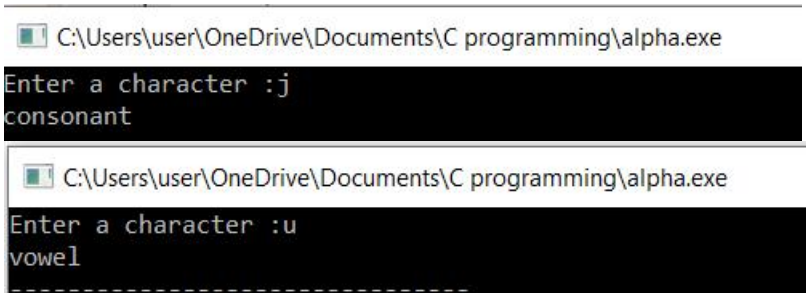
2. Vowel or Consonant using switch case

Code:

```
#include<stdio.h>
main()
{
        char ch;
        printf("Enter a character :");
        scanf("%c",&ch);
        switch(ch){
                case 'a':
                printf("vowel");
                break;
                case 'e':
                printf("vowel");
                break;
                case 'i':
                printf("vowel");
                break;
                case 'o':
                printf("vowel");
                break;
                case 'u':
```

```
            printf("vowel");
            break;
        default:
        printf("consonant");
        break;
}
}
```

Output:



10. WAP to take 10 number..

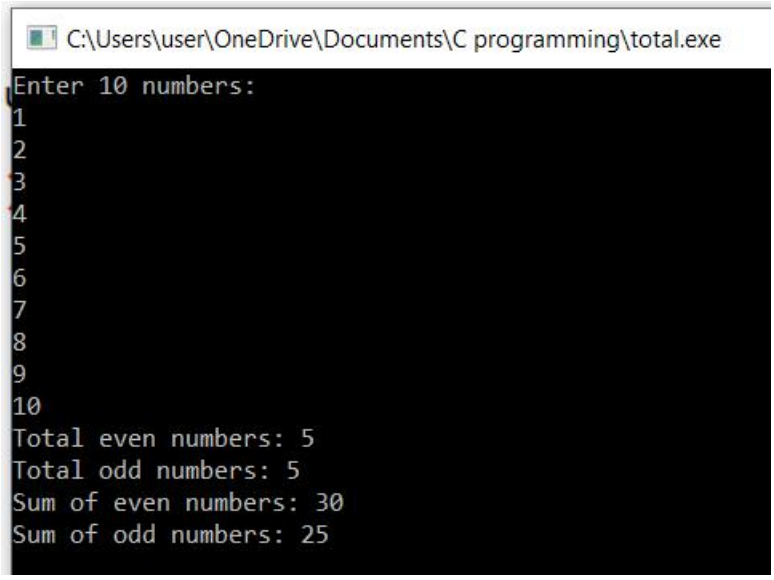
2. Input from user and find out …
3. How many Even numbers are there
4. How many odd numbers are there
5. Sum of even numbers
6. Sum of odd numbers

Code:

```
#include <stdio.h>

int main() {
   int num,i, evenSum = 0, oddSum = 0,even = 0, odd = 0;

   printf("Enter 10 numbers:\n");

   for (i = 0; i < 10; i++) {
      scanf("%d", &num);

      if (num % 2 == 0) {
         evenSum += num;
         even++;
      } else {
         oddSum += num;
         odd++;
      }
   }

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

```
    return 0;
}
```

Output:

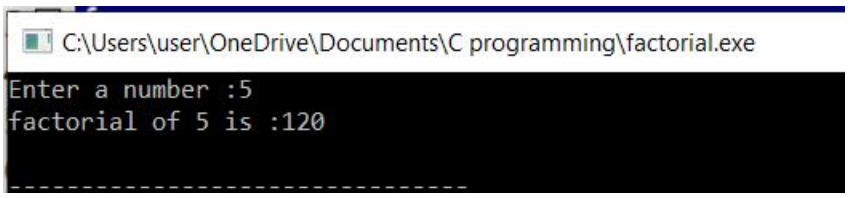


11. WAP to print factorial of given number

Code:

```
#include<stdio.h>
main()
{
        int i,f=1,num;
        printf("Enter a number :");
        scanf("%d",&num);
        for(i=1;i<=num;i++)
        f=f*i;
        printf("factorial of %d is :%d\n",num,f);
}
```

Output :

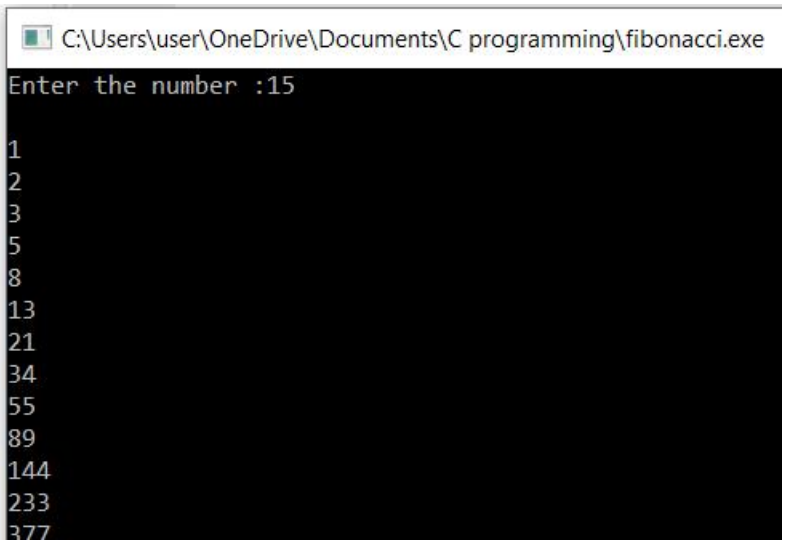


12. WAP to print Fibonacci series up to given numbers

Code:

```
#include<stdio.h>
main(){
	int n1=0,n2=1,n3,num,i;
	printf("Enter the number :");
	scanf("%d",&num);
	//printf("\n%d%d\n",n1,n2);
	for(i=2;i<num;++i)
	{
		n3=n1+n2;
		printf("\n%d",n3);
		n1=n2;
		n2=n3;
	}
}
```

Output:

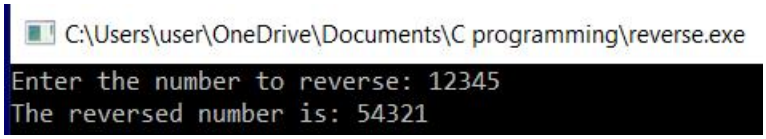


13. WAP to print number in reverse order

Code:

```
#include <stdio.h>

int main(){

   int Num, rev_Num = 0, remainder;

   printf("Enter the number to reverse: ");

   scanf("%d", &Num);

   while (Num != 0){

      remainder = Num % 10;

      rev_Num = rev_Num * 10 + remainder;

      Num = Num/10;

   }

   printf("The reversed number is: %d", rev_Num);

   return 0;

}
```

Output:

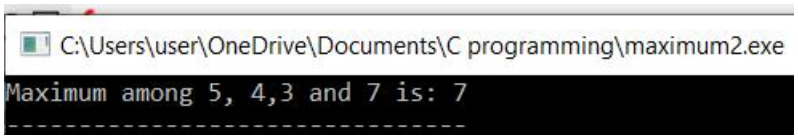


14. Write a program to find out the max from given number.

Code:

```
#include <stdio.h>
int main()
{
   int a = 5, b = 4, c = 3 ,d = 7;

   // temporary varaible
   int max = d;

   if (max < b)
      max = b;
   if (max < c)
      max = c;
   if (max < a)
      max = a;

   printf("Maximum among %d, %d,%d and %d is: %d", a, b,
c,d,max);

   return 0;
}
```

Output:

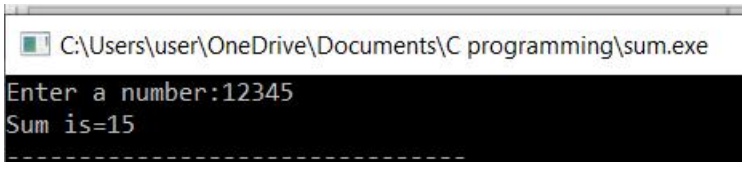


15. Write a program make a summation of given number

Code:

```
#include<stdio.h>
main()
{
	int n,sum=0,m;
	printf("enter the value :");
	scanf("%d",&n);
	while(n>0)
	{
		m=n%10;
		sum=sum+m;
		n=n/10;
	}
	printf("sum is =%d",sum);

}
```

Output:

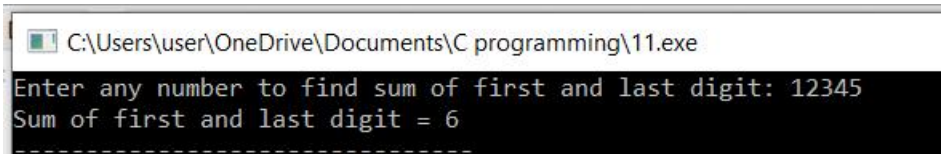


16. Write a program you have to make a summation of first and last Digit.

Code:

```
#include <stdio.h>

int main()
{
   int num, sum=0, firstDigit, lastDigit;

   printf("Enter any number to find sum of first and last digit: ");
   scanf("%d", &num);

   lastDigit = num % 10;

   firstDigit = num;

   while(num >= 10)
   {
      num = num / 10;
   }
   firstDigit = num;

   sum = firstDigit + lastDigit;

   printf("Sum of first and last digit = %d", sum);

   return 0;
}
```

Output:

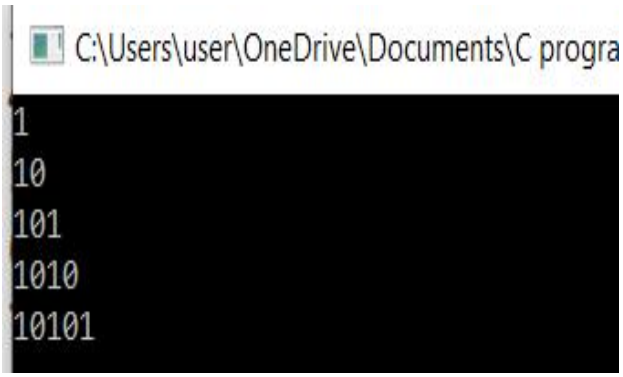


17. Pattern-1

Code:

```
#include <stdio.h>

int main() {
   int i, j;

   for (i = 1; i <= 5; i++) {
      for (j = 1; j <= i; j++) {
         if (j % 2 == 0) {
            printf("0");
         } else {
            printf("1");
         }
      }
      printf("\n");
   }

   return 0;
}
```

Output:

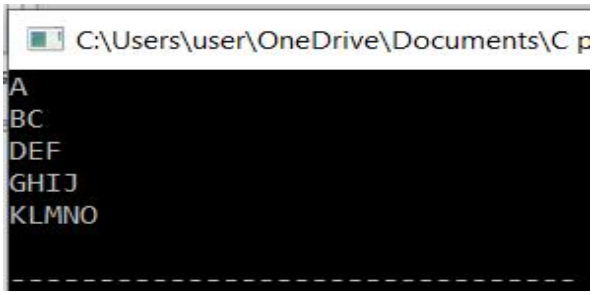


18. Pattern-2

Code:

```
#include<stdio.h>
main(){
	int i,j;
	char ch ='A';
	for(i=1;i<=5;i++){
		for(j=1;j<=i;j++){
			printf("%c",ch);
			ch++;
		}
		printf("\n");
	}
}
```

Output:

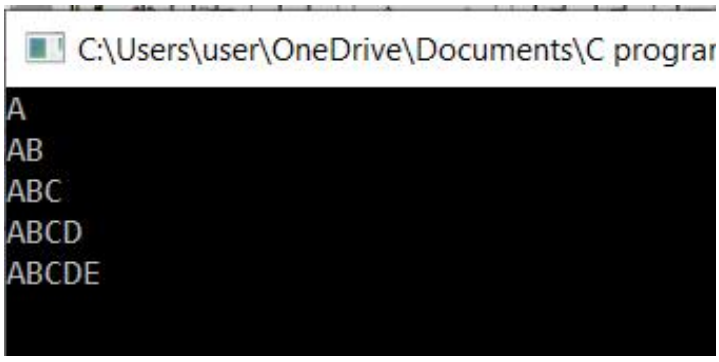


19. Pattern -3

Code:

```
#include <stdio.h>
int main()
{
   int i, j;
   for(i=1;i<=5;i++)
   {
      for(j=1;j<=i;j++)
      {
         printf("%c",'A' + j-1);
      }
      printf("\n");
   }
   return 0;
}
```

Output:

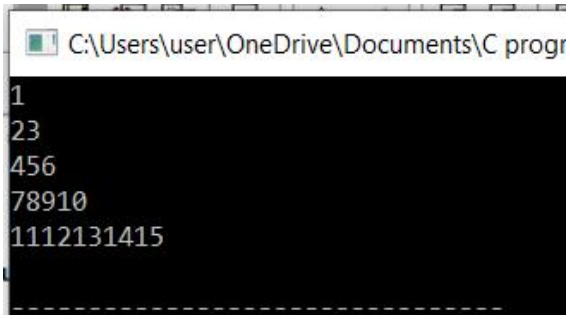


20. Pattern -4

Code:

```
#include<stdio.h>
main()
{
	int i,j,num=1;
	for(i=1;i<=5;i++){
		for(j=1;j<=i;j++){
			printf("%d",num);
			num++;
		}
	printf("\n");
}
}
```

Output:



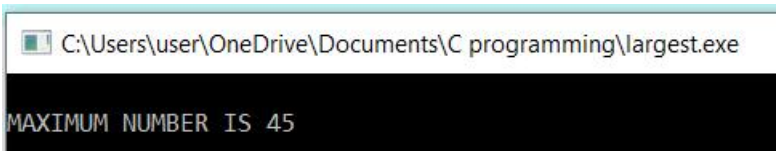
MODULE: 3.3 (File Handling and Debugging)

21. Write a program to find out the max number from given array using function.

Code:

```
#include <stdio.h>
#include <conio.h>
max(int [],int);
void main()
{
        int a[]={10,5,45,12,19};
        int n=5,m;
        m=max(a,n);
        printf("\nMAXIMUM NUMBER IS %d",m);
}
max(int x[],int k)
{
        int t,i;
        t=x[0];
        for(i=1;i<k;i++)
      {
              if(x[i]>t)
                      t=x[i];
        }
        return(t);
}
```

Output:



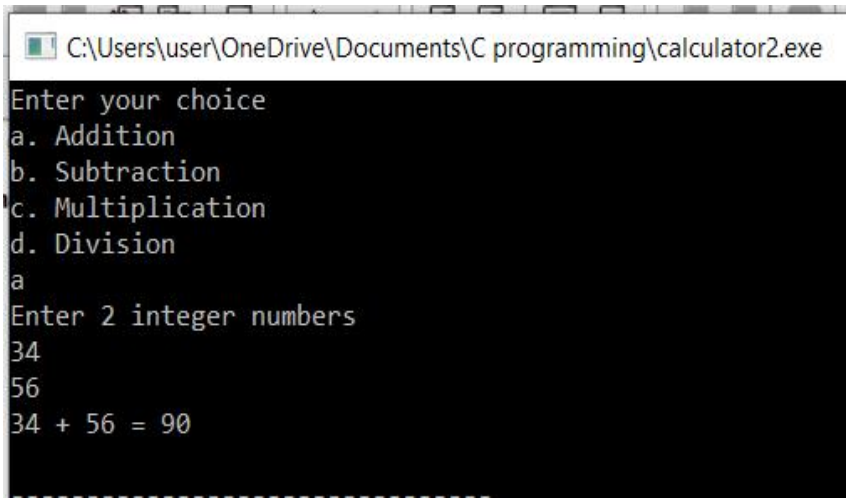
22. WAP of Addition, Subtraction, Multiplication and Division using Switch case.(Must Be Menu Driven).

Code:

```
#include <stdio.h>

int main()
{
   int a, b;
   char choice;

   printf("Enter your choice\n");
   printf("a. Addition\nb. Subtraction\nc. Multiplication\nd.
Division\n");
   scanf("%c", &choice);


  printf("Enter 2 integer numbers\n");
  scanf("%d %d", &a, &b);


   switch(choice)
   {
      case 'a': printf("%d + %d = %d\n", a, b, (a+b));
            break;

      case 'b': printf("%d - %d = %d\n", a, b, (a-b));
            break;

      case 'c': printf("%d x %d = %d\n", a, b, (a*b));
            break;

      case 'd': if( b != 0)
```

```
            printf("%d / %d = %d\n", a, b, (a/b));
        else
            printf("Number can't be divided by 0\n");
        break;

    default: printf("You entered wrong choice\n");
        break;
  }

  return 0;
}
```

Output:

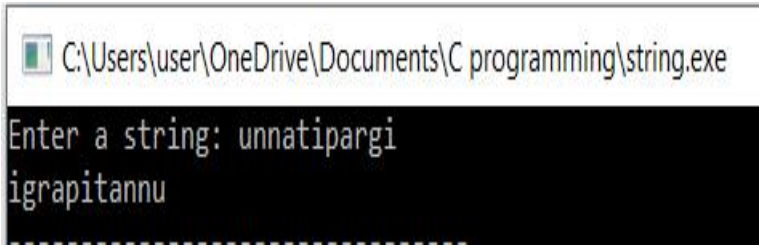


23. WAP to find reverse of string using recursion.

Code:

```
#include <stdio.h>

void reverse();
int main() {
   printf("Enter a string: ");
   reverse();
   return 0;
}

void reverse() {
   char c;
   scanf("%c", &c);
   if (c != '\n') {
      reverse();
      printf("%c", c);
   }
}
```

Output:

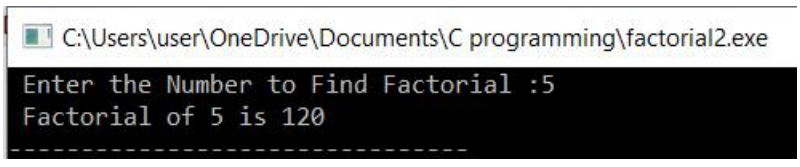


24. WAP to find factorial using recursion.

Code:

```
#include<stdio.h>

int fact(int);
int main()
{
   int x,n;
   printf(" Enter the Number to Find Factorial :");
   scanf("%d",&n);

   x=fact(n);
   printf(" Factorial of %d is %d",n,x);

   return 0;
}
int fact(int n)
{
   if(n==0)
      return(1);
   return(n*fact(n-1));
}
```

Output:

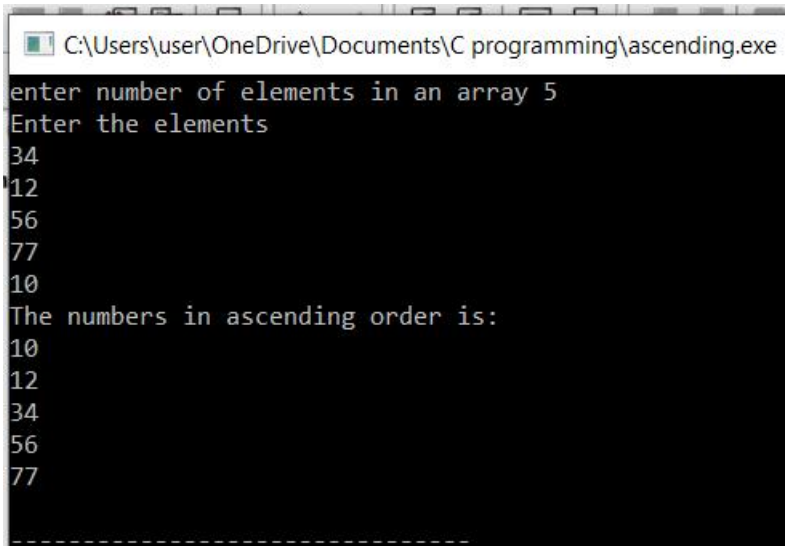


25. WAP to take two Array input from user and sort them in ascending or descending order as per user's choice.

Code:

```
#include <stdio.h>
void main (){
  int num[20];
  int i, j, a, n;
  printf("enter number of elements in an array");
  scanf("%d", &n);

  printf("Enter the elements\n");

  for (i = 0; i < n; ++i)
    scanf("%d", &num[i]);

  for (i = 0; i < n; ++i){
    for (j = i + 1; j < n; ++j){

      if (num[i] > num[j]){
        a = num[i];
        num[i] = num[j];
        num[j] = a;
      }
    }
  }
  printf("The numbers in ascending order is:\n");
  for (i = 0; i < n; ++i){
    printf("%d\n", num[i]);
  }
}
```

Output:


C:\Users\user\OneDrive\Documents\C programming\ascending.exe
enter number of elements in an array 5
Enter the elements
34
12
56
77
10
The numbers in ascending order is:
10
12
34
56
77
----

26. WAP to make addition, Subtraction and multiplication of two matrix using 2-D Array

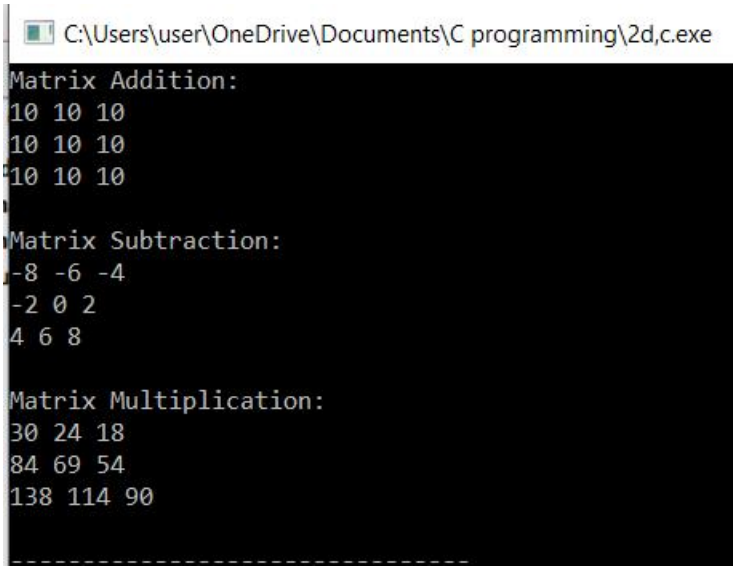
Code:

```
#include <stdio.h>


void addMatrix(int mat1[][3], int mat2[][3], int result[][3], int
rows, int cols) {
   for (int i = 0; i < rows; i++) {
      for (int j = 0; j < cols; j++) {
         result[i][j] = mat1[i][j] + mat2[i][j];
      }
   }
}


void subtractMatrix(int mat1[][3], int mat2[][3], int result[][3],
int rows, int cols) {
   for (int i = 0; i < rows; i++) {
      for (int j = 0; j < cols; j++) {
         result[i][j] = mat1[i][j] - mat2[i][j];
      }
   }
}

void multiplyMatrix(int mat1[][3], int mat2[][3], int result[][3],
int rows1, int cols1, int cols2) {
   for (int i = 0; i < rows1; i++) {
      for (int j = 0; j < cols2; j++) {
         result[i][j] = 0;
         for (int k = 0; k < cols1; k++) {
            result[i][j] += mat1[i][k] * mat2[k][j];
```

```
            }
        }
    }
}

int main() {
    int mat1[3][3] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};
    int mat2[3][3] = {{9, 8, 7}, {6, 5, 4}, {3, 2, 1}};
    int result[3][3];

    int rows1 = 3, cols1 = 3, rows2 = 3, cols2 = 3;

    addMatrix(mat1, mat2, result, rows1, cols1);
    printf("Matrix Addition:\n");
    for (int i = 0; i < rows1; i++) {
        for (int j = 0; j < cols1; j++) {
            printf("%d ", result[i][j]);
        }
        printf("\n");
    }

    subtractMatrix(mat1, mat2, result, rows1, cols1);
    printf("\nMatrix Subtraction:\n");
    for (int i = 0; i < rows1; i++) {
        for (int j = 0; j < cols1; j++) {
            printf("%d ", result[i][j]);
        }
        printf("\n");
    }

    multiplyMatrix(mat1, mat2, result, rows1, cols1, cols2);
    printf("\nMatrix Multiplication:\n");
    for (int i = 0; i < rows1; i++) {
        for (int j = 0; j < cols2; j++) {
            printf("%d ", result[i][j]);
```

```
        }
        printf("\n");
    }

    return 0;
}
```

Output:

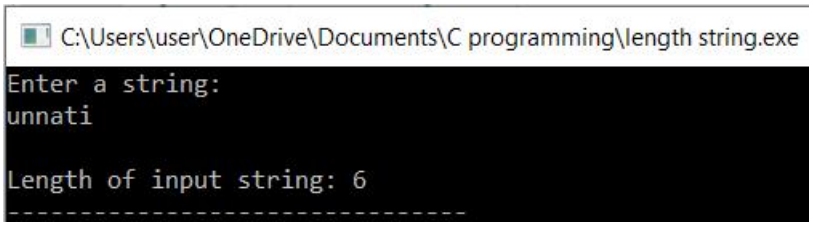


27. WAP Find out length of string without using inbuilt function.

Code:

```
#include<stdio.h>
#include<string.h>
main()
{
	char name[20],name1[20];
	printf("Enter your  name here:");
	//scanf("%s",&name);
	gets(name);
	printf("Enter your name1 here:");
	scanf("%s",&name1);
	printf("This is your length of name %d \n",strlen(name));
	printf("This is your length of name1 %d
\n",strlen(name1));
}
```

Output:



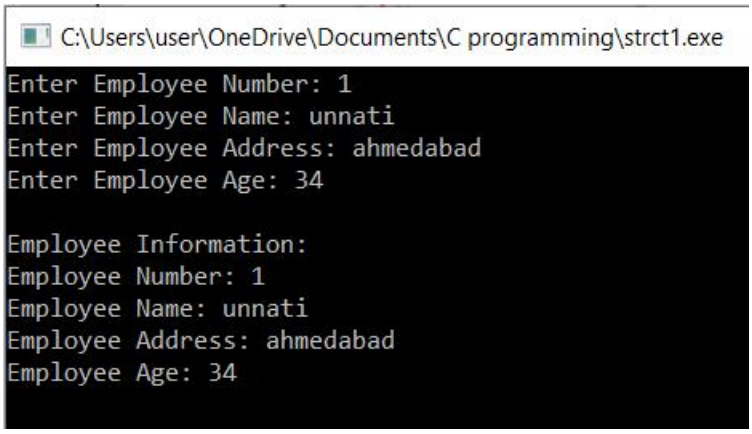
28. Write a program of structure employee that provides the following information -print and display empno, empname, address and age.

Code:

```
#include <stdio.h>
#include <string.h>


struct Employee {
   int empno;
   char empname[50];
   char address[100];
   int age;
};

int main() {

   struct Employee emp;

   printf("Enter Employee Number: ");
   scanf("%d", &emp.empno);
   printf("Enter Employee Name: ");
   scanf("%s", emp.empname);
   printf("Enter Employee Address: ");
   scanf(" %s", emp.address);
   printf("Enter Employee Age: ");
   scanf("%d", &emp.age);

   printf("\nEmployee Information:\n");
   printf("Employee Number: %d\n", emp.empno);
   printf("Employee Name: %s\n", emp.empname);
   printf("Employee Address: %s\n", emp.address);
```

```
    printf("Employee Age: %d\n", emp.age);

    return 0;
}
```

Output:



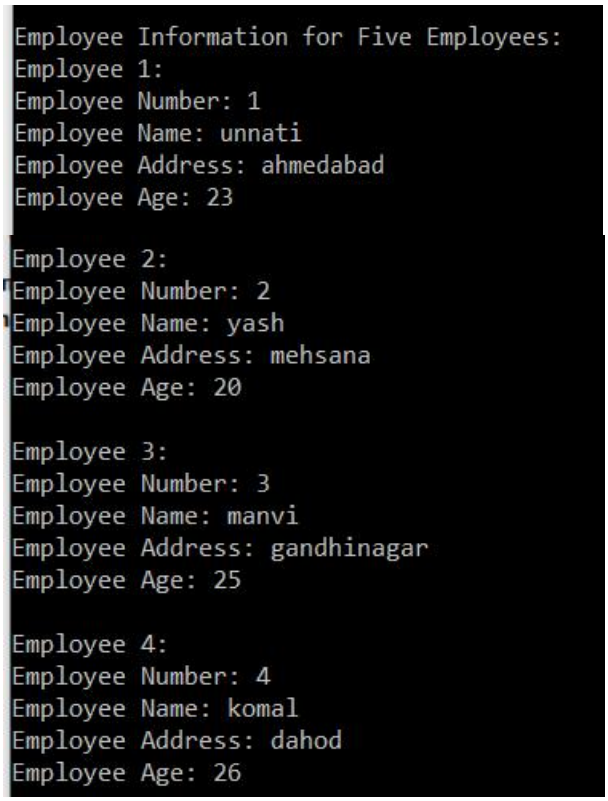
29. Write a program of structure for five employee that provides the following information -print and display empno, empname, address and age.

Code:

```
#include <stdio.h>
#include <string.h>

struct Employee {
   int empno;
   char empname[50];
   char address[100];
   int age;
};

int main() {
   struct Employee employees[5];
   int i;

   for ( i = 0; i < 5; i++) {
      printf("Enter Employee Number for Employee %d: ", i + 1);
      scanf("%d", &employees[i].empno);
      printf("Enter Employee Name for Employee %d: ", i + 1);
      scanf("%s", employees[i].empname);
      printf("Enter Employee Address for Employee %d: ", i + 1);
      scanf(" %[^\n]s", employees[i].address);
      printf("Enter Employee Age for Employee %d: ", i + 1);
      scanf("%d", &employees[i].age);
   }

   printf("\nEmployee Information for Five Employees:\n");
   for (i = 0; i < 5; i++) {
      printf("Employee %d:\n", i + 1);
```

```
        printf("Employee Number: %d\n", employees[i].empno);
        printf("Employee Name: %s\n", employees[i].empname);
        printf("Employee Address: %s\n", employees[i].address);
        printf("Employee Age: %d\n", employees[i].age);
        printf("\n");
    }

    return 0;
}
```

Output:

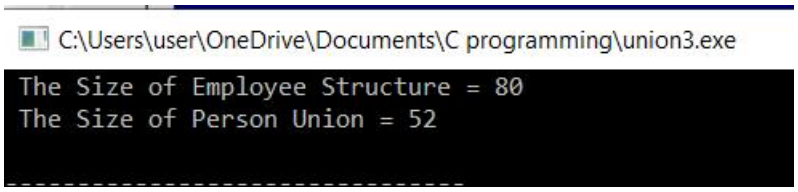


30. WAP to show difference between Structure and Union.

Code:

```
#include<stdio.h>
#include<string.h>

struct Employee
{
  int age;
  char Name[50];
  char Department[20];
  float Salary;
};

union Person
{
  int age;
  char Nam[50];
  char Departent[20];
  float Salary;
};

int main()
{
  struct Employee emp1;
  union Person Person1;

  printf(" The Size of Employee Structure = %d\n", sizeof
(emp1) );
  printf(" The Size of Person Union = %d\n", sizeof (Person1));

  return 0;
}
```

Output:

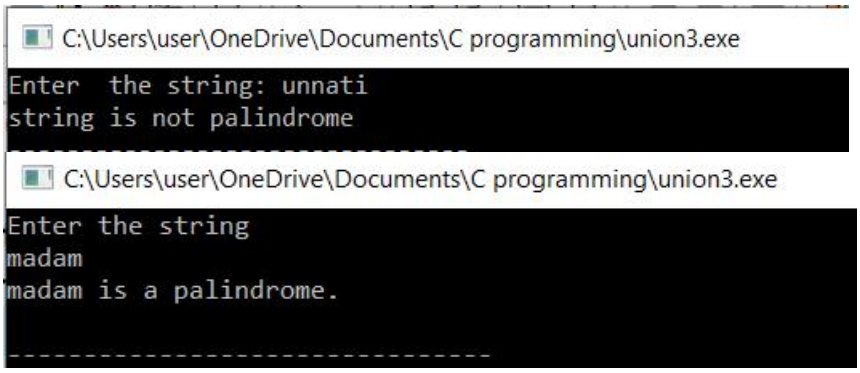

C:\Users\user\OneDrive\Documents\C programming\union3.exe
The Size of Employee Structure = 80
The Size of Person Union = 52

31. WAP to reverse a string and check that the string is palindrome or not.

Code:

```
#include<string.h>
#include<stdio.h>

int main()
{
    char string1[1000],string2[1000];

   printf("Enter  the string: ");
   gets(string1);
   strcpy(string2,string1);
   strrev(string2);
   if(!strcmp(string1,string2))
           printf("string is palindrome");
   else
      printf("string is not palindrome");


   return 0;


}
```

Output:


C:\Users\user\OneDrive\Documents\C programming\union3.exe
Enter the string: unnati
string is not palindrome
C:\Users\user\OneDrive\Documents\C programming\union3.exe
Enter the string
madam
madam is a palindrome.