Q1: Write a c program to ~~calculate~~ print "Hello, world!"

Ans:
```
#include<stdio.h>
int main()
{
  printf("Hello,world!");
 return 0;
}
```

Output: Hello, world!

Q2: Write a c program to calculate the area of a rectangle taking it's height and width from keyboard.

Ans:
```
#include <stdio.h>
   int main()
{  int height, we width, result;
  printf(" Enter height of rectangle\n");
    scanf("%d", &height);
  printf(" Enter width of rectangle\n");
    scanf("%d", &width);
    result = height * width;
  printf(" Area of the rectangle is : %d", result);
  return 0;
}
```

Input:
Enter the height of rectangle : 2
Enter the width of rectangle : 3

Output:
Area of the rectangle is : 6.

Q3: Write a program to print whether a given number is even or odd.

Ans:

```
#include <stdio.h>
int main()
{
  int x;
  printf("Enter the number \n");
  scanf("%d", &x);
  if(x%2==0)
  { printf("The number is Even \n");
  }
  else
      printf("The number is Odd \n");
  return 0;
}
```

Input:

Enter the number : 10

Enter the number : 9

Output:

The number is Even

The number is Odd

Q4: Write a program to print positive integer from 10 to 100.

Ans:

```
#include <stdio.h>
int main()
{
  for( int i=10 ; i<=100 ; i++)
  {
     printf ("%d ", i);
  }
  return 0;
}
```

output : 10 11 12 13 14 15 16 . . .

. . . . . 99 100 .

Q5: Write a c program for the following display

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

Ans:

```
#include<stdio.h>
int main()
{
for(int i=0; i<4; i++)
{
  for(int j=0; j<i; j++)
  {
    printf(" * ");
  }
    printf("\n");
}
return 0;
}
```

Output:

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

Q6: Write a program to insert 5 elements into any array and print them in reverse.

Ans:
```
#include <stdio.h>
int main()
{
    int arr[5]; printf("Enter the elements:\n");
    for(int i=0; i<5; i++)
    {
        scanf("%d", &arr[i]);
    }
    printf("The elements are in reverse order:");
    for(int j=4; j>=0; j--)
    {
        printf("%d ", arr[j]);
    }
    return 0;
}
```

input:

Enter the elements: 2 5 3 7 1.

Output:

The elements are in reverse order

: 1 7 3 5 2.

Q7: Write a program to insert 5 elements into any array and sort them in ascending order.

Ans:

```
#include<stdio.h>
int main()
{
  int arr[5];
  printf("Enter the elements:\n");
for(int i=0; i<5; i++)
 { scanf("%d",&arr[i]);
 }
for(int i=0; i<5; i++)
{   for(int j=i+1; j<5; j++)
     { if(arr[i]>arr[j])
       { int tmp;
         tmp = arr[i];
         arr[i] = arr[j];
          arr[j] = tmp;
       }
} printf("The elements are in ascending order:\n");
for (int i=0; i<5; i++)
    { printf("%d ", arr[i]);
    }
  return 0;
}
```

Input:

Enter the elements:

2 7 4 3 1

Output:

The elements are in ascending order:

1 2 3 4 7

Q8: Write a program to calculate factorial of a number using recursion.

```
#include<stdio.h>
int factorial(int n);
int main()
{
  int num, fact;
  printf("Enter any number:\n");
  scanf("%d", &num);
  fact = factorial(num);
  printf("factorial of %d = %d", num, fact);
  return 0;
}
int factorial(int n)
{ int fact;
    if (n==0)
      return 1;
    else return n * factorial(n-1);
}
```

Input

Enter any number : 3

Output

6

Q9: Write a c program to find biggest among three numbers using pointer.

Ans;

```
#include <stdio.h>
int main()
{
  int x, y, z;
  printf("Enter three number: ");
   scanf("%d %d %d", &x, &y, &z);
    int *ptrA = &x;
    int *ptrB = &y;
    int * ptrC = &z;
   int largest = *ptrA;
    if (*ptrB > largest)
      { largest = *ptrB;
      }
     if (*ptrC > largest)
       { largest = *ptrC;
       }
```

```
    printf("The largest number is %d \n", largest);
    return 0;
}
```

Input:

Enter three number : 4 1 3

Output:

The largest number is : 4

Q10: Write a c program that reads a string and prints if it is a palindrome or not.

Ans:

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

int main()
{
    char s[100];
    int len;
    bool is_palindrome = 1;
    printf("Enter a string:");
    scanf("%s", s) // array name is used as
                   a pointer, so, &s isn't used.

    len = strlen(s);
```

```
    for(int i=0; i<len/2; i++)
    {
        if(s[i]!=s[len-1-i])
        {
            is_palindrome=0;
            break;
        }
    }
    if (is_palindrome==1)
    { printf("%s is a palindrome\n",s);
    }
    else
        { printf("%s is not a palindrome\n",s);
        }
return 0;
}
```

Input

Enter a string : madam

Enter a string ; cool

output :

madam is a palindrome.

cool is not a palindrome.

Q11: Write a c program that include addition, multiplication, subtraction and divisional function with return type.

Ans:

```
#include<stdio.h>
int main()
{   int add(int a,int b);
    int multiply(int a, int b);
    int subtract(int a, int b);
    double divide(double a, double b);

int main()
{
  int a = 10, b=5;
  int result_add = add(a, b);
  int result_multiply = multiply(a,b);
  int result_subtract = subtract(a,b);
  double result_divide = divide(a,b);

  printf("a= %d, b= %d \n",a,b);
printf("Addition : %d \n", result_add);
printf("Multiplication : %d \n",result_multiply);
printf("Subtraction : %d \n", result_subtract);
```

```
printf("Division : %.2f\n", result_divide);
return 0;
}
int add(int a, int b)
  { return a+b;
  }
int multiply(int a, int b)
  {
    return a*b;
  }
int subtract(int a, int b)
  {
    return a-b;
  }
double divide(double a, double b)
  { if (b==0)
    {printf("Error : Division by zero\n");
    }
    else
        return a/b;
  }
```

Input

a = 10, b = 5

Output

Addition : 15
Multiplication : 50
Subtraction : 5
Division : 2

Q12: Write a c program to store information of 5 students using structure and display it.

Ans:

```
#include<stdio.h>
struct student
{
  char name[50];
  int roll;
  float marks;
}
  s[5];
int main()
{
  struct student s[5];
printf("Enter information of 5 students:\n");
```

```
// Input student information
for(int i=0; i<5; i++)
{
  printf("Enter name of student %d: ", i+1);
   scanf("%s", s[i].name);
  printf("Enter roll of student %d: ", i+1);
    scanf("%d", &s[i].roll);
  printf("Enter marks of a student %d: ", i+1);
   scanf("%.2f", &s[i].marks);
  // Output student information
  printf("\n student information:\n");
  for (int i=0; i<5; i++)
  {
    printf("Name: %s\n", s[i].name);
   .printf("Roll : %d \n", s[i]. roll);
    printf("Marks : %.2f \n", s[i]. marks);
    return 0;
  }
```

Input:

Enter information of 5 students :

Enter name of student 1 : Turzo
Enter roll of student 1 : 210606
Enter marks of students 1 : 8

Enter name of student 2 : Haque
Enter roll of student 2 : 210607
Enter marks of student 2 : 7

. . . . . .
. . . . . .

Enter name of student 5 : S.H
Enter roll of student 5 : 210608
Enter marks of student 5 : 9

Output :

Student Information :

Name : Turzo
Roll : 210606
Marks : 8
Name : Haque
Roll : 210607
Marks : 7
. . . . .
. . . . .
Name : S.H
Roll : 210608
Marks : 9

Q13. Write a c program to create "test.txt" and enter your name, roll into the file.

Ans:
```
#include <stdio.h>
int main()
{ FILE *fl;
  char name[50];
  int roll;
  fl= fopen("test.txt","w");
  printf("Enter the name :\n");
    scanf("%s", name);
  fprintf(fl, "Name = %s\n", name);
  printf("Enter the roll: \n");
  scanf("%d", &roll);
  fprintf(fl, "Roll = %d", roll);
  fclose(fl);
printf("\n File \"test.txt\" created successfull
\n");
return 0;
}
```

Input:
Enter the name: Turzo
Enter the roll : 210606

output:
File test.txt created successfully.

Q14. Write a program to display existing information from a file "test.txt".

Ans:

```
#include<stdio.h>
void main()
FILE *fl;
char fnam[50],str;
 printf("Input the filename to be opened:\n);
scanf('%s", fname);
 fl = fopen (fname,"r");
 if (fl==NULL)
   { printf("File doesn't exist.\n");
    exit(0);
   }
 printf("\n The content of the file %s
            is:\n", fname);
  str = fgetc(fl);
 while (str!=EOF)
   { printf("%c", str);
     str = fgetc(fl);
   }
  fclose(fl);
}
```

Input:
Input the filename to be opened: test.txt

Output:
The content of the file is:
Name : Turzo
Roll : 210606

Q 15: Write a C program that returns G.C.D of two integers.

Ans:
```
#include <stdio.h>
   int main()
int gcd(int a, int b)
{
  if(b==0)
    { return a;
    }
    else return gcd(b, a%b);
}
int main()
{
 int num1, num2;
printf("Enter two number: \n");
scanf("%d %d", &num1, &num2);
```

```
printf("GCD of %d and %d is %d \n", num1,
        num2, gcd(num1, num2));
return 0;
}
```

Input:

Enter two numbers: 2 4
Enter two numbers: 2 3

Output:

GCD of 2 and 4 is : 2
GCD of 2 and 3 is : 1

Q16: Write a c program that takes two same dimensional matrix and print their sum.

Ans:

```
#include<stdio.h>
int main()
{
  int a, int b;
  printf(" Enter the dimension of the matrix: \n");
  scanf("%d %d", &a, &b);
  int arr1[a][b], arr2[a][b], sum[a][b];
  printf(" Enter the elements of 1st matrix: \n");
```

```
// taking input in the first matrix
for(int i=0 ; i<a ; i++)
{
    for (int j=0 : j<b ; j++)
    {
        scanf("%d", &arr1[i][j]);
    }
} printf("Enter the elements of second matrix:\n");
// taking input in the second matrix
for(int i=0; i<a; i++)
{
    for(int j=0 ; j<b; j++)
    {
        scanf("%d", &arr2[i][j]);
    }
}printf("the sum of the matrix is:\n");
// sum of the two matrix
for(int i=0; i<a; i++)
{
    for(int j=0 ; j<b ; j++)
    {
        sum[i][j] = arr1[i][j]+arr2[i][j];
    }
}
```

```
// Display the matrix
for(int i=0; i<a; i++)
{   for( int j=0; j<b; j++)
    {  printf("%d ", sum[i][j]);
    }  printf("\n");
}
 return 0;
}
```

Input:

Enter the dimension of the matrix : 2 2

Enter the elements of first matrix : 1 0
0 1

Enter the elements of second matrix : 1 0
0 1

Output:

The sum of the matrix is : 2 0
0 2