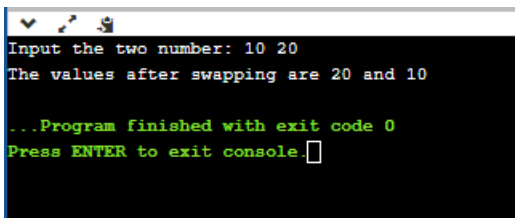
Pointers

1.Write a C program to swap two numbers without using third variable using call by reference.

Program:

```
#include <stdio.h>
void swap(int *a,int *b)
{
   *a=*a+*b;
   *b=*a-*b;
   *a=*a-*b;
}
int main()
{
   int n1,n2;
   printf("Input the two number: ");
   scanf("%d%d",&n1,&n2);
   swap(&n1,&n2);
   printf("The values after swapping are %d and %d",n1,n2);
   return 0;
}
```

OUTPUT:

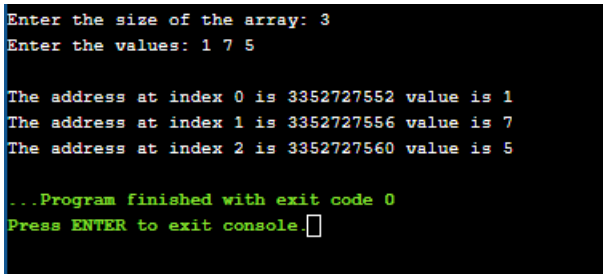


2.Write a C program to read array elements using pointers and print with addresses.

Program:

```
#include <stdio.h>
int main()
{
   int n,i;
   printf("Enter the size of the array: ");
   scanf("%d",&n);
   int arr[n];
   printf("Enter the values: ");
   for(i=0;i<n;i++)
      scanf("%d",(arr+i));
   for(i=0;i<n;i++)
   {
      printf("\nThe address at index %d is %u value is %d",i,arr+i,*(arr+i));
   }
   return 0;
}
```

OUTPUT:

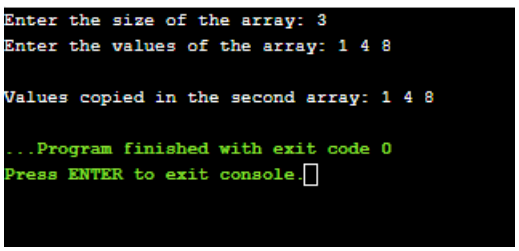


3.Write a C program to copy one array to another using pointer.

Program:

```
#include <stdio.h>
int main()
{
   int n,i;
   printf("Enter the size of the array: ");
   scanf("%d",&n);
   int arr1[n],arr2[n];
   printf("Enter the values of the array: ");
   for(i=0;i<n;i++)
      scanf("%d",arr1+i);
   for(i=0;i<n;i++)
   {
      *(arr2+i)=*(arr1+i);
   }
   printf("\nValues copied in the second array: ");
   for(i=0;i<n;i++)
      printf("%d ",arr2[i]);
   return 0;
}
```

OUTPUT:



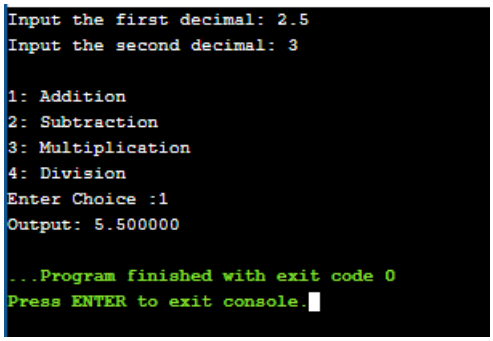
4.Use an array of function pointers to perform any on the following arithmetic operation +, -, *, / based on the user choice.

Program:

```
#include <stdio.h>
float add(float a, float b)
{
   return a+b;
}
float sub(float a, float b)
{
   return a-b;
}
float mul(float a, float b)
{
   return a*b;
}
float divi(float a, float b)
{
   return a/b;
}
float (*ptr[4]) (float x, float y);
int main()
{
   float n1,n2;
   int choice;
   printf("Input the first decimal: ");
```

```
    scanf("%f",&n1);
    printf("Input the second decimal: ");
    scanf("%f",&n2);
    ptr[0]=add;
    ptr[1]=sub;
    ptr[2]=mul;
    ptr[3]=divi;
    printf("\n1: Addition\n2: Subtraction\n3: Multiplication\n4: Division\nEnter Choice :");
    scanf("%d",&choice);
    printf("Output: %f",(*ptr[choice-1])(n1,n2));
    return 0;
}
```

OUTPUT:



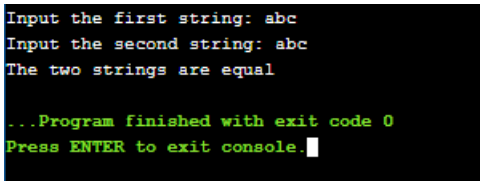
String

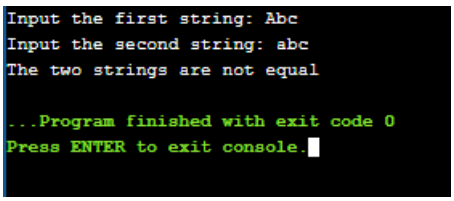
Q1. Write a C Program to get two string inputs from the user. Compare the two strings using string function and print strings are equal or not.

Program:

```
#include <stdio.h>
#include<string.h>
int main()
{
   char str1[50],str2[50];
   printf("Input the first string: ");
   gets(str1);
   printf("Input the second string: ");
   gets(str2);
   if(strcmp(str1,str2))
      printf("The two strings are not equal");
   else
      printf("The two strings are equal");
   return 0;
}
```

OUTPUT:





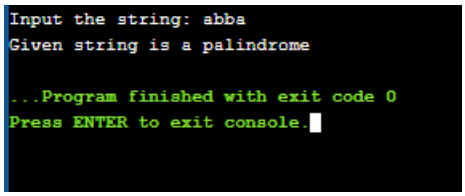
Q2. Write a function int isPalindrome(char str[ ]) that takes a string and returns 1 if str is a palindrome and 0 (zero) otherwise. Implement the function by employing a for loop.

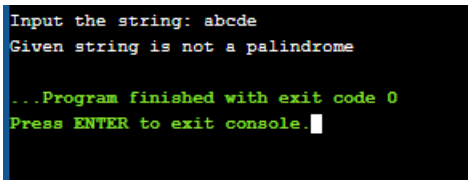
Program:

```
#include <stdio.h>
#include<string.h>
int isPalindrome(char str[])
{
   int t=1;
   for(int i=0;i<strlen(str)/2;i++)
   {
      if(str[i]!=str[strlen(str)-i-1])
      {
         t=0;
         break;
      }
   }
   return t;
}
int main()
{
   char c[50];
   printf("Input the string: ");
   gets(c);
   if(isPalindrome(c))
```

```
        printf("Given string is a palindrome");
    else
        printf("Given string is not a palindrome");
    return 0;
}
```

OUTPUT:





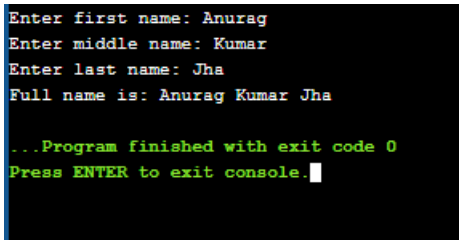
Q3.Write a C program to accept first name, middle name and last name from user, store them in 3 different character arrays. Concatenate these 3 strings in one and print as full name.

Program:

```
#include <stdio.h>
int main()
{
    char c1[50],c2[50],c3[50],c4[150];
    printf("Enter first name: ");
    gets(c1);
    printf("Enter middle name: ");
    gets(c2);
    printf("Enter last name: ");
    gets(c3);
    strcpy(c4,c1);
```

```
    strcat(c4," ");
    strcat(c4,c2);
    strcat(c4," ");
    strcat(c4,c3);
    printf("Full name is: %s",c4);
    return 0;
}
```

OUTPUT:



Q4. Write a C program to accept a string from the user and count the number of vowels and consonants in it.

Program:

```
#include <stdio.h>
#include<ctype.h>
#include<string.h>
int main()
{
    char str[50];
    int i,aph=0,vow=0,con=0;
    printf("Input the string: ");
    gets(str);
    for(i=0;i<strlen(str);i++)
    {
```

```
        if(isalpha(str[i]))
        {
            aph++;

if(str[i]=='a'||str[i]=='A'||str[i]=='e'||str[i]=='E'||str[i]=='i'||str[i]=='I'||str[i]=='o'||str
[i]=='O'||str[i]=='u'||str[i]=='U')
                vow++;
            else
                con++;
        }
    }
    printf("String Length: %d",strlen(str));
    printf("\nTotal Aplhabets: %d",aph);
    printf("\nTotal Vowels: %d",vow);
    printf("\nTotal Consonants: %d",con);
    return 0;
}
```

OUTPUT: