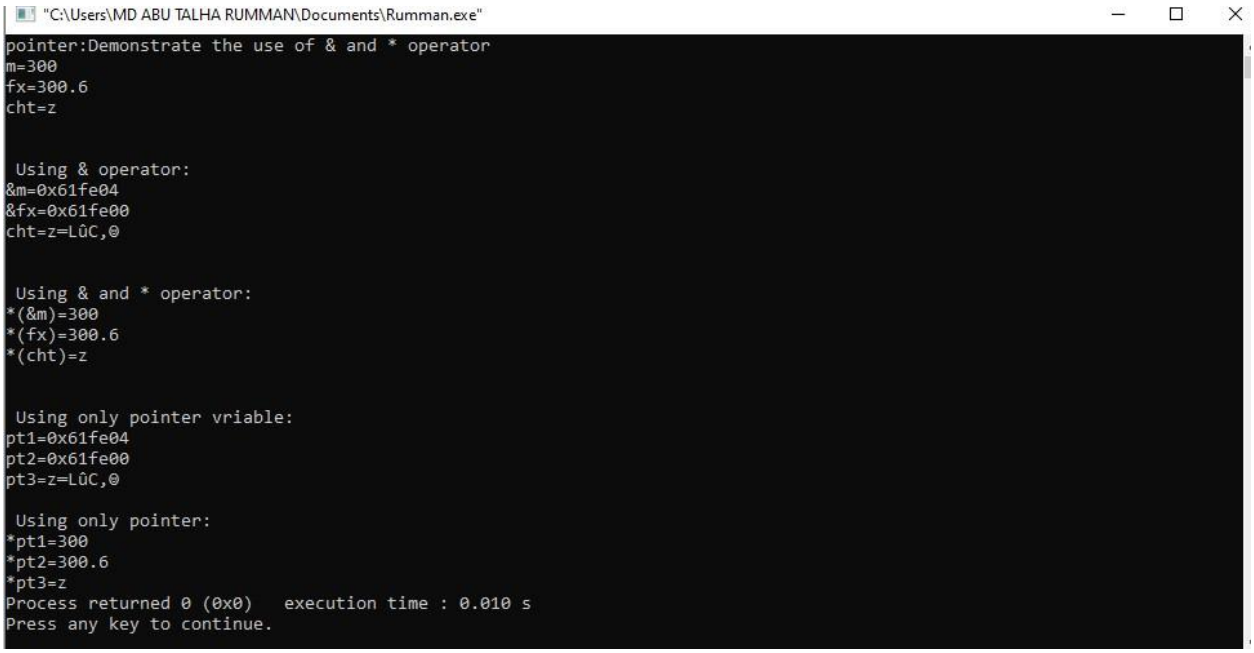
1. Write a program in C++ to demonstrate the use of & (address of)*(value at address) operator.

Ans:

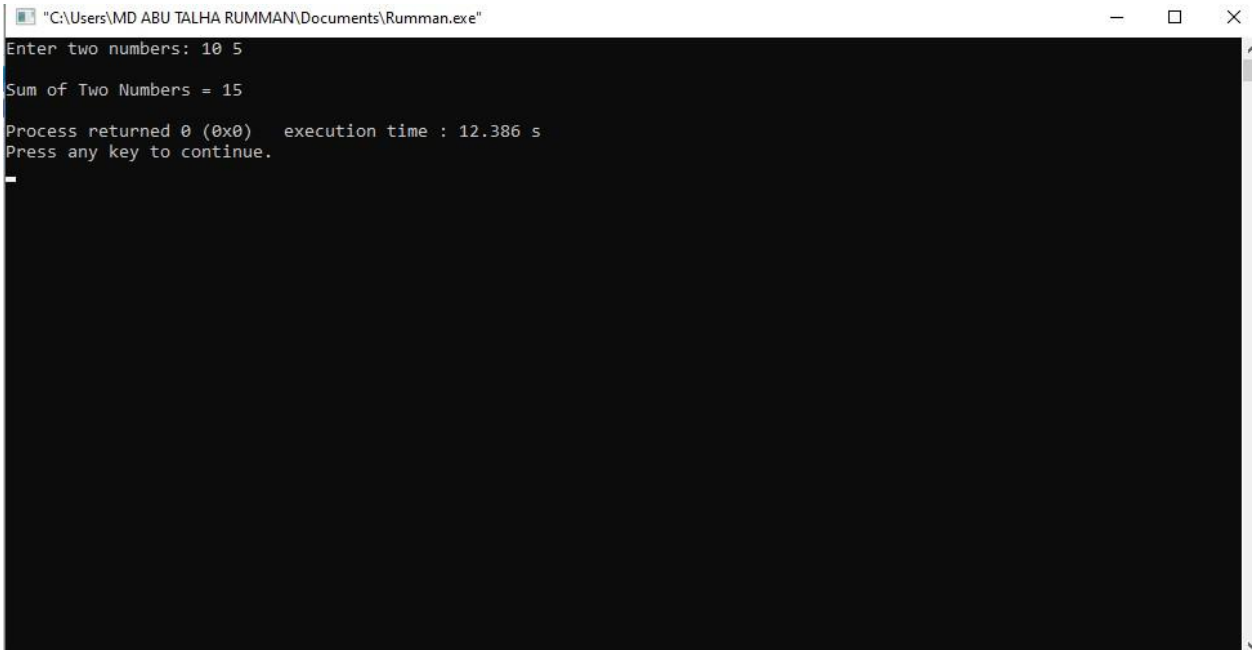
```
#include<iostream>
 using namespace std;
 main()
{
int m=300;
float fx=300.6;
 char cht='z';
cout<<"pointer:Demonstrate the use of & and * operator"<<endl;
int *point1; float *point2; char *point3; point1=&m; point2=&fx;
point3=&cht; cout<<"m="<<*point1<<endl;
cout<<"fx="<<*point2<<endl; cout<<"cht="<<*point3<<endl;
cout<<"\n\n Using & operator:"<<endl;
cout<<"&m="<<point1<<endl; cout<<"&fx="<<point2<<endl;
cout<<"cht="<<point3<<endl;
cout<<"\n\n Using & and * operator:"<<endl;
cout<<"*&m="<<*point1<<endl;
cout<<"*fx="<<*point2<<endl; cout<<"*cht="<<*point3<<endl;
cout<<"\n \n Using only pointer vriable:"<<endl;
cout<<"point1="<<point1<<endl;
cout<<"point2="<<point2<<endl;
cout<<"point3="<<point3;
 cout<<"\n\n Using only
pointer:"<<endl;
cout<<"*point1="<<*point1<<endl;
cout<<"*point2="<<*point2<<endl;
cout<<"*point3="<<*point3;

return 0;
}
```



2. Write a program in C++ to add two numbers using pointers manually and using reference.

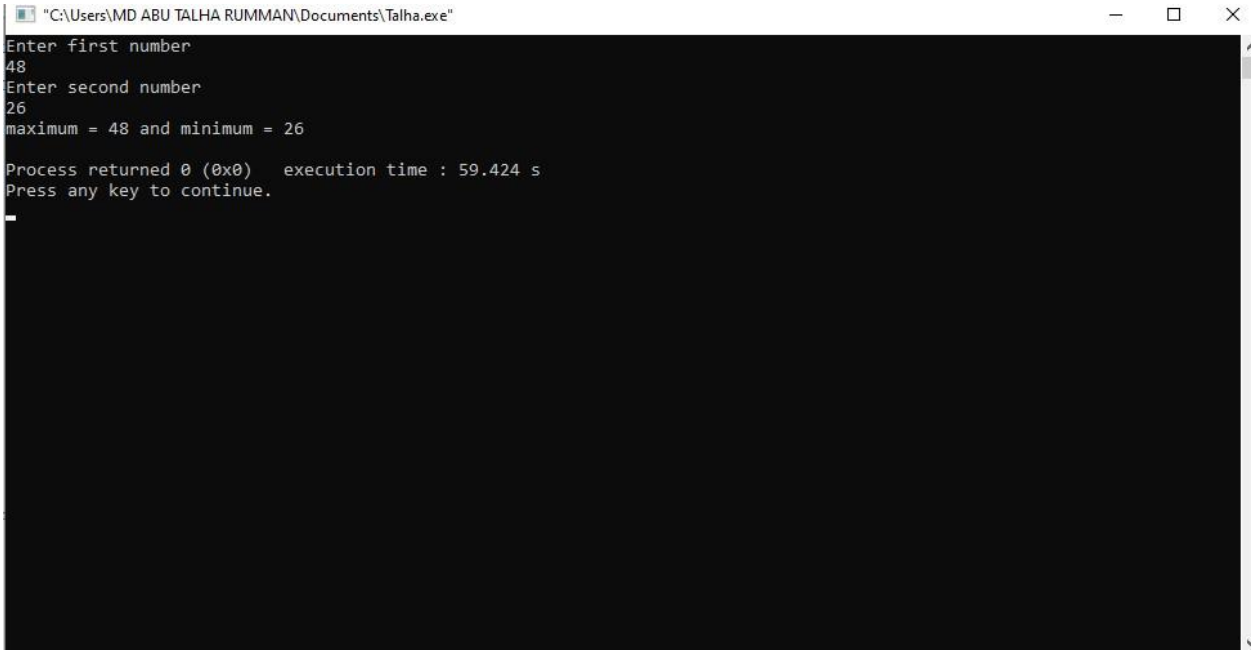
Ans:

```
#include<iostream>
 using namespace std;
int main()
{
   int num1, num2, *ptr1, *ptr2, sum=0;
cout<<"Enter two numbers: ";
cin>>num1>>num2;     ptr1 = &num1;
ptr2 = &num2;     sum = *ptr1 + *ptr2;
   cout<<"\nSum of Two Numbers = "<<sum;
cout<<endl;
   return 0;
 }
```

3. 

Write a program in C++ to find the minimum number between two numbers using a pointer. Ans:

```
#include<iostream>
 using namespace std;
 int main()
{
int first,second,*A,*B;


A=&first;
B=&second;


   cout<<"Enter first number"<<"\n";
         cin>>first;
        cout<<"Enter second number"<<"\n";
        cin>>second;
 if(*A>*B)
{

cout<<"maximum = "<<*A<<" and minimum = "<<*B<<"\n";
 }
else
{
cout<<"maximum = "<<*A<<" and minimum = "<<*B<<"\n"; return0;
}
```



4. Write a program in C++ to swap elements using call by reference.

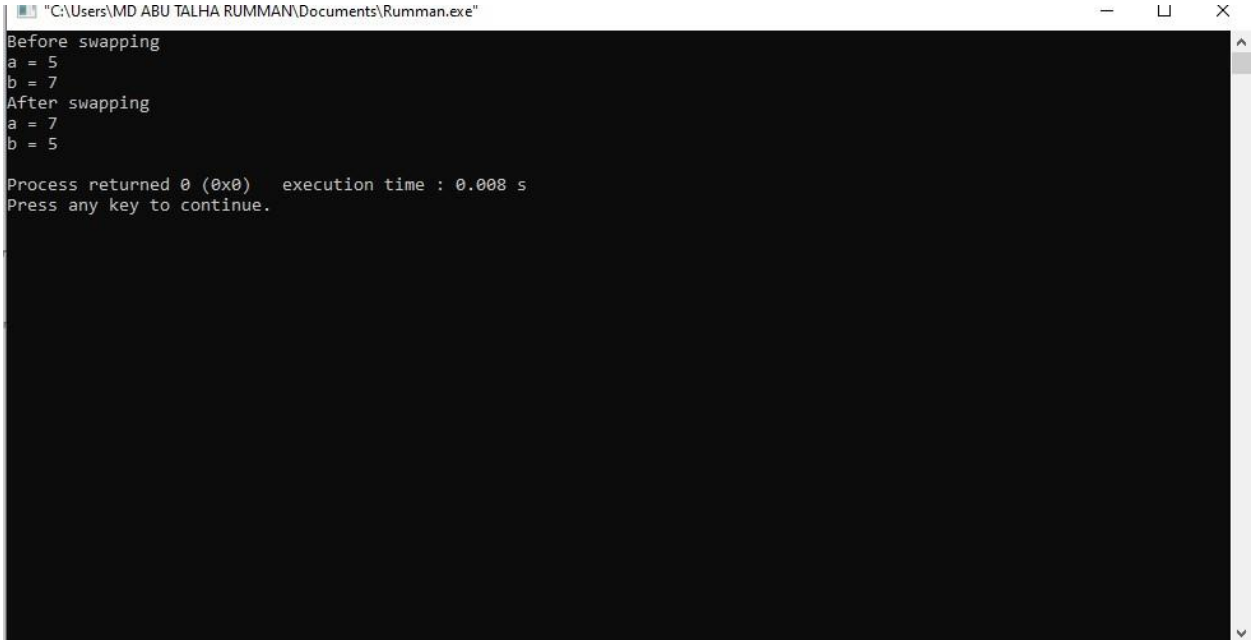
A=5, B=7

Output:

A=7, B=5

```
#include <iostream>

using namespace std;

void swap(int &x, int &y)
{
   int temp;
temp = x;
 x = y;
   y = temp;
}

int main()
{
 int a = 5, b = 7;

   cout << "Before swapping" << endl;
cout << "a = " << a << endl;
  cout << "b = " << b << endl;
swap(a, b);
   cout << "After swapping" << endl;
cout << "a = " << a << endl;
```

```
    cout << "b = " << b << endl;

      return 0;
}
```



5. Write a program in C++ to sort an array using pointer.

```
#include<iostream>
#include<conio.h>
using namespace std;
void sort(int n, int* ptr)
{
   int i, j, t;
 for (i = 0; i < n; i++)
{
 for (j = i + 1; j < n; j++)
{
 if (*(ptr + j) < *(ptr + i))
{
```

```
            t = *(ptr + i);
              *(ptr + i) = *(ptr + j);
              *(ptr + j) = t;
        }
       }
    }
    cout << "Sorted array:" << endl;
     for (i = 0; i < n; i++)
{
cout << "element - " << i << ":" <<*(ptr + i) << endl;
    }
}
int main()
{
    cout << "Input the number of elements to store in the array :";
    int n;
cin >> n;
int arr[n];
  cout << "Enter elements in the array :" << endl;
 for(int i=0;i<n;i++)
    {
        cout << "element " << i << ":";
cin >> arr[i];
    }
    cout << "The elements you entered are :" << endl;
for(int i=0;i<n;i++)
    {
        cout << "element - " << i << ":" << arr[i] << endl;
    }
```

```
   sort(n, arr);
 return0;
}
```