

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;
}
```

```

"C:\Users\MD ABU TALHA RUMMAN\Documents\Rumman.exe"
pointer:Demonstrate the use of & and * operator
m=300
fx=300.6
cht=z

Using & operator:
&m=0x61fe04
&fx=0x61fe00
&cht=z=L0C,0

Using & and * operator:
*(&m)=300
*(fx)=300.6
*(cht)=z

Using only pointer variable:
pt1=0x61fe04
pt2=0x61fe00
pt3=z=L0C,0

Using only pointer:
*pt1=300
*pt2=300.6
*pt3=z
Process returned 0 (0x0)   execution time : 0.010 s
Press any key to continue.

```

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;
}

```

```
"C:\Users\MD ABU TALHA RUMMAN\Documents\Rumman.exe"
Enter two numbers: 10 5
Sum of Two Numbers = 15
Process returned 0 (0x0)   execution time : 12.386 s
Press any key to continue.
```

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"; return 0;
    }
}
```

```
"C:\Users\MD ABU TALHA RUMMAN\Documents\Talha.exe"
Enter first number
48
Enter second number
26
maximum = 48 and minimum = 26
Process returned 0 (0x0)   execution time : 59.424 s
Press any key to continue.
```

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;
}

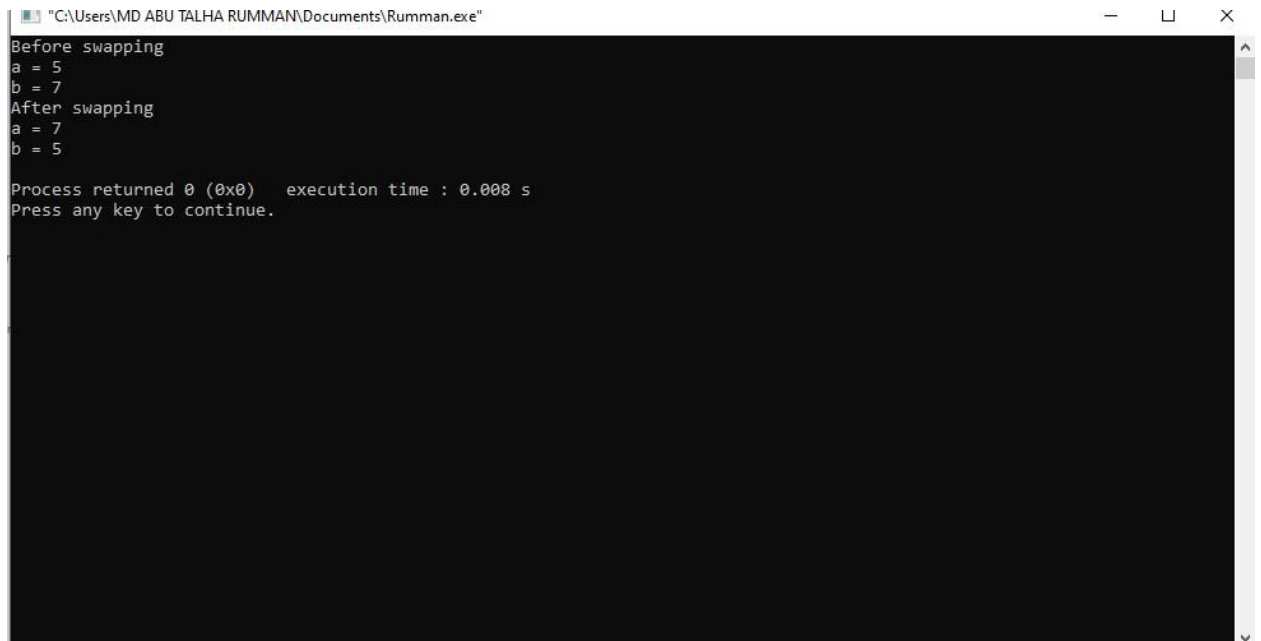
int main()
{
    int a = 5, b = 7;

    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;
```

```
}
```



The screenshot shows a Windows command prompt window titled "C:\Users\MD ABU TALHA RUMMAN\Documents\Rumman.exe". The output of the program is as follows:

```
Before swapping
a = 5
b = 7
After swapping
a = 7
b = 5

Process returned 0 (0x0)   execution time : 0.008 s
Press any key to continue.
```

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))
```

```
            {
```

```

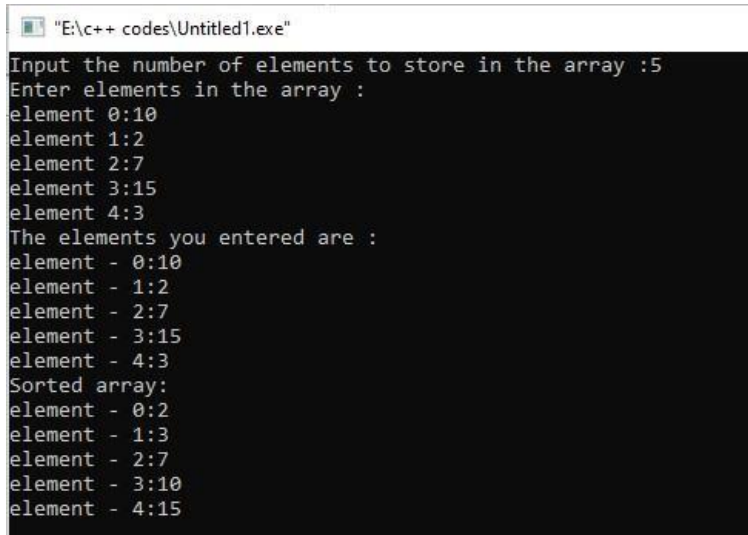
        t = *(ptr + i);
        *(ptr + i) = *(ptr + j);
        *(ptr + j) = t;
    }
}

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);  
  
    return 0;  
}
```



The screenshot shows a console window titled "E:\c++ codes\Untitled1.exe". The program prompts the user to input the number of elements to store in the array (5) and then to enter the elements. The entered elements are: element 0:10, element 1:2, element 2:7, element 3:15, and element 4:3. The program then displays the sorted array: element 0:2, element 1:3, element 2:7, element 3:10, and element 4:15.

```
"E:\c++ codes\Untitled1.exe"  
Input the number of elements to store in the array :5  
Enter elements in the array :  
element 0:10  
element 1:2  
element 2:7  
element 3:15  
element 4:3  
The elements you entered are :  
element - 0:10  
element - 1:2  
element - 2:7  
element - 3:15  
element - 4:3  
Sorted array:  
element - 0:2  
element - 1:3  
element - 2:7  
element - 3:10  
element - 4:15
```