Week -6

#1 **Write a C++ Program for Add Two Numbers Using Pointer.**

This is the required program:

```cpp
#include <iostream>
using namespace std;
int main()
{
    float a, b, add;
    float *ptr_a, *ptr_b, *ptr_add;
    cout << "Enter two numbres\n";
    cin >> a >> b;
    ptr_a = &a;
    ptr_b = &b;
    add = *ptr_a + *ptr_b;
    cout << "\nThe sum of both numbers: " << add;
}
```

And this is result:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL

PS D:\C++\Lab\WEEK 6> cd "d:\C++\Lab\WEEK 6\
Enter two numbres
5
6.3

The sum of both numbers: 11.3
PS D:\C++\Lab\WEEK 6> █
```

#2 Write a C++ Example Program for Swap Numbers Using Pointers.

This is the required code:

```cpp
#include <iostream>
using namespace std;
float swap(float *a, float *b)
{
    float temp;
   temp = *a;
   *a = *b;
   *b = temp;
}
int main()
{
    float x, y, *ptr_x, *ptr_y;
    ptr_x = &x;
    ptr_y = &y;
    cout << "Enter two numbers\n";
    cin >> x >> y;
    cout << "Value of x and y before swapping: " << x
<< "     " << y<<endl;
    swap(ptr_x, ptr_y);
    cout << "Value of x and y after swapping: " << x
<< "     " << y;
}
```

And this is the output:

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL

PS D:\C++\Lab\WEEK 6> cd "d:\C++\Lab\WEEK 6\
Enter two numbers
5
9
Value of x and y before swapping: 5   9
Value of x and y after swapping: 9   5
PS D:\C++\Lab\WEEK 6>

#3 Write a C++ Program to Print the address of the Variable Using a Pointer.

This is the required program:

```cpp
#include <iostream>
using namespace std;
int main()
{
    int *ptr_a, a,b;
    ptr_a = &b;
    ptr_a = &a;
    cout<<"The address of the variable is "<<ptr_a;
}
```

And this is the result:

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL

PS D:\C++\Lab\WEEK 6> cd "d:\C++\Lab\WEEK 6\"
The address of the variable is 0x61ff08
PS D:\C++\Lab\WEEK 6>

#4 Write a C++ Program for Increment and Decrement Integer Using Pointer.

This is the required code:

```cpp
#include<iostream>
using namespace std;
int main()
{
    float a, *ptr_a;
    cout<<"Enter a number: ";
    cin>>a;
    ptr_a = &a;
    *ptr_a = *ptr_a +1;
    cout<<"Incremented value: "<<*ptr_a<< endl;
     *ptr_a = *ptr_a-3;
     cout<<"Decremented value: "<<*ptr_a;
}
```

And this is the result:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL

PS D:\C++\Lab\WEEK 6> cd "d:\C++\Lab\WEEK 6
Enter a number: 5
Incremented value: 6
Decremented value: 3
PS D:\C++\Lab\WEEK 6>
```

#5 Write a C++ Program for Print String Using Pointer.

This is the required code:

```cpp
#include <iostream>
using namespace std;
int main()
{
    char mystr[1000];

    cout << "Enter any string: ";
    cin.getline(mystr , 1000);
    char *ptr;
    ptr = &mystr[0];
    cout<<mystr;
}
```

And this is output:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL

PS D:\C++\Lab\WEEK 6> cd "d:\C++\Lab\WEEK 6\"
Enter any string: Hello Moto
Hello Moto
PS D:\C++\Lab\WEEK 6>
```

#6 Write a C++ program to concatenate two strings using pointers.

This is the required program:

```cpp
#include <iostream>
using namespace std;
void concatenateStrings(char *str1, const char *str2)
{
    // Move the pointer to the end of str1
    while (*str1)
        str1++;
    // Copy characters from str2 to str1
    while (*str2)
    {
        *str1 = *str2;
        str1++;
        str2++;
    }
    // Add null terminator to str1
    *str1 = '\0';
}
int main()
{
    char str1[100], str2[100];
    cout << "Enter the first string: ";
    cin.getline(str1, sizeof(str1));

    cout << "Enter the second string: ";
    cin.getline(str2, sizeof(str2));

    concatenateStrings(str1, str2);

    cout << "Concatenated string: " << str1 << endl;
    return 0;
```

And this is the output:

#7 Write a program for reading elements using a pointer into an array and display the values using an array.

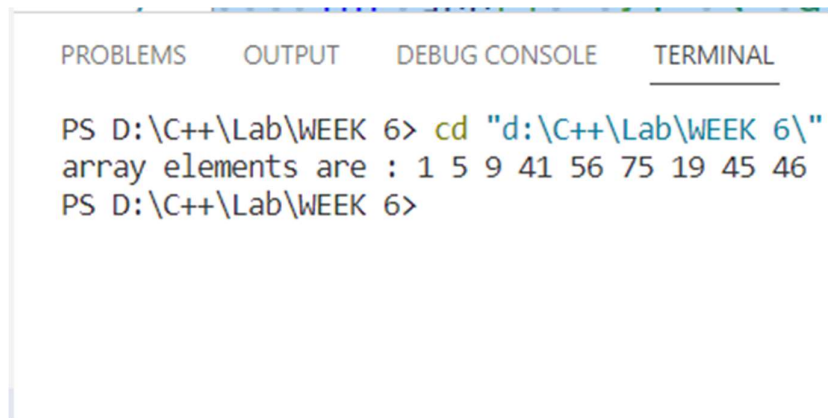**i. Declare a set of elements.**

ii.   Declare the pointer and initialize it to the first element address of a set of elements(array).

This is the required code:

```cpp
#include <iostream>
using namespace std;
int main()
{
    // declaring a set of elements
    int arr[] = {1, 5, 9, 41, 56, 75, 19, 45, 46};
    int *ptr = &arr[0];
    // Display the values using array indexing
    cout << "array elements are : ";
    for (int i = 0; i < sizeof(arr) / sizeof(arr[0]); i++)
        cout << *(ptr + i) << " ";

    cout << endl;
    return 0;
}
```

And this is the result:


```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL

PS D:\C++\Lab\WEEK 6> cd "d:\C++\Lab\WEEK 6\"
array elements are : 1 5 9 41 56 75 19 45 46
PS D:\C++\Lab\WEEK 6>
```

#8 Write a program through a pointer variable to the sum of n elements from the array.

This the result:

```cpp
#include <iostream>
using namespace std;
int main()
{
    int n;
    cout<<"Enter the size of the array : ";
    cin>>n;
    float arr[n], sum=0;
    float *ptr = &arr[0];
    cout<<"Enter elements of the array\n";
    for (int i = 0; i < n; i++)
    {
        cin>>*(ptr+i);
        sum+=*(ptr+i);
    }
    cout<<"The sum of the elements is: "<<sum;
}
```

And this is the result:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS D:\C++\Lab\WEEK 6> cd "d:\C++\Lab\WEEK 6\" ; if
Enter the size of the array : 5
Enter elements of the array
2
3
6
8
9
The sum of the elements is: 28
PS D:\C++\Lab\WEEK 6>
```

#9 Write a program for reading elements using a pointer into the array and display the values using an array.

This is the required program:

```cpp
#include <iostream>
using namespace std;
int main()
{
    int n;
    cout << "Enter the size of the array : ";
    cin >> n;
    int arr[n];
    int *ptr = arr;
    for (int i = 0; i < n; i++)
    {
        cout << "Enter element " << i + 1 << ": ";
        cin >> *(ptr + i);
    }
    cout << "Entered elements: ";
    // Display the values using array indexing
    for (int i = 0; i < n; i++)
        cout << arr[i] << " ";
    cout << endl;
    return 0;
}
```

And this is the output:

```
PS D:\C++\Lab\WEEK 6> cd "d:\C++\Lab\WEEK 6\" ; if
Enter the size of the array : 7
Enter element 1: 3
Enter element 2: 2
Enter element 3: 6
Enter element 4: 5
Enter element 5: 4
Enter element 7: 7
Entered elements: 3 2 6 5 4 8 7
```

#10 **Write a C++ program to reverse a string using pointers.**

This is the required code:

```cpp
#include <iostream>
#include <cstring>
using namespace std;
void reversestr(char *str)
{
    int length = strlen(str);
    char *start = str;
    char *end = str + length - 1;
    while (start < end)
    {
        char temp = *start;
        *start = *end;
        *end = temp;
        end--;
        start++;
    }
}
int main()
{
    char str[1000];
    cout << "Enter any string : ";
    cin.getline(str, sizeof(str));
    // cout<<strlen(str);
    // cout<<sizeof(str)<<endl;
    reversestr(str);
    cout << str;
}
```

And this is the result:

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL

```
PS D:\C++\Lab\WEEK 6> cd "d:\C++\Lab\WEEK 6\"
Enter any string : hello moto
otom olleh
PS D:\C++\Lab\WEEK 6>
```