WEEK-7

#1 Write a C++ Program for Count vowels String Using Pointer.

This is the required code:

```
#include <iostream>
using namespace std;
int countvowels(char *str)
{
    int cnt =0;
    while (*str != '\0')
    {
        if (*str == 'a' || *str == 'e' || *str == 'i' || *str == 'o' || *str == 'u'
|| *str == 'A' || *str == 'E' || *str == 'I' || *str == 'O' || *str == 'U')
        {
            cnt++;
        }
        *str++;
    }
    return cnt;
}

int main()
{
    char strng[100];
    int count;


    cout << "Enter a string: ";
    cin.getline(strng, 100);
    count = countvowels(strng);
    cout <<"The number of vowels are: "<< count;
```

Output:

#2 Write a C++ Program for Length of String Using Pointer.

This is the required program:

```
#include <iostream>
using namespace std;
int lnthStr(char *str)
{
    int lnth = 0;
    while (*str != '\0')
    {
        lnth++;
        *str++;
    }
    return lnth;
}

int main()
{
    char strng[100];
    int length;

    cout << "Enter a string: ";
    cin.getline(strng, 100);
    length = lnthStr(strng);
    cout << "Length of the string is: " << length;
}
```

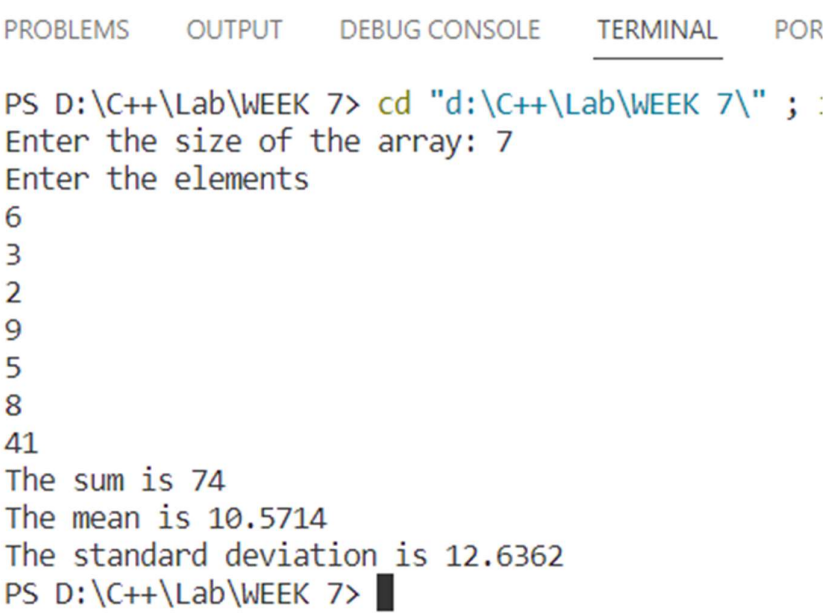
Output:

#3 Write a C++ program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of n real numbers.

This the required code:

```
#include <iostream>
#include <cmath>
using namespace std;
double arrSum(double *ar, int n)
{
    double sum = 0;
    for (int i = 0; i < n; i++)
        sum += ar[i];
    return sum;
}
double arrMean(double *ar, int n)
{
    double sum = 0;
    for (int i = 0; i < n; i++)
            sum += ar[i];

    double mn = sum / n;
    return mn;
}
double sd(double *ar, int n)
{
    double mean, smsqr = 0, mnsq;
    for (int i = 0; i < n; i++)
            smsqr += ar[i] * ar[i];

    smsqr = smsqr / n;
    mean = arrMean(ar, n);
    mnsq = mean * mean;

    return smsqr - mnsq;
}

int main()
{
    int n;
    cout << "Enter the size of the array: ";
    cin >> n;
    cout << "Enter the elements\n";
    double arr[n], mean = 0, sum = 0, std = 0;
    for (int i = 0; i < n; i++)
            cin >> arr[i];
    sum = arrSum(arr, n);
    mean = arrMean(arr, n);
    std = sqrt(sd(arr, n));
    cout << "The sum is " << sum << endl
         << "The mean is "
         << mean << endl
         << "The standard deviation is " << std;
}
```

Output:



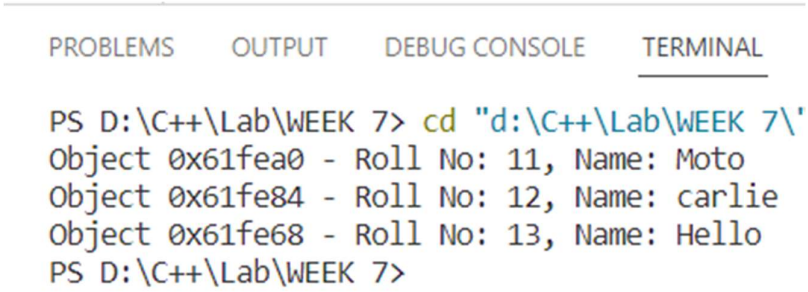
#4 Write a C++ program to create three objects for a class named pntr_obj with data members such as roll_no & name. Create a member function set_data() for setting the data values and print() member function to print which object has invoked it using the 'this' pointer.

This is the required code:

```
#include <iostream>
using namespace std;
class pntr_obj
{
    string name;
    int roll_no;

public:
    void set_data(int roll, const string &student_name)
    {
        roll_no = roll;
        name = student_name;
    }
    void print()
    {
        cout << "Object " << this << " - Roll No: " << roll_no << ", Name: " << name
<< endl;
    }
};

int main()
{
    pntr_obj obj1, obj2, obj3;

    obj1.set_data(11, "Moto");
```

```
    obj2.set_data(12, "carlie");
    obj3.set_data(13, "Hello");
    obj1.print();
    obj2.print();
    obj3.print();
    return 0;
}
```

Output:

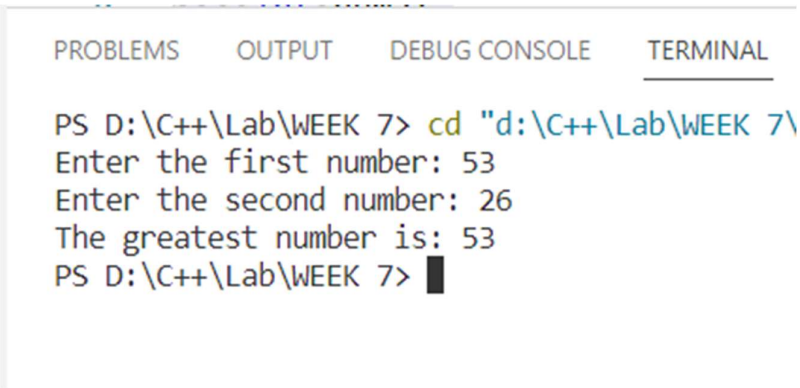


#5 Develop a C++ program to find the greatest of two numbers using this pointer which returns the member variable.

This is the required program:

```
#include <bits/stdc++.h>
using namespace std;
class GreatestNumFinder
{
private:
    int num1;
    int num2;
public:
    GreatestNumFinder(int a, int b) : num1(a), num2(b) {}

    int ReturnGreatest()
    {
        return this->num1 > this->num2 ? this->num1 : this->num2;
    }
};
int main()
{
    int a, b;
    cout << "Enter the first number: ";
    cin >> a;
    cout << "Enter the second number: ";
    cin >> b;
    GreatestNumFinder finder(a, b);
    int greatest = finder.ReturnGreatest();
    cout << "The greatest number is: " << greatest << endl;
    return 0;
}
```

Output:

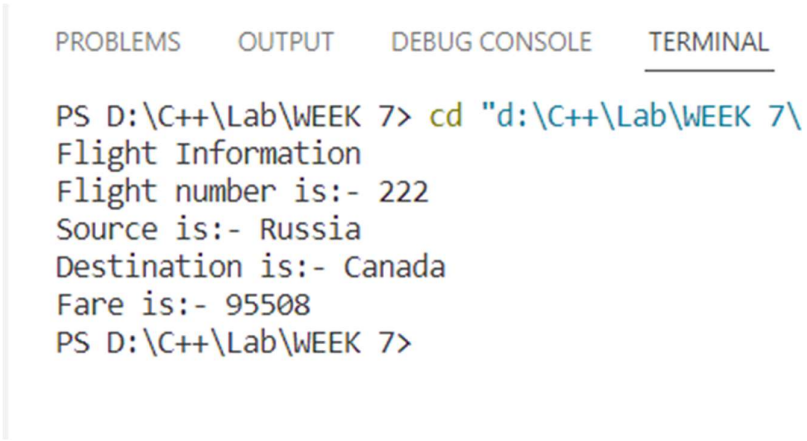


#6 Write a C++ program to implement flight class with data member as flightno., source destination and fare. Write a member function to display the flight information using this pointer.

This is the required code:

```
#include <iostream>
using namespace std;
class flight
{
    int flight_no;
    string source;
    string destination;
    double fare;
public:
    flight(int fl_no, string src, string des, double fr)
    {
        flight_no = fl_no;
        source = src;
        destination = des;
        fare = fr;
    }
    void information()
    {
        cout << "Flight Information\n";
        cout << "Flight number is:- " << this->flight_no<<endl<< "Source is:-
" << this->source<<endl << "Destination is:- " << this->destination<<endl <<
"Fare is:- " << this->fare;
    }
};
int main()
{
    flight f1 = { 222,
                  "Russia",
                  "Canada",
                  95508 };
    f1.information();
}
```

Output:



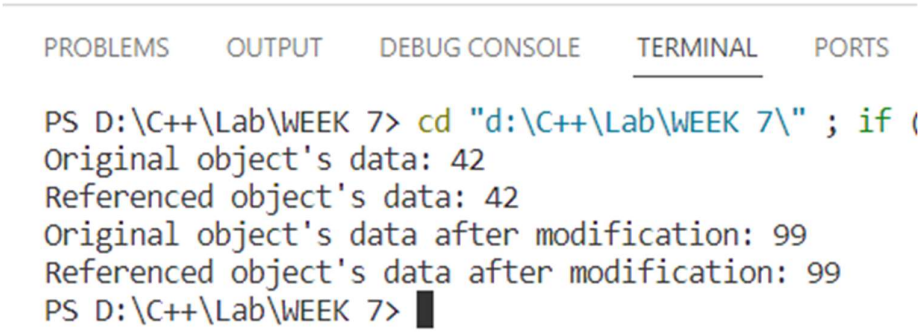
#7 Write a C++ program to use this pointer and return the pointer reference.

This is the required code:

```
#include <iostream>
using namespace std;
class Sample {
private:
    int data;

public:
    Sample(int value) : data(value) {}

    // Member function to return a reference to the current object
    Sample& returnThis() {
        return *this;
    }

    // Member function to get a modifiable reference to data
    int& getData() {
        return data;
    }
};

int main() {
    Sample obj(42);

    // Using the returnThis() member function to get a reference to the
current object
    Sample& ref = obj.returnThis();

    cout << "Original object's data: " << obj.getData() << endl;
    cout << "Referenced object's data: " << ref.getData() << endl;

    // Modify the data through the reference
    ref.getData() = 99;
```

```
    // Verify that the data is modified in the original object as well
    cout << "Original object's data after modification: " << obj.getData() <<
endl;
    cout << "Referenced object's data after modification: " << ref.getData()
<< endl;

    return 0;
}
```

Output:



WEKK-8

#1 Write a C++ program that uses functions to perform the following operations: i) To insert a sub string into a given main string from a given position. ii) To delete n characters from a given position in a given string.

This is the required program:

[*] Q1.cpp | Q2.cpp | Q3.cpp | Q4.cpp

```cpp
#include <iostream>
using namespace std;

string insertStringAt(string toString, string strToInsert, int atIndex) {
    if (atIndex < 0)
        return strToInsert + toString;
    else if (atIndex <= toString.size())
        return toString.insert(atIndex, strToInsert);
    else
        return toString + strToInsert;
}

string removeCharacterAt(string fromString, int fromIndex, int charCount) {
    if (fromIndex < 0 || fromIndex >= fromString.size()) {
        cout << "Index can not be negative or greater than string size";
        return "";
    }
    return fromString.erase(fromIndex, charCount);
}

int main() {
    string os, ss, ans;
    int i, c;

    cout << "Original string: ";
    getline(cin, os);

    cout << "Sub-String to insert: ";
    getline(cin, ss);

    cout << "At position: ";
    cin >> i;

    ans = insertStringAt(os, ss, i);
    cout << "After inserting sub-string: " << ans << endl;

    cout << "Enter the number of characters to remove from the new string: ";
    cin >> c;

    cout << "Index from where to remove character: ";
    cin >> i;

    ans = removeCharacterAt(ans, i, c);
    cout << "After removing characters: " << ans << endl;

    return 0;
}
```

Output:

```
C:\Users\hp\Documents\MCA 1 SEM\lab\WEEK 8\Q1.exe
Original string: HELLO
Sub-String to insert: WORLD
At position: 5
After inserting sub-string: HELLOWORLD
Enter the number of characters to remove from the new string: 3
Index from where to remove character: 2
After removing characters: HEWORLD

--------------------------------
Process exited after 8.253 seconds with return value 0
Press any key to continue . . .
```

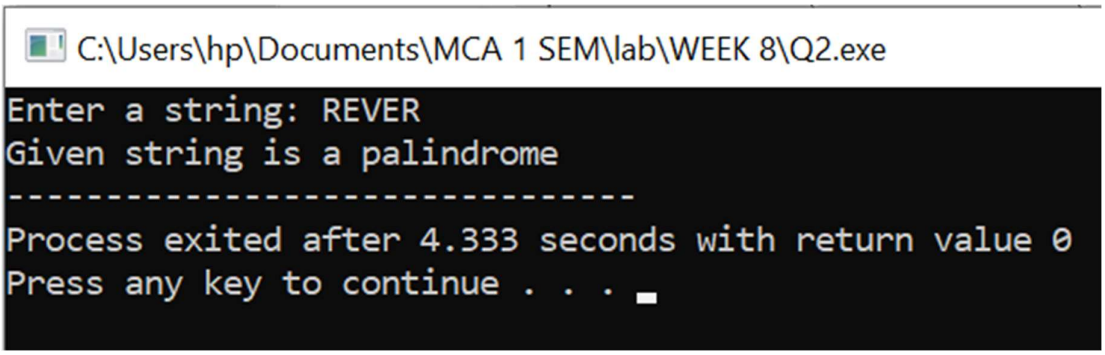
#2 Write a C++ program to determine if the given string is a palindrome or not.

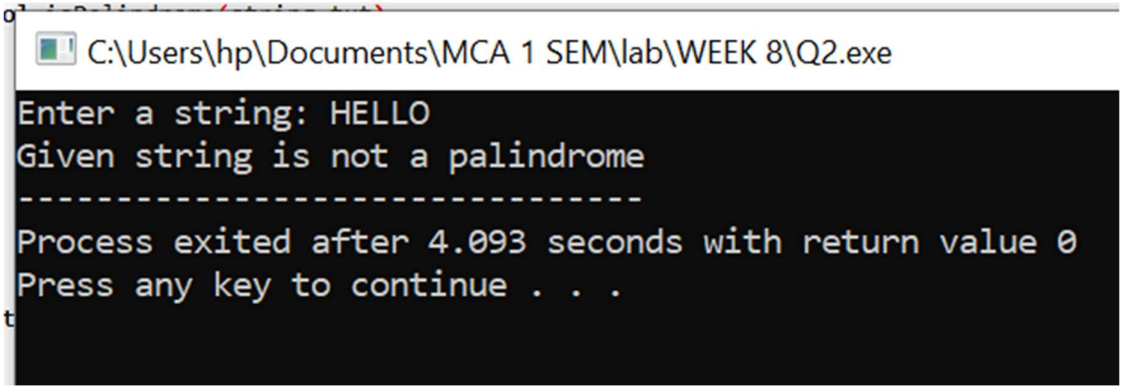
This is the required code:

Q1.cpp | Q2.cpp | Q3.cpp | Q4.cpp | Q5.cp

```cpp
#include<iostream>
using namespace std;
bool isPalindrome(string txt)
{
    int len = txt.size();
    for(int i=0; i<len/2; i++)
    {
        if(txt[i]!=txt[len-i-1])
        return false;
    }
    return true;
}
int main()
{
    string s;
    cout<<"Enter a string: ";
    cin>>s;
    cout<<"Given string is "<<(isPalindrome(s)?"":"not ")<<"a palindrome";
    return 0;
}
```

Output:





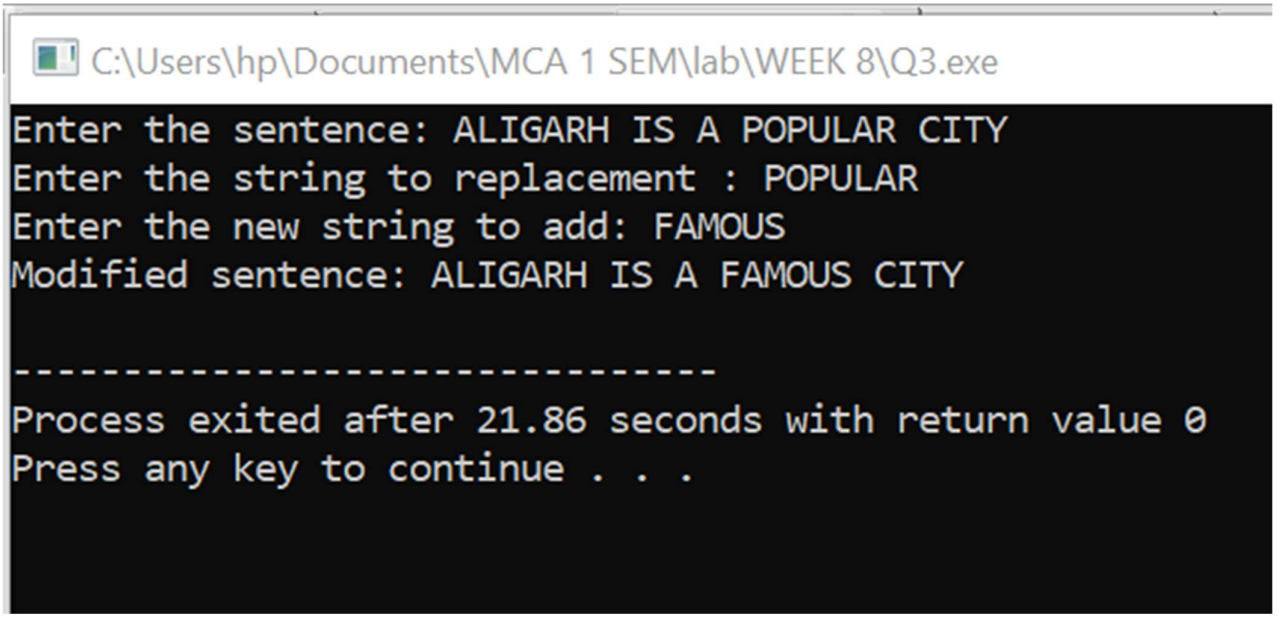
#3 Write a C++ program to find a string within a sentence and replace it with another string.

This is the required code:

Q1.cpp | Q2.cpp | Q3.cpp | Q4.cpp | Q5.c

```cpp
#include <iostream>
#include <string>
using namespace std;
int main() {
    string sentence;
    string searchString;
    string replaceString;

    cout << "Enter the sentence: ";
    getline(cin, sentence);

    cout << "Enter the string to replacement : ";
    getline(cin, searchString);

    cout << "Enter the new string to add: ";
    getline(cin, replaceString);

    size_t position = sentence.find(searchString);

    if (position != string::npos) {
        sentence.replace(position, searchString.length(), replaceString);
        cout << "Modified sentence: " << sentence << endl;
    } else {
        cout << "String not found in the sentence." << endl;
    }

    return 0;
}

```

Output:



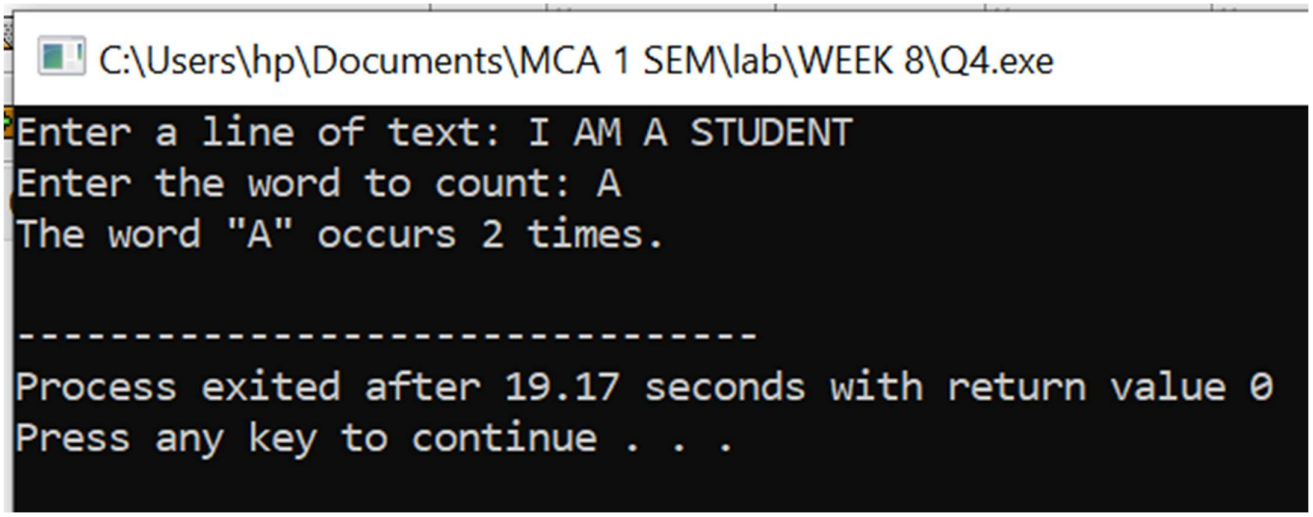
#4 Write a C++ program that reads a line of text and counts all occurrence of a particular word.

This is the required code:

Q1.cpp | Q2.cpp | Q3.cpp | Q4.cpp | Q5.cpp

```cpp

#include <iostream>
#include <string>
using namespace std;
int main() {
    string line;
    string word;
    int count = 0;

    cout << "Enter a line of text: ";
    getline(cin, line);

    cout << "Enter the word to count: ";
    cin >> word;

    size_t pos = line.find(word);
    while (pos != string::npos) {
        count++;
        pos = line.find(word, pos + 1);
    }

    cout << "The word \"" << word << "\" occurs " << count << " times." << std::endl;

    return 0;
}

```

Output:



#5 Write a C++ program that displays the position or index in the string S where the string T begins, or 1 if S doesn't contain T.

This is the required program:

Q1.cpp | Q2.cpp | Q3.cpp | Q4.cpp | Q5.cpp

```cpp
#include <iostream>
#include <string>
using namespace std;
int findIndex(string sentence, string word)
{
    return sentence.find(word);
}
int main() {
    string sen, word;
   // int position;
    cout << "Enter string sentence: ";
    getline(cin, sen);

    cout << "Enter a word to find its starting index: ";
    getline(cin, word);
    size_t position = sen.find(word);
    if (position != string::npos) {
        cout <<"'"<<word<<"'"<< " is found at index " <<findIndex(sen, word)<< " in string "<<"'"<<sen<<"'"<< endl;
    } else {
      cout << "String "<<"'"<<sen<<"'"<<" does not contain string "<<"'"<<word<<"'" << endl;
        position = 1;
    }

    return 0;
}
```

Output:

```
C:\Users\hp\Documents\MCA 1 SEM\lab\WEEK 8\Q5.exe
Enter string sentence: I AM A STUDENT
Enter a word to find its starting index: AM
'AM' is found at index 2 in string 'I AM A STUDENT'

--------------------------------
Process exited after 15.32 seconds with return value 0
Press any key to continue . . .
```