Programming Fundamentals

Lab Manual 8

Instructor:
Mr. Samyan Qayyum Wahla

Learning Objectives:

- Student should be able to understand string manipulation algorithms
- Learn to write well documented and formatted code.

CLO:

- CLO1

Registration Number:

_____

Name:

_____

Guidelines/Instructions:

- Use of VS Code is must in this lab.
- Write well commented code.
- Name of variables should be meaningful.
- Code should be well formatted.
- Create meaningful variable names. Add comments for readability. Indent each line of your code.
- Plagiarism/Cheating is highly discouraged by penalizing to both who tried and one who shared his/her code.
- **Do not change the function prototypes.**

Helping Content:

1. How to get length of string X.

```
string X = "Programming";
int size = X.length();
```

2. How to access character of string X.

```
string X = "Programming";
char y = X[3];  // y now contains g
```

3. How to join two string X and string Y

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

int main()
{
   string X = "Samyan";
   string Y = "Wahla";
   string Z = X+Y;
   cout<<Z<<endl;
   return 0;
}
```

4. How to join string X with char y.

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

int main()
{
   string X = "school";
   char Y = 's';
```

```
    string Z = X+Y;
    cout<<Z<<endl;
    return 0;
}
```

5. What to do if I am unable to declare the array of variable sizes

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

int main()
{
    string array1[12];

    int size;
    cout<<"enter size of array: ";
    cin>>size;
    string* array2= new string[size];  //declare array of varaible size
    //we will study this notation in details later
    return 0;
}
```

Lab Tasks:

1. Write a C++ function that tells whether the start of String Y is equal to the string Z. Function should have the following prototype
   bool startsWith(string Y, string Z)

Sample Input	**Sample Output**
Y: UET Lahore Z: UET	True
Y: Programming Fundamentals Z: Prgrmming	False

2. Write a C++ function that tells whether the end of String Y is equal to the string Z. Function should have the following prototype
   bool endsWith(string Y, string Z)

Sample Input	**Sample Output**
Y: UET Lahore Z: Capital City	False
Y: Programming Fundamentals Z: mentals	True

3. Write a C++ function that converts the string X to lowercase string. Function should have the following prototype
   string toLowerCase(string X)

Sample Input	**Sample Output**
X: UET Lahore	uet lahore
X: ueT123	uet123

4. Write a C++ function that converts and splits the string X bases on the delimiter character Y.
   string* tokenizer(string X, char Y)

Sample Input	**Sample Output**
X: “1,2,4,5” Y: ‘,’	Return string array of size 4 with the following elements {“1”,”2”,”4”,”5”}
X: “1,2, 4,5” Y: ‘ ’	Return string array of size 2 with the following elements {“1,2,”,”4,5” }
X: “9:40:13” Y: ‘:’	Return string array of size 3 with the following elements {“9”,”40”,”13”}

5. Write a C++ function that tells whether replace the string Y with string Z in the string X. function has the following prototype
   string replace(string X, string Y, string Z)

Sample Input	**Sample Output**
X: UET Lahore Y: Lahore Z: Narowal	UET Narowal
X: I go to school. Y: o Z: y	I gy ty schyyl

6. Write a C++ function that tells whether the end of String Y contains the string Z. Function should have the following prototype
   bool contains(string Y, string Z)

Sample Input	**Sample Output**
Y: I live at UET. Z: at	True
Y: I live in UET. Z: at	False

7. Write a C++ function that removes all spaces from the string Z. Function should have the following prototype
   string removeSpaces(string Z)

Sample Input	**Sample Output**
Z: I live at UET.	IliveatUET.
Z: I live in UET.	IliveinUET

8. Write a C++ function that return the substring from the starting index to end Index of string Z. Function should have the following prototype
   string removeSpaces(string Z, int start, int end)

Sample Input	**Sample Output**
Z: I live at UET. start: 2 end: 7	live a
Z: I live at UET. start: 10 end: 15	UET.

9. Write all the function again with change of the function parameter string to char array and return type to char*.

What to Submit:

- All the functions should be written in single file named stringFunctions.cpp which will contain 16 functions and all the functions should be called and tested in main function. No other file is allowed to submit.