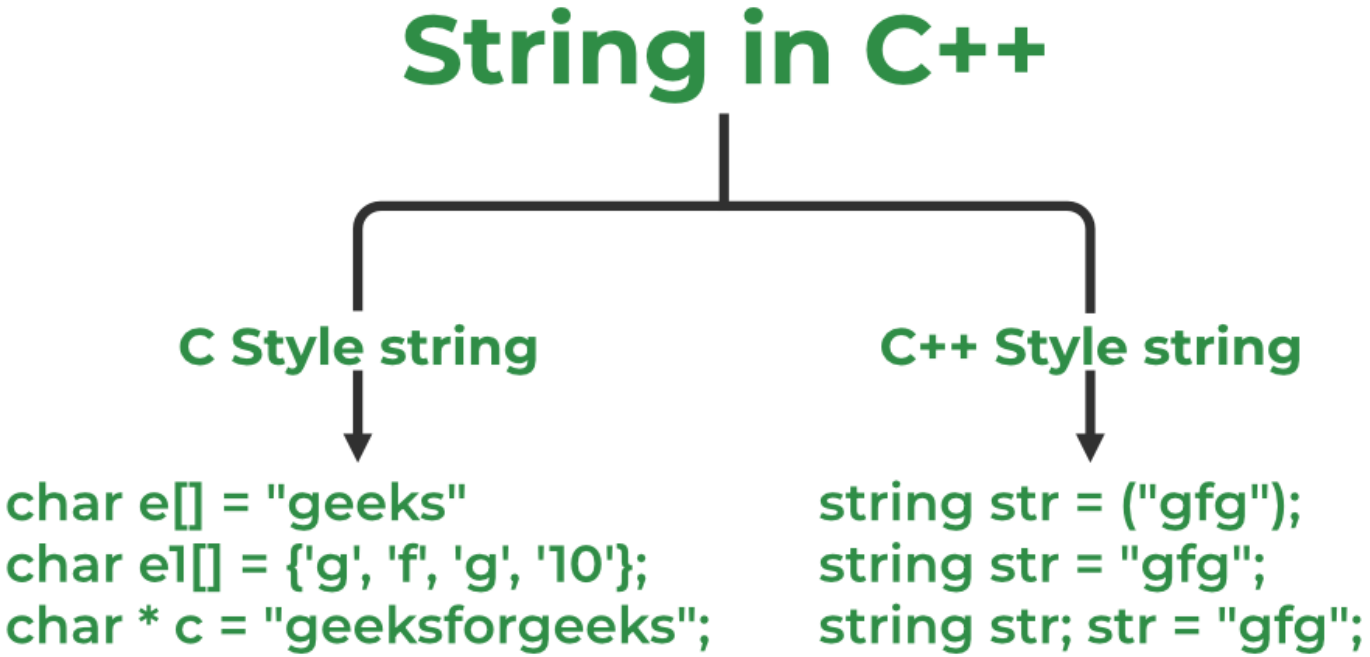
Intermediate programming(C++)-

Lab 6 – Strings

Strings styles



String definition

C-Style

```
int main()
{
    char s[] = "Nile University";
    cout << s << endl;
    return 0;
}
```

C++-Style

```
int main()
{
   string str("Nile University");
   cout << str;
   return 0;
}
```

Note:
Array size = 15

{'N', 'i', 'l', 'e', ' ', 'U', 'n', 'i', 'v', 'e', 'r', 's', 'i', 't', 'y', '\o'}

Null character

Output:
Nile University

String definition

```
int main()
{
    string s = "Nile University";
    string str("Nile University");

    cout << "s = " << s << endl;
    cout << "str = " << str << endl;

    return 0;
}
```

Output:
Nile University
Nile University

```
int main()
{
    char s1[] = { 'g', 'f', 'g', '\0' };
    char s2[4] = { 'g', 'f', 'g', '\0' };
    char s3[4] = "gfg";
    char s4[] = "gfg";

    cout << "s1 = " << s1 << endl;
    cout << "s2 = " << s2 << endl;
    cout << "s3 = " << s3 << endl;
    cout << "s4 = " << s4 << endl;

    return 0;
}
```

Output:
gfg
gfg
gfg
gfg

Taking string from the user

- cin
- getline

```
int main() {

     string s;

    cout<<"Enter String"<<endl;
     cin>>s;

    cout<<"String is: "<<s<<endl;
    return 0;
}
```

```
int main()
{

    string s;
    cout << "Enter String" << endl;
    getline(cin, s);
    cout << "String is: " << s << endl;
    return 0;
}
```

How to Pass Strings to Functions?

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

void print_string(string s)
{
    cout << "Passed String is: " << s << endl;
    return;
}

int main()
{
    string s = "Nile University";
    print_string(s);

    return 0;
}
```

Output:
Passed String is:
Nile University

String class functors

```
#include<iostream>
#include<string>
using namespace std;
int main()
{
    string str = "freshersnow is for freshers";
    cout<<"The initial string is : ";
    cout<<str << endl;

    str.resize(13);
    cout<<"The string after resize operation is : ";
    cout<< str << endl;

    cout<<"The capacity of string is : ";
    cout<<str.capacity() << endl;

    str.shrink_to_fit();
    cout<<"The new capacity after shrinking is : ";
    cout<<str.capacity() << endl;
    return 0;
}
```

String class functors

```
int main()
{
    string str1 = "freshersnow is for freshers";
    string str2 = "freshersnow tutorial";
    char ch[80];

    str1.copy(ch,13,0);
    cout<<"The new copied character array is : ";
    cout<<ch<<endl<<endl;

    cout<<"The 1st string before swapping is : ";
    cout<<str1<<endl;
    cout<<"The 2nd string before swapping is : ";
    cout<<str2<<endl;

    str1.swap(str2);
    cout<<"The 1st string after swapping is : ";
    cout<<str1 << endl;
    cout<<"The 2nd string after swapping is : ";
    cout<<str2<<endl;
    return 0;
}
```

Task - Arrays

Write a C++ program that performs the following operations on an integer array:

Input:

- Prompt the user to enter the size of the array (an integer greater than zero).
- Then, ask the user to input each element of the array.

Operations:

- Print the Array: Display all the elements of the array.
- Find the Maximum Element: Identify and display the largest number in the array.
- Find the Minimum Element: Identify and display the smallest number in the array.
- Calculate the Average: Compute and display the average of all the numbers in the array.

Output:

- Display the array, the maximum and minimum elements, and the average value formatted appropriately.

Task - Strings

Write a C++ program that performs the following operations on a string:

Input:

- Prompt the user to enter a string.

Operations:

- Print the String: Display the input string.
- Reverse the String: Reverse the string and display the result.
- Count Vowels: Count and display the number of vowels (a, e, i, o, u in both uppercase and lowercase) in the string.
- Check if Palindrome: Check if the string is a palindrome (reads the same forward and backward) and display the result.

Output:

- Display the original string, the reversed string, the number of vowels, and whether the string is a palindrome or not.