Assignment - 3

U19CS012

1) Write a C/C++ program to test whether a given identifier is valid or not.

In order to qualify as a valid identifier, the string must satisfy the following conditions:

- ✓ It must start with either **underscore(_)** or any of the characters from the ranges **['a', 'z'] and ['A', 'Z']**.
- ✓ There must **not be any white space** in the string.
- ✓ And, all the subsequent characters after the first character **must not** consist of any special characters like **$, #, %** etc.

Code:

```cpp
#include <iostream>
#include <string>
using namespace std;
// U19CS012 [BHAGYA VINOD RANA]

// This Checks if the Given String is Valid Identifier or Not
bool is_valid_identfier(string s);

int main()
{
    string s;
    cout << "Enter String to Check for Type of Identifier : ";
    cin >> s;

    if (is_valid_identfier(s))
        cout << s << " is Valid Identifier!\n";
    else
        cout << s << " is Not a Valid Identifier!\n";

    return 0;
}

// This Checks if the Given String is Valid Identifier or Not
bool is_valid_identfier(string s)
{
    int n = s.length();

    // If first character is not {_/[A-Z]/[a-z]}, then identifier is invalid
    if (!(((s[0] >= 'a' && s[0] <= 'z') || (s[0] >= 'A' && s[0] <= 'Z') || s[0] == '_'))
```

```
        return false;

    // All remaining Characters is not {_/[A-Z]/[a-z]/[0-9]}, then identifier is invalid
    for (int i = 1; i < s.length(); i++)
    {
        if (!((s[i] >= 'a' && s[i] <= 'z') || (s[i] >= 'A' && s[i] <= 'Z') || (s[i] >= '0' &&
s[i] <= '9') || s[i] == '_'))
            return false;
    }

    // String is a valid identifier
    return true;
}
```

Output:

```
PS C:\Users\Admin\Desktop\SS_A3> cd "c:\Users\Admin\Desktop\
Enter String to Check for Type of Identifier : _age
_age is Valid Identifier!
PS C:\Users\Admin\Desktop\SS_A3> cd "c:\Users\Admin\Desktop\
Enter String to Check for Type of Identifier : 1user
1user is Not a Valid Identifier!
PS C:\Users\Admin\Desktop\SS_A3> cd "c:\Users\Admin\Desktop\
Enter String to Check for Type of Identifier : *name*
*name* is Not a Valid Identifier!
PS C:\Users\Admin\Desktop\SS_A3> cd "c:\Users\Admin\Desktop\
Enter String to Check for Type of Identifier : calcPercent
calcPercent is Valid Identifier!
PS C:\Users\Admin\Desktop\SS_A3> cd "c:\Users\Admin\Desktop\
Enter String to Check for Type of Identifier : %centage
%centage is Not a Valid Identifier!
PS C:\Users\Admin\Desktop\SS_A3> cd "c:\Users\Admin\Desktop\
Enter String to Check for Type of Identifier : H@ppy
H@ppy is Not a Valid Identifier!
PS C:\Users\Admin\Desktop\SS_A3> cd "c:\Users\Admin\Desktop\
Enter String to Check for Type of Identifier : !!
!! is Not a Valid Identifier!
PS C:\Users\Admin\Desktop\SS_A3>
```

2) Write a C/C++ program to identify whether a given line is a comment or not.

Types of comments in programs:

- **Single Line Comment:** *Comments preceded by a Double Slash ('//')*
- **Multi-line Comment:** *Comments starting with ('/*') and ending with ('*/').*

Code:

```cpp
#include <bits/stdc++.h>
using namespace std;
// U19CS012 [BHAGYA VINOD RANA]

// This Checks if the Given String is Valid Comment or Not
void is_valid_comment(string line);

int main()
{
    string line;
    cout << "Enter a String to Check if it is Comment or Not : ";
    cin >> line;

    is_valid_comment(line);

    return 0;
}

// This Checks if the Given String is Valid Comment or Not
void is_valid_comment(string line)
{
    if (line.length() < 2)
    {
        cout << "It is Not a Comment!\n";
        return;
    }
    else if (line.length() == 2)
    {
        if (line[0] == '/' && line[1] == '/')
        {
            cout << "It is a Single-line Comment!\n";
            return;
        }
        else
        {
            cout << "It is Not a Comment!\n";
            return;
        }
    }
    else
```

```
{
    // Single Line Comment Format
    if (line[0] == '/' && line[1] == '/' && line[2] != '/')
    {
        cout << "It is a Single-line Comment!\n";
        return;
    }

    // /* abcd */ Multi-Line Comment Format
    if ((line[0] == '/' && line[1] == '*') && (line[line.size() - 2] == '*' &&
line[line.size() - 1] == '/'))
    {
        cout << "It is a Multi-line Comment!\n";
        return;
    }

    cout << "It is Not a Comment!\n";
}
}
```

Output:

SUBMITTED BY: U19CS012

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