



San Francisco Bay University

CS360L - Programming in C and C++ Lab Lab Assignment #0

Due day: 1/17/2024

Kritika Regmi
ID: 19702

1. Create your personal account of C++ online compiler at the following link and run the first program on it. <https://replit.com/>

ANS: Running result:

```
1 //No:1
2 //Name:Kritika Regmi 19702
3
4 #include <iostream>
5 #include <fstream> // pkg is for file processing
6 #include <iomanip> // for printing format on the monitor
7 using namespace std;
8 int GetInches(ifstream& rainFile, int numberOfDays);
9
10 int main(){
11     float average; // Average rainfall
12     float totalRain; // Total accumulated rain
13     int numberOfDays; // Number of days in calculation
14     ifstream rainFile; // Data file - read from hard drive to memory
15
16     cout << fixed << showpoint;
17
18     rainFile.open("Rain.In");
19     rainFile >> numberOfDays;
20     totalRain = GetInches(rainFile, numberOfDays);
21     if (totalRain == 0.0)
22     cout << "There was no rain during this period." << endl;
23     else{
24         average = totalRain / numberOfDays;
25         cout << "The average rain fall over "
26             << numberOfDays;
27         cout << " days is " << setw(1) << setprecision(3)
28             << average << endl;
```

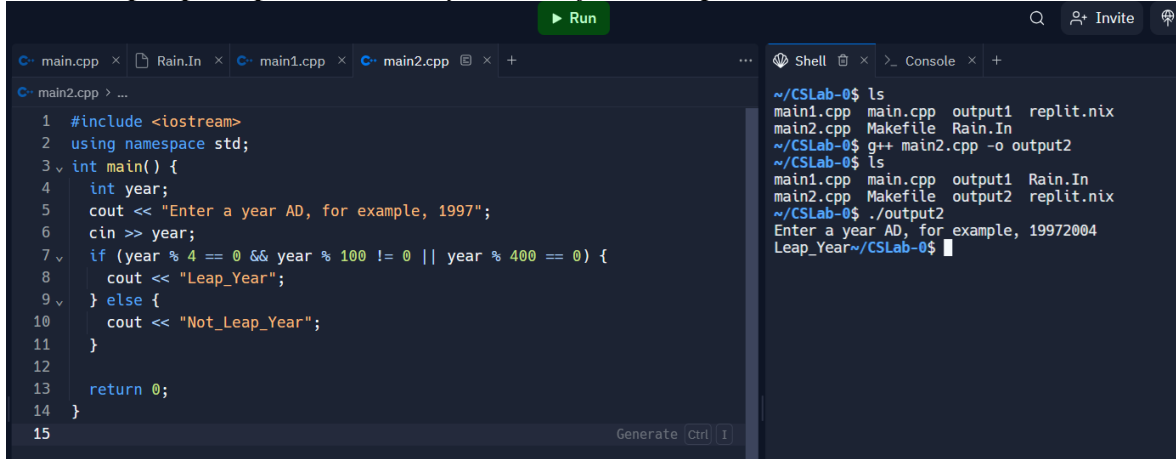
2. Enter the editor and key in the following program. And explain the meanings of each statement.

ANS:

```
1 //No:2
2 // Name:Kritika Regmi 19702
3
4 #include <iostream>
5 // iostream is a library that has access to input and output functions
6 using namespace std;
7 // std is a namespace that has access to all the functions in iostream library
8
9 int main() {
10     // main is a function that returns an integer value
11     int inches;
12     // inches is a variable of type integer
13     cout << "Enter the number of inches on a side " << endl;
14     // cout is a function that prints the output
15     cout << "Press the return key." << endl;
16     // endl is a function that prints the output
17     cin >> inches;
18     // cin is a function that reads the input
19     cout << endl << "The area is " << inches * inches << "." << endl;
20     // endl is a function that prints the output
21     return 0;
22     // return 0 is a function that returns an integer value
23 }
```

4. Write the program to check leap year as the first programming exercise and verify your program by the following cases.

a. The input prompt is *"Enter a year AD, for example, 1997"*



The screenshot shows a C++ IDE with a file named `main2.cpp`. The code is as follows:

```
1 #include <iostream>
2 using namespace std;
3 int main() {
4     int year;
5     cout << "Enter a year AD, for example, 1997";
6     cin >> year;
7     if (year % 4 == 0 && year % 100 != 0 || year % 400 == 0) {
8         cout << "Leap_Year";
9     } else {
10        cout << "Not_Leap_Year";
11    }
12
13    return 0;
14 }
15
```

The console output shows the following sequence of commands and results:

```
~/CSLab-0$ ls
main1.cpp  main.cpp  output1  replit.nix
main2.cpp  Makefile  Rain.In
~/CSLab-0$ g++ main2.cpp -o output2
~/CSLab-0$ ls
main1.cpp  main.cpp  output1  Rain.In
main2.cpp  Makefile  output2  replit.nix
~/CSLab-0$ ./output2
Enter a year AD, for example, 19972004
Leap_Year~/CSLab-0$
```

b. Change the prompt so that the example year is 2005.



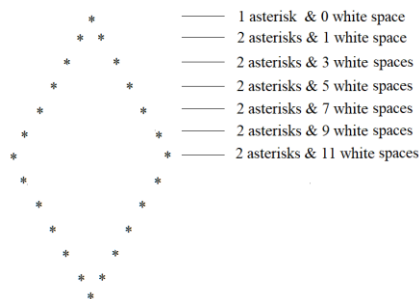
The screenshot shows a C++ IDE with a file named `main3.cpp`. The code is as follows:

```
1 #include <iostream>
2 using namespace std;
3 int main() {
4     int year;
5     cout << "Enter a year AD, for example, 2005 ";
6     cin >> year;
7     if (year % 4 == 0 && year % 100 != 0 || year % 400 == 0) {
8         cout << "Leap_Year";
9     } else {
10        cout << "Not_Leap_Year";
11    }
12
13    return 0;
14 }
15
```

The console output shows the following sequence of commands and results:

```
~/CSLab-0$ ls
main1.cpp  main3.cpp  Makefile  output2  replit.nix
main2.cpp  main.cpp  output1  Rain.In
~/CSLab-0$ g++ main3.cpp -o output3
~/CSLab-0$ ./output3
Enter a year AD, for example, 2005 2020
Leap_Year~/CSLab-0$
```

5. Figure out the program to print the following pattern by **loop** structure.



```
1.cpp x Rain.In x main1.cpp x main2.cpp x main3.cpp x main4.cpp x + ... Shell x + Console x +
C++ main4.cpp > f main
1 #include <iostream>
2 using namespace std;
3 int main() {
4     int n = 7;
5     for (int i = 0; i < n; i++) {
6         for (int j = 0; j < n - i - 1; j++) {
7             cout << " ";
8         }
9         cout << "*";
10        if (i > 0) {
11            for (int k = 0; k < 2 * i - 1; k++) {
12                cout << " ";
13            }
14            cout << "*";
15        }
16        cout << endl;
17    }
18
19    for (int i = n - 2; i >= 0; i--) {
20        for (int j = 0; j < n - i - 1; j++) {
21            cout << " ";
22        }
23        cout << "*";
24        if (i > 0) {
25            for (int k = 0; k < 2 * i - 1; k++) {
26                cout << " ";
27            }
28            cout << "*";
29        }
30        cout << endl;
31    }
32}
```

```
~/CSLab-0$ ls
main1.cpp  main3.cpp  main.cpp  output1  output3  replit.nix
main2.cpp  main4.cpp  Makefile  output2  Rain.In
~/CSLab-0$ g++ main4.cpp -o output4
~/CSLab-0$ ./output4
      *
     **
    ***
   ****
  *****
 *****
  *****
   ****
    ***
     **
      *
     **
    ***
   ****
  *****
 *****
  *****
   ****
    ***
     **
      *
```