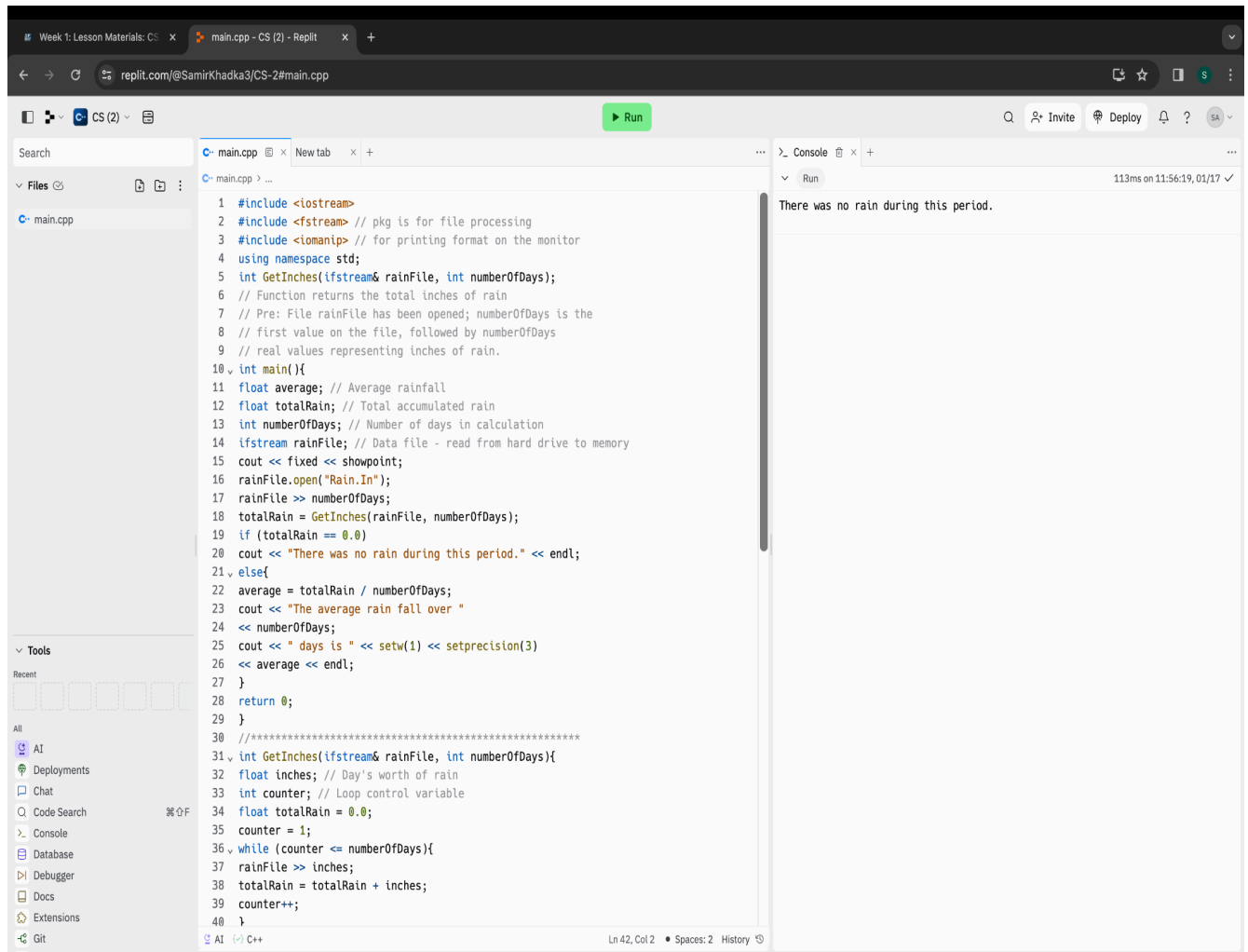


1. Create your personal account of C++ online compiler at the following link and run the first program on it.



The screenshot shows a web browser window with the URL `replit.com/@SamirKhadka3/CS-2#main.cpp`. The interface includes a file explorer on the left, a code editor in the center, and a console on the right. The code in `main.cpp` is as follows:

```
1 #include <iostream>
2 #include <fstream> // pkg is for file processing
3 #include <iomanip> // for printing format on the monitor
4 using namespace std;
5 int GetInches(ifstream& rainFile, int numberOfDays);
6 // Function returns the total inches of rain
7 // Pre: File rainFile has been opened; numberOfDays is the
8 // first value on the file, followed by numberOfDays
9 // real values representing inches of rain.
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     cout << fixed << showpoint;
16     rainFile.open("Rain.In");
17     rainFile >> numberOfDays;
18     totalRain = GetInches(rainFile, numberOfDays);
19     if (totalRain == 0.0)
20     cout << "There was no rain during this period." << endl;
21     else{
22         average = totalRain / numberOfDays;
23         cout << "The average rain fall over "
24         << numberOfDays;
25         cout << " days is " << setw(1) << setprecision(3)
26         << average << endl;
27     }
28     return 0;
29 }
30 //*****
31 int GetInches(ifstream& rainFile, int numberOfDays){
32     float inches; // Day's worth of rain
33     int counter; // Loop control variable
34     float totalRain = 0.0;
35     counter = 1;
36     while (counter <= numberOfDays){
37         rainFile >> inches;
38         totalRain = totalRain + inches;
39         counter++;
40     }
```

The console output shows the result of running the program: `There was no rain during this period.` The execution time is 113ms on 11:56:19, 01/17.

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

```
1 // Program Area calculates the area of a square.
2 // The user is prompted to enter the number of inches on each
3 // side. Note that "endl" in line 7 ends in the letter "l", not
4 // the number one.
5 #include <iostream> //input/output stream library, allowing the program to use input
6 // and output operations.
7 using namespace std; //using the standard namespace
8
9 int main() {
10     int inches; // Declaring an integer variable 'inches' to store the side length of
11     // the square.
12     // Prompting to enter the number of inches on a side.
13     cout << "Enter the number of inches on a side " << endl;
14     // Displaying a message to instruct to press the return key.
15     cout << "Press the return key." << endl;
16     // Reading input (side length) and store it in the 'inches' variable.
17     cin >> inches;
18     // Displaying the calculated area of the square using the entered side length.
19     cout << endl << "The area is " << inches * inches << "." << endl;
20     // Returning 0 to indicate successful execution of the program.
21     return 0;
22 }
```

Console output:

```
Enter the number of inches on a side
Press the return key.
9
The area is 81.
```

- `#include <iostream>`: Includes the input/output stream library, letting the program use input and output operations.
- `using namespace std;`: Declares that the program will use the standard namespace (includes the standard C++ library components.)
- `int main() {`: Starting point of the program.
- `int inches;`: Declares an integer variable named 'inches' to store the side length of the square.
- `cout << "Enter the number of inches on a side " << endl;`: Prints a message, prompts the user to enter the number of inches on a side.
- `cout << "Press the return key." << endl;`: Instructs the user to press the return key.
- `cin >> inches;`: Reads the user input (side length) from the console and stores it in the 'inches' variable.
- `cout << endl << "The area is " << inches * inches << "." << endl;`: Calculates and prints the area of the square using the entered side length.
- `return 0;`: Indicates successful execution.

3. 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"



```

main.cpp
1  #include<iostream>
2  using namespace std;
3
4  int main() {
5      int n, i, j;
6      cout << "Enter number of rows: ";
7      cin >> n;
8
9      for(i = 0; i <= n; i++) {
10         for(j = 0; j < n-i; j++)
11             cout << " ";
12         for(j = 0; j < 2*i-1; j++) {
13             if(j == 0 || j == 2*i-2)
14                 cout << "*";
15             else
16                 cout << " ";
17         }
18         cout << "\n";
19     }
20
21     for(i = n-1; i >= 1; i--) {
22         for(j = 0; j < n-i; j++)
23             cout << " ";
24         for(j = 0; j < 2*i-1; j++) {
25             if(j == 0 || j == 2*i-2)
26                 cout << "*";
27             else
28                 cout << " ";
29         }
30         cout << "\n";
31     }

```

```

32
33     return 0;
34 }
35

```

input

Enter number of rows: 7

```

      *
     * *
    *  *
   *   *
  *    *
 *     *
*      *
*     *
 *    *
  *   *
   *  *
    * *
     *
    
```