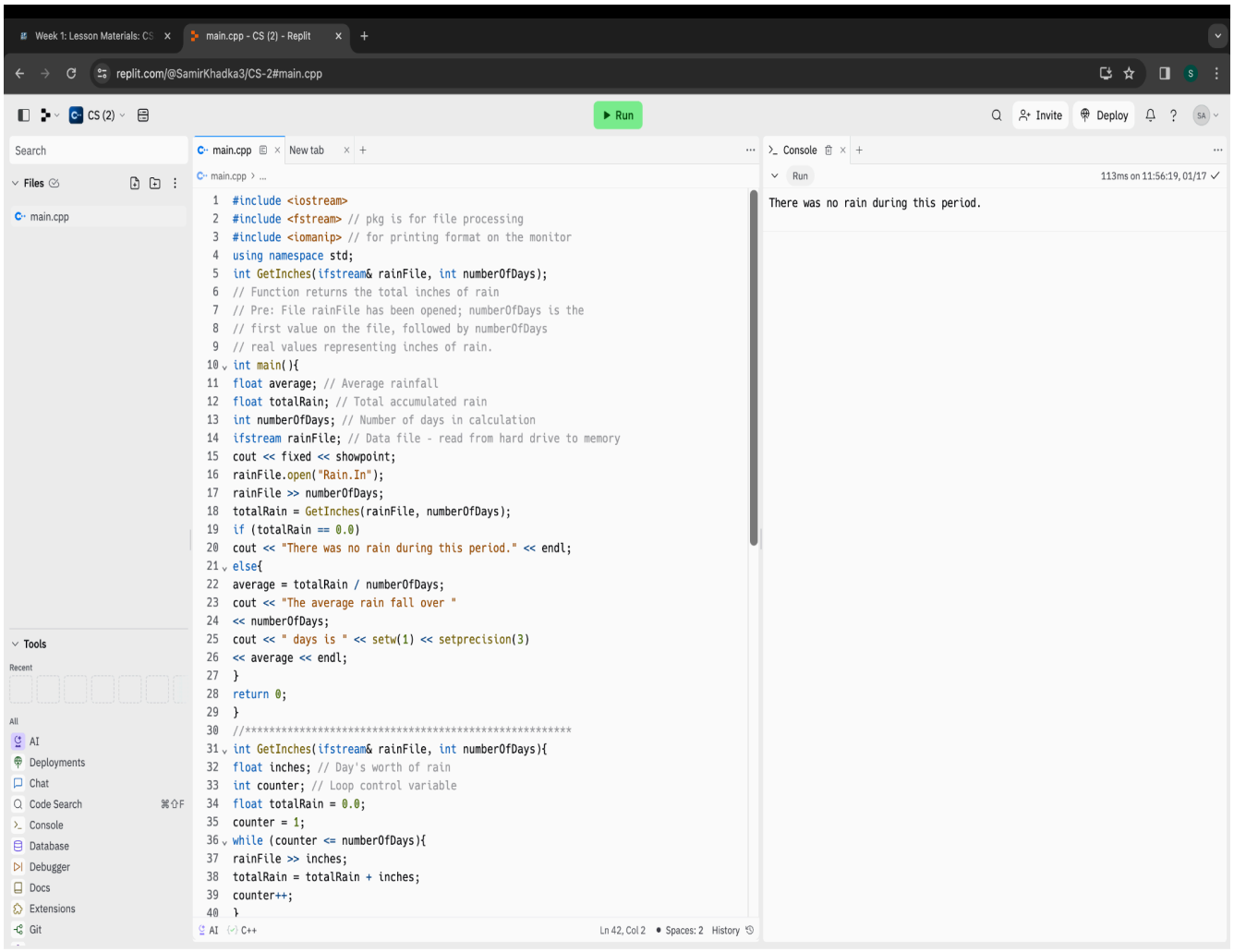
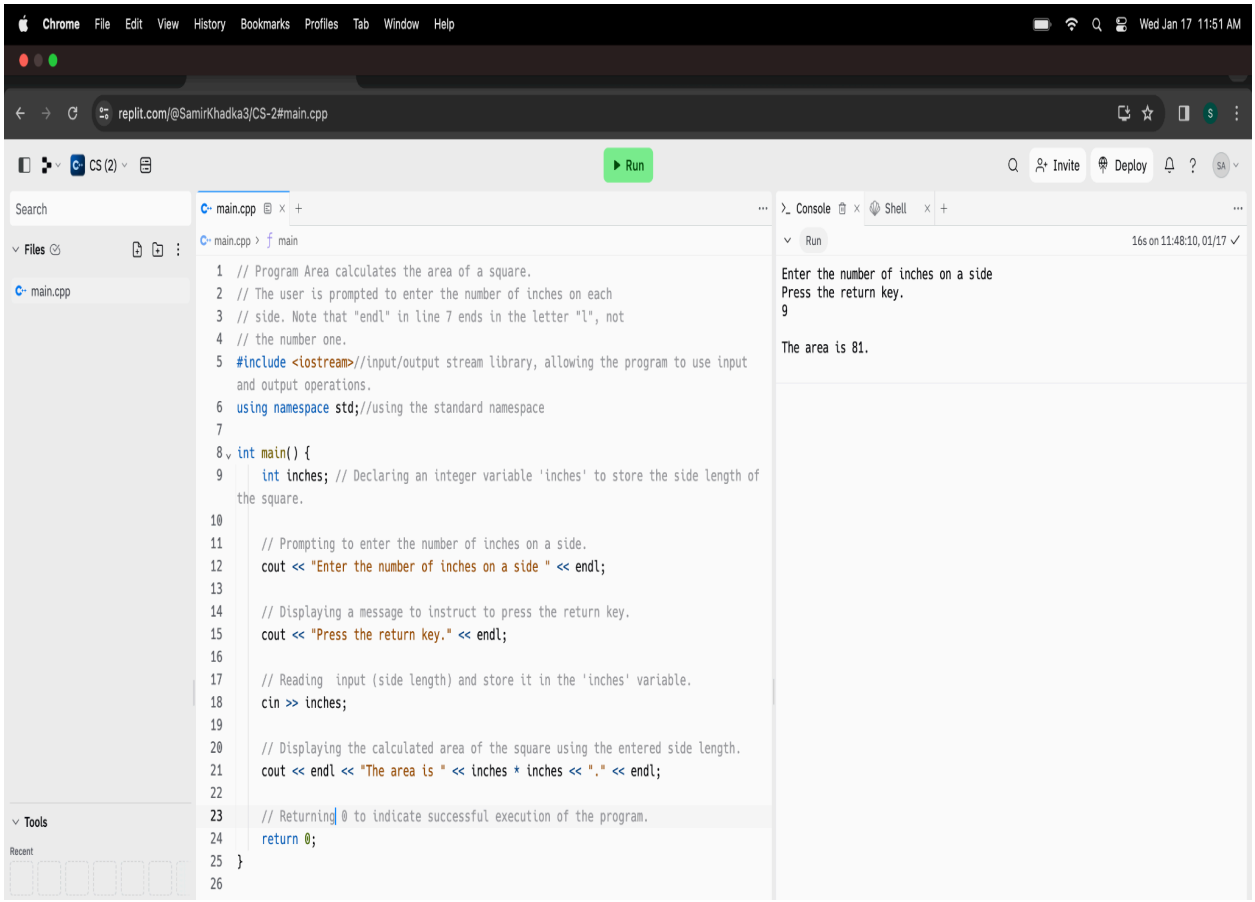
1. Create your personal account of C++ online compiler at the following link and run the first program on it.



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



- #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"

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

main.c

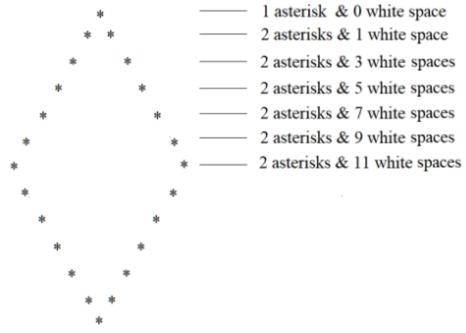
Save Run Output

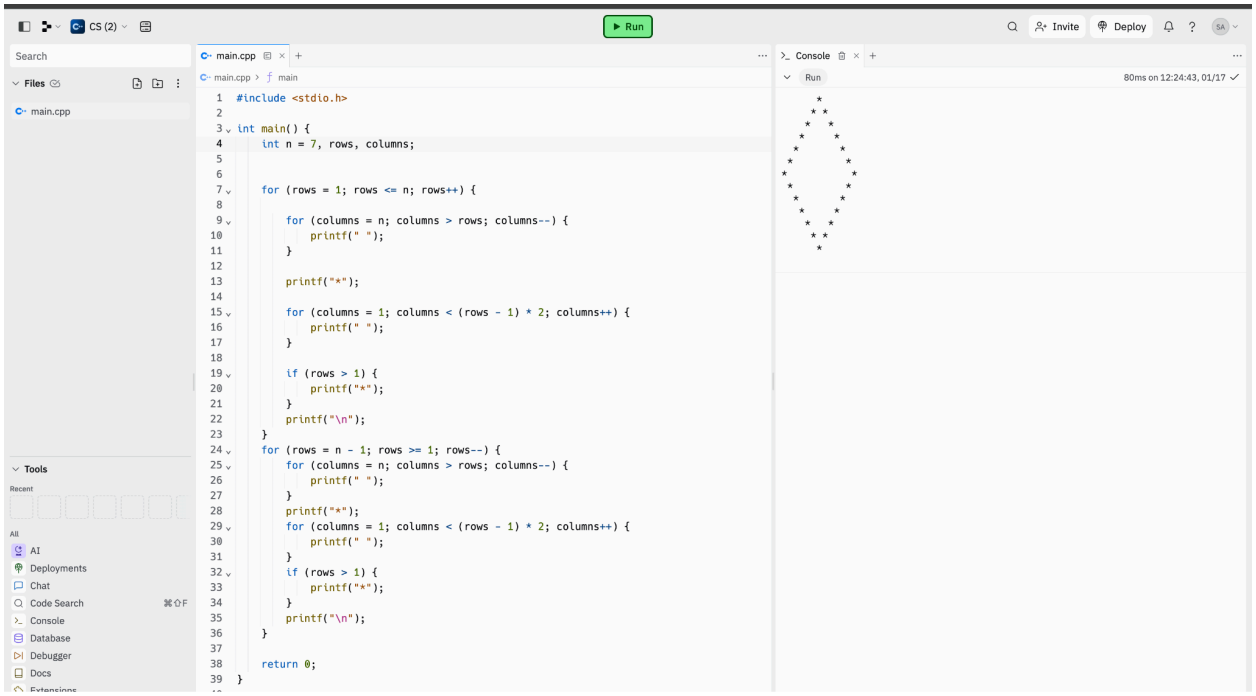
```c
#include <stdio.h>

int main() {
    int year;

    // Prompt the user to enter a year
    printf("a. Enter a year AD, for example, 1997: ");
    scanf("%d", &year);

    // Check if it's a leap year
    if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {
        printf("%d is a leap year.\n", year);
    } else {
        printf("%d is not a leap year.\n", year);
    }

    // Prompt with changed example year
    printf("b. Enter a year AD, for example, 2005: ");
    scanf("%d", &year);

    // Check if it's a leap year
    if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {
        printf("%d is a leap year.\n", year);
    } else {
        printf("%d is not a leap year.\n", year);
    }

    return 0;
}
```

```
/tmp/YnKcilqOYp.o
a. Enter a year AD, for example, 1997: 1997
1997 is not a leap year.
b. Enter a year AD, for example, 2005: 2006
2006 is not a leap year.
```

4.

Figure out the program to print the following pattern by loop structure




CS (2)
Run
Invite
Deploy
Search
Files
main.cpp
Tools
Recent
All
AI
Deployments
Chat
Code Search
Console
Database
Debugger
Docs
main.cpp
main.cpp > main
#include <stdio.h>
int main() {
int n = 7, rows, columns;
for (rows = 1; rows <= n; rows++) {
for (columns = n; columns > rows; columns--) {
printf(" ");
}
printf("*");
for (columns = 1; columns < (rows - 1) * 2; columns++) {
printf(" ");
}
if (rows > 1) {
printf("*");
}
printf("\n");
}
for (rows = n - 1; rows >= 1; rows--) {
for (columns = n; columns > rows; columns--) {
printf(" ");
}
printf("*");
for (columns = 1; columns < (rows - 1) * 2; columns++) {
printf(" ");
}
if (rows > 1) {
printf("*");
}
printf("\n");
}
return 0;
}
Console
Run
80ms on 12:24:43, 01/17