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CS360L

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LAB ASSIGMENT #0

1.

The running result is: “The average rainfall over 7 days is 0.286”

```
PS D:\VS CODE\C C++> cd "d:\VS CODE\C C++\" ; if ($?) { g++ rain.cpp -o rain } ; if ($?) { .\rain }
The average rain fall over 7 days is 0.286
PS D:\VS CODE\C C++>
```

2.

The code and the meanings of each statement:

```
#include <iostream> //include the input-output stream. This is required in almost every
C++ program.

using namespace std;

int main (){
    int  inches; //Declare the type of variable "inches"

    cout  << "Enter the number of inches on a side " //Print out the instruction on the
screen
             << endl; //End line
    cout  << "Press the return key." //Print out the instruction on the screen
             << endl; //End line
    cin    >> inches; //Read the input
    cout  << "The area is "  << inches * inches  <<"." //Print out the area of the square
with the function inches * inches
         << endl; //End line
```

```
    return 0; //Return 0 for finish the program
}
```

Run the code:

```
                > cd "d:\VS CODE\C C++\" ; if ($?) { g++ ex2.cpp -o ex2 } ; if ($?) { .\ex2 }
Enter the number of inches on a side
Press the return key.
8
The area is 64.
PS D:\VS CODE\C C++>
```

The program will take the input as variable “inches” and then it uses “inches * inches” to square the values and output the area of the square.

3.

The code:

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

int main(){
    int year = 0;
    cout << "Input the year number: ";
    cin >> year;
    if (year % 100 == 0) {
        if (year % 400 == 0) {
            cout << year << " is a leap year." << endl;
        }
        else {
            cout << year << " is not a leap year." << endl;
        }
    }
    else {
        if (year % 4 == 0) {
            cout << year << " is a leap year." << endl;
        }
        else {
            cout << year << " is not a leap year." << endl;
        }
    }
```

```
    return 0;
}
```

Test cases:

a. 1997

Run the program:

```
                    > cd "d:\VS CODE\C C++\"
Input the year number: 1997
1997 is not a leap year.
PS D:\VS CODE\C C++>
```

b. 2005

```
PS D:\VS CODE\C C++> cd "d:\VS CODE\C C++\" ;
Input the year number: 2005
2005 is not a leap year.
PS D:\VS CODE\C C++>
```

4.

The code:

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

int main()
{
    int i,j;
    cout << "\n\n Display the pattern like a diamond:\n";
    cout << "---------------------------------------\n";

//Draw the first line of the diamond
    for (i=0; i<6; i++)
    {
        cout << " ";
    }
    cout << "*";
```

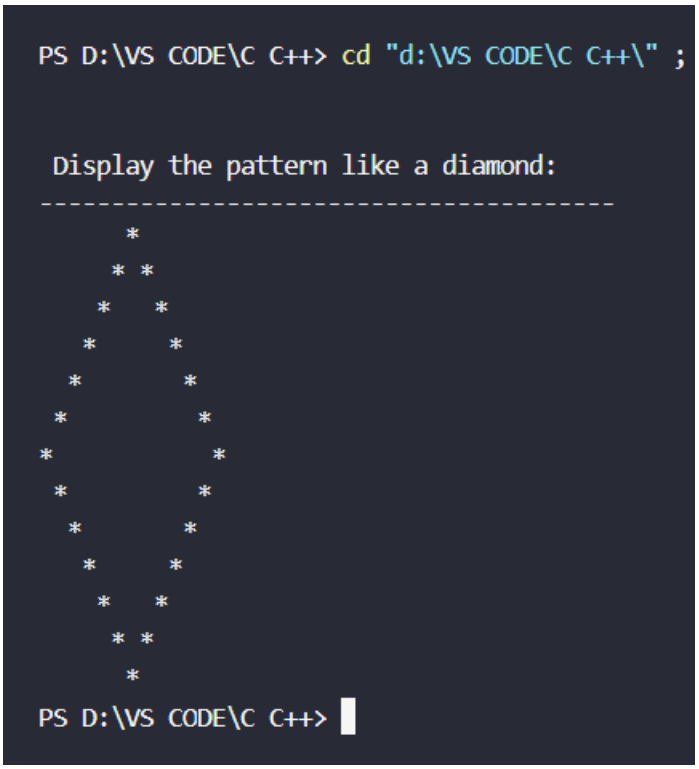
```
    cout << endl;

//Use loop to draw the first half of the diamond
    for(i=0;i<6;i++)
    {
        for(j=1;j<=5-i;j++)
            cout <<" ";
        cout << "*";
        for(j=1;j<=2*i+1;j++)
            cout <<" ";
        cout << "*";
        for(j=1;j<=5-i;j++)
            cout << " ";
        cout<<endl;
   }

//Use loop to draw the other half of the diamond
   for(i=4;i>=0;i--)
    {
        for(j=1;j<=5-i;j++)
            cout <<" ";
        cout << "*";
        for(j=1;j<=2*i+1;j++)
            cout <<" ";
        cout << "*";
        for(j=1;j<=5-i;j++)
            cout << " ";
        cout<<endl;
   }

// Draw the last line of the diamond
    for (i=0; i<6; i++)
    {
        cout << " ";
    }
    cout << "*";
    cout << endl;
}
```

Run the program:


PS D:\VS CODE\C C++> cd "d:\VS CODE\C C++\" ;
Display the pattern like a diamond:
PS D:\VS CODE\C C++>