

Hands-on Activity 2.1

Data Types and Arithmetic Operations

Course Code: CPE007	Program: Computer Engineering
Course Title: Programming Logic and Design	Date Performed: 8/7/25
Section: CPE11S1	Date Submitted: 8/7/25
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6. Output

Example 1: The following program has an output of:

The value of seven is: 7.000000

The value of eight and a half is: 8.500000

Can you find all possible compilation errors and logic errors? Can you fix them to print the same result as the expected output? Before you use your compiler, try to find the errors only by manual code analysis.

```
#include<iostream>

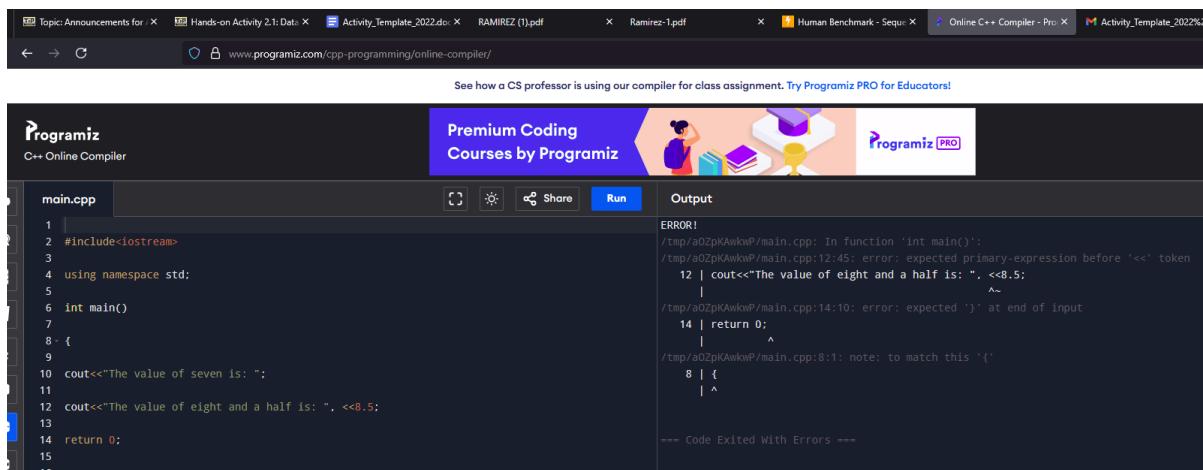
using namespace std;

int main()
{
cout<<"The value of seven is: ";

cout<<"The value of eight and a half is: ", <<8.5;

return 0;
```

ERRORS



The screenshot shows the Programiz C++ Online Compiler interface. The code editor contains the provided C++ program. The output window displays the following errors:

```
ERROR!
/tmp/a0ZpKAwkWp/main.cpp: In function 'int main()':
/tmp/a0ZpKAwkWp/main.cpp:12:45: error: expected primary-expression before '<<' token
12 | cout<<"The value of eight and a half is: ". <<8.5;
          ^
/tmp/a0ZpKAwkWp/main.cpp:14:10: error: expected ')' at end of input
14 | return 0;
          ^
/tmp/a0ZpKAwkWp/main.cpp:8:1: note: to match this '{'
8 | {
          ^
== Code Exited With Errors ==
```

FIXED RESULTS

The screenshot shows a web-based C++ compiler interface. The URL is www.programiz.com/cpp-programming/online-compiler/. At the top, there's a banner with the text "See how a CS professor is using our compiler for class assignment. Try Programiz PRO for Educators!". Below the banner, the interface has a dark theme with a header bar containing the "Programiz" logo, a file menu, and various icons for saving, running, and sharing. The main area is divided into two sections: "main.cpp" on the left and "Output" on the right. The "main.cpp" section contains the following code:

```
1 #include<iostream>
2
3 using namespace std;
4
5 int main()
6 {
7     cout<<"The value of seven is: "<< 7.0 << endl;
8     cout<<"The value of eight and a half is: "<< 8.5 << endl;
9 }
10
11
12
13 return 0;
14
15 }
```

The "Output" section shows the results of running the program:

```
The value of seven is: 7
The value of eight and a half is: 8.5
== Code Execution Successful ==
```

Example 2: The following program has an output of:

The value of seven is: 7.000000

The value of eight and a half is: 8.500000

Can you find all possible compilation errors and logic errors? Can you fix them to print the same result as the expected output? Before you use your compiler, try to find the errors only by manual code analysis.

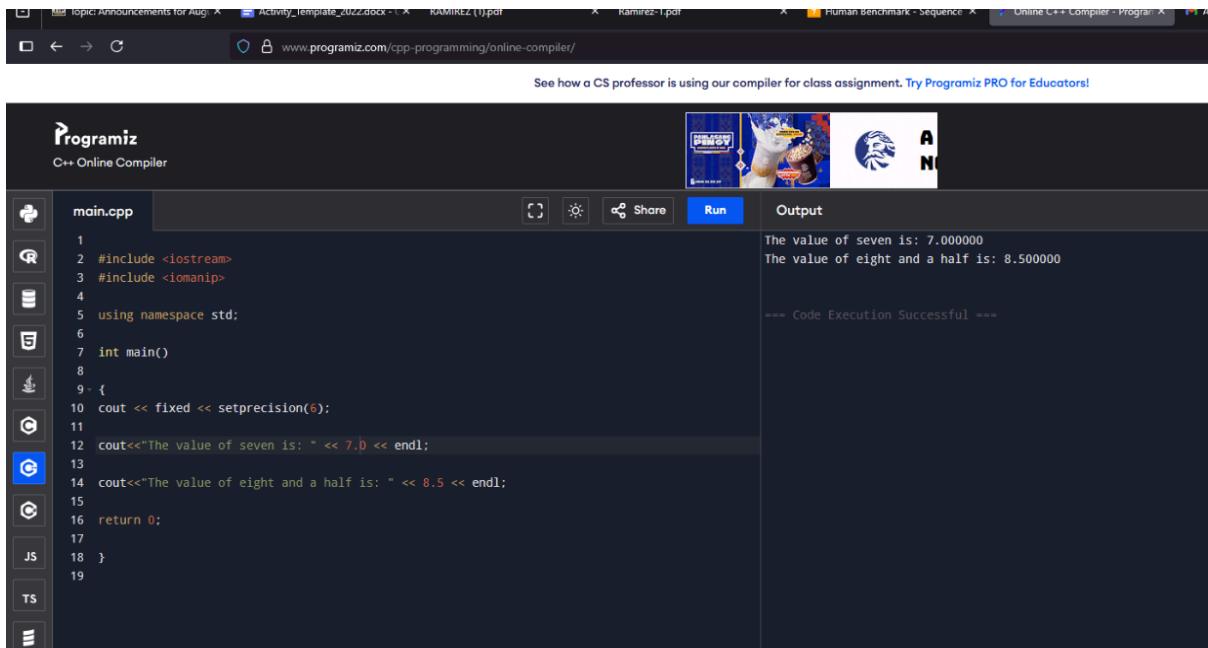
```
#include <iostream>

using namespace std;

int main()

{
    cout<<"The value of seven is: "<< 7.0;
    cout<<"The value of eight and a half is: "<< 8.5;
    return 0;
}
```

ERRORS



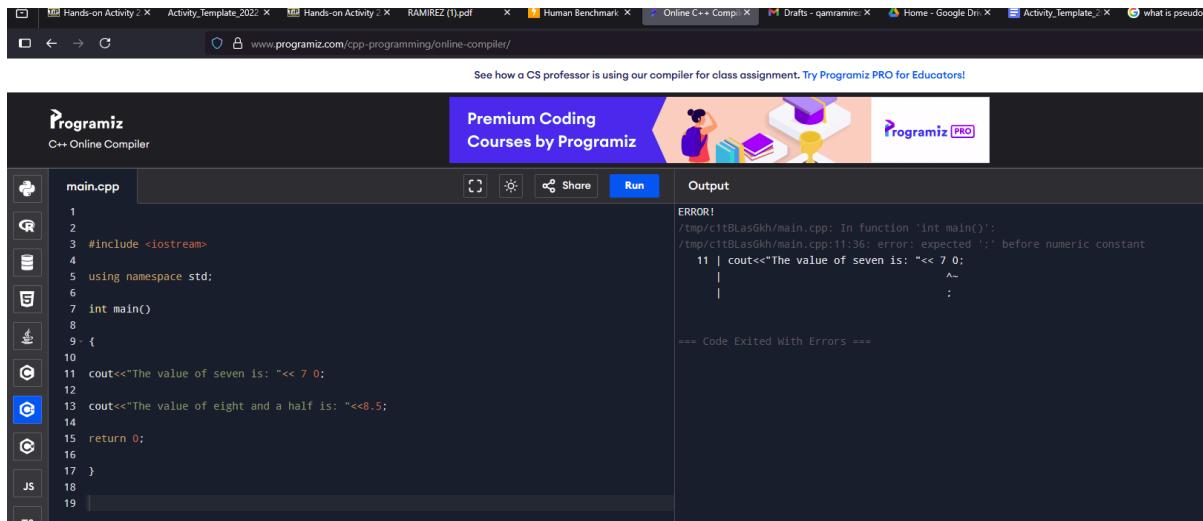
The screenshot shows a browser window with multiple tabs open. The active tab is 'www.programiz.com/cpp-programming/online-compiler/'. The code editor contains the following C++ code:

```
main.cpp
1
2 #include <iostream>
3 #include <iomanip>
4
5 using namespace std;
6
7 int main()
8 {
9     cout << fixed << setprecision(6);
10
11    cout<<"The value of seven is: "<< 7.0 << endl;
12
13    cout<<"The value of eight and a half is: "<< 8.5 << endl;
14
15    return 0;
16
17 }
18
19
```

The output window displays the results of the program's execution:

```
The value of seven is: 7.000000
The value of eight and a half is: 8.500000
==== Code Execution Successful ====
```

FIXED RESULTS



The screenshot shows a browser window with multiple tabs open. The active tab is 'www.programiz.com/cpp-programming/online-compiler/'. The code editor contains the same C++ code as the previous screenshot.

```
main.cpp
1
2 #include <iostream>
3 #include <iomanip>
4
5 using namespace std;
6
7 int main()
8 {
9     cout << fixed << setprecision(6);
10
11    cout<<"The value of seven is: "<< 7.0;
12
13    cout<<"The value of eight and a half is: "<<8.5;
14
15    return 0;
16
17 }
18
19
```

The output window displays the compilation errors:

```
ERROR!
/tmp/c1t8LasGkh/main.cpp: In function 'int main()':
/tmp/c1t8LasGkh/main.cpp:11:36: error: expected ';' before numeric constant
   11 | cout<<"The value of seven is: "<< 7.0;
                  ^
                  ;
==== Code Exited With Errors ====
```

Example 3: The following program has an output of:

The value of half is: 0.500000

The value of Pi is: 3.141593

Can you find all possible compilation errors and logic errors? Can you fix them to print the same result as the expected output? Before you use your compiler, try to find the errors only by manual code analysis.

int main()

```
{
float halfValue = 0.6;

float piValue = 3.141 592 65;

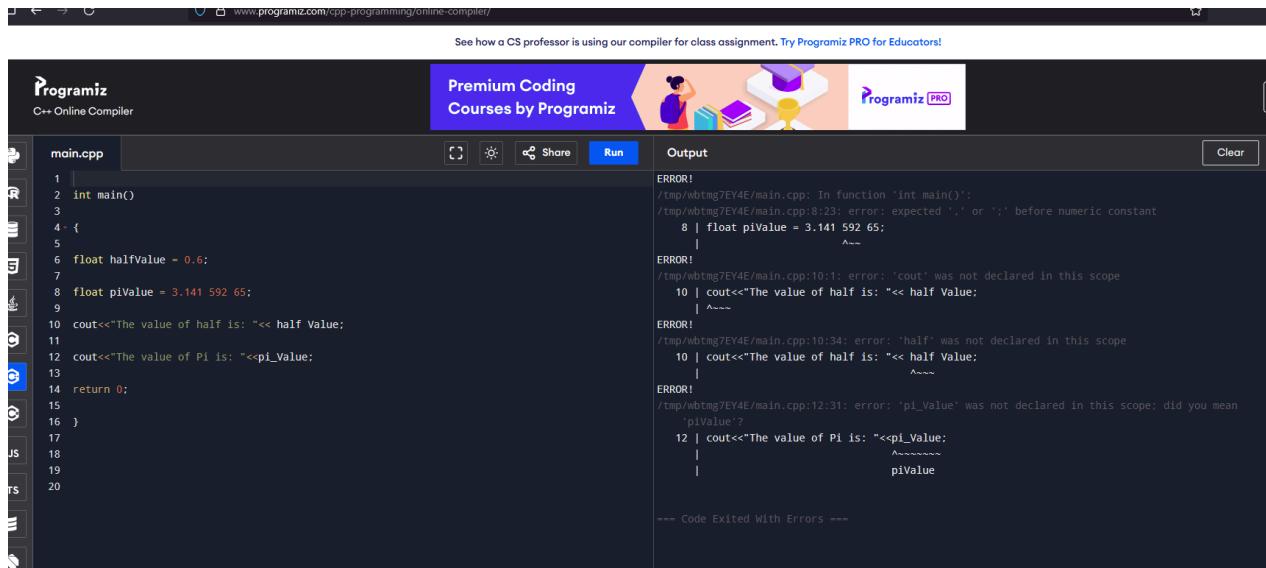
cout<<"The value of half is: "<< half Value;

cout<<"The value of Pi is: "<<pi_Value;

return 0;

}
```

ERRORS:



The screenshot shows the Programiz C++ Online Compiler interface. The code in the editor is identical to the one above. The output window displays multiple errors from the compiler:

```

See how a CS professor is using our compiler for class assignment. Try Programiz PRO for Educators!
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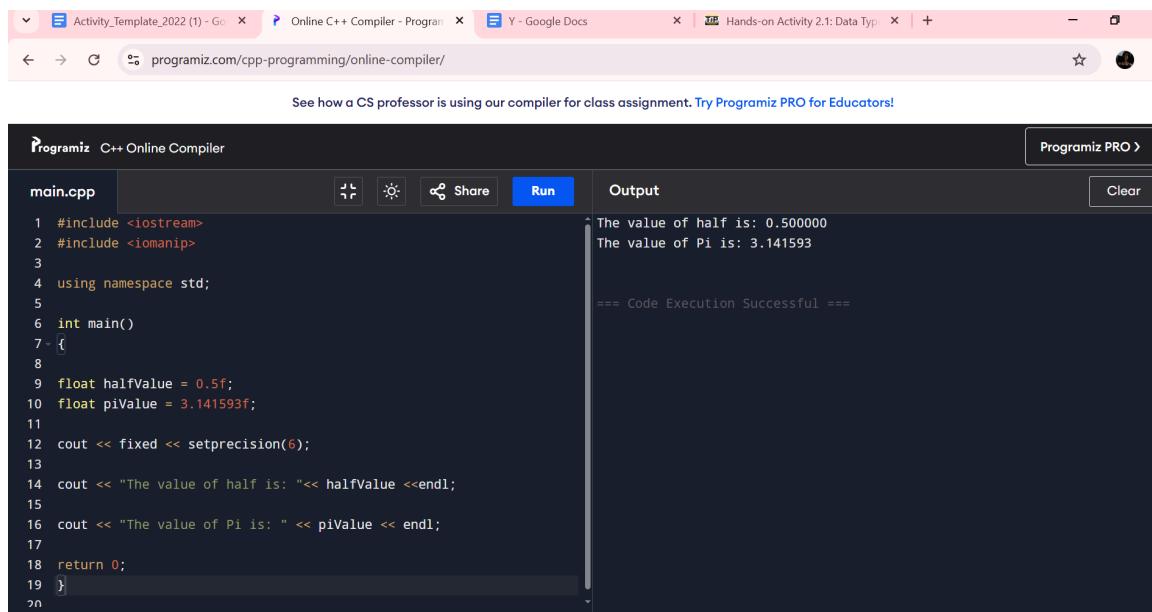
main.cpp
1 int main()
2 {
3
4 {
5
6 float halfValue = 0.6;
7
8 float piValue = 3.141 592 65;
9
10 cout<<"The value of half is: "<< half Value;
11
12 cout<<"The value of Pi is: "<<pi_Value;
13
14 return 0;
15
16 }
17
18
19
20

Output
ERROR!
/tmp/wbtmg7EY4E/main.cpp: In function 'int main()':
/tmp/wbtmg7EY4E/main.cpp:8:23: error: expected ',' or ';' before numeric constant
    8 | float piValue = 3.141 592 65;
                  ^
ERROR!
/tmp/wbtmg7EY4E/main.cpp:10:1: error: 'cout' was not declared in this scope
  10 | cout<<"The value of half is: "<< half Value;
                 ^
ERROR!
/tmp/wbtmg7EY4E/main.cpp:10:34: error: 'half' was not declared in this scope
  10 | cout<<"The value of half is: "<< half Value;
                 ^
ERROR!
/tmp/wbtmg7EY4E/main.cpp:12:31: error: 'pi_Value' was not declared in this scope; did you mean
  12 | cout<<"The value of Pi is: "<<pi_Value;
                 ^
                 |
                 piValue

*** Code Exited With Errors ***

```

FIXED RESULT



The screenshot shows the same compiler interface after the code has been fixed. The code now includes proper variable declarations and output statements:

```

#include <iostream>
#include <iomanip>
using namespace std;
int main()
{
    float halfValue = 0.5f;
    float piValue = 3.141593f;
    cout << fixed << setprecision(6);
    cout << "The value of half is: "<< halfValue << endl;
    cout << "The value of Pi is: " << piValue << endl;
}

```

The output window shows the successful execution of the program:

```

The value of half is: 0.500000
The value of Pi is: 3.141593

*** Code Execution Successful ***

```

Example 4: Sample program for Adding Two Integers

```
#include <iostream>

int main()
{
    int integer1, integer2, sum; /*declaration */

    cout<<"Enter first integer: \n"; /* prompt */

    cin>>integer1;           /* read an integer */

    cout<<"Enter second integer: \n"; /* prompt */

    cin<<integer2;           /* read an integer */

    sum = integer1 + integer2; /* assignment of sum */

    cout<<"Sum is : "<<sum;    /* print sum */

    return 0; /* indicate that program ended successfully */
}
```

ERRORS

The screenshot shows the Programiz C++ Online Compiler interface. The code in the editor is identical to the one above, but it contains several syntax errors. The output window displays the following error messages:

```
ERROR!
/tmp/ACDe8gI7Wp/main.cpp:7:7: error: extended character " is not valid in
an identifier
 7 | cout<<"Enter second integer: \n" ; /* prompt */
   |          ^
/tmp/ACDe8gI7Wp/main.cpp:7:30: error: stray '\' in program
 7 | cout<<"Enter second integer: \n" ; /* prompt */
   |          ^
/tmp/ACDe8gI7Wp/main.cpp:7:31: error: extended character " is not valid
in an identifier
 7 | cout<<"Enter second integer: \n" ; /* prompt */
   |          ^
/tmp/ACDe8gI7Wp/main.cpp:10:7: error: extended character " is not valid
in an identifier
10 | cout<<"Sum is : "<<sum;           /* print sum */
   |          ^
ERROR!
/tmp/ACDe8gI7Wp/main.cpp:10:17: warning: missing terminating " character
10 | cout<<"Sum is : "<<sum;           /* print sum */
   |          ^
```

The browser address bar shows the URL: programiz.com/cpp-programming/online-compiler/. The status bar at the bottom right indicates the date and time: 07/08/2025 4:19 pm.

← → ⌂ programiz.com/cpp-programming/online-compiler/ ⋮

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Programiz C++ Online Compiler Programiz PRO >

main.cpp Clear

```
1 #include <iostream>
2 int main()
3 {
4     int integer1, integer2, sum; /*declaration */
5     cout<<"Enter first integer: \n" ; /* prompt */
6     cin>>integer1 ; /* read an integer */
7     cout<<"Enter second integer: \n" ; /* prompt */
8     cin<<integer2; /* read an integer */
9     sum = integer1 + integer2; /* assignment of sum */
10    cout<<"Sum is : "<<sum; /* print sum */
11
12    return 0; /* indicate that program ended successfully */
13 }
14
15
```

Output

```
/tmp/ACDe8gI7Wp/main.cpp:10:17: error: missing terminating " character
10 | cout<<"Sum is : "<<sum; /* print sum */
|                                     ^
|                                     ~~~~~
ERROR!
/ttmp/ACDe8gI7Wp/main.cpp: In function 'int main()':
/ttmp/ACDe8gI7Wp/main.cpp:5:1: error: 'cout' was not declared in this
scope; did you mean 'std::cout'?
5 | cout<<"Enter first integer: \n" ; /* prompt */
| ^~~
| std::cout
In file included from /tmp/ACDe8gI7Wp/main.cpp:1:
/usr/local/include/c++/14.2.0/iostream:63:18: note: 'std::cout' declared
here
63 |     extern ostream cout;           //=< Linked to standard output
|          ^
|          ~~~
ERROR!
/ttmp/ACDe8gI7Wp/main.cpp:6:1: error: 'cin' was not declared in this scope
; did you mean 'std::cin'?
6 | cin>>integer1 ;             /* read an integer */
| ^
```

← → ⌂ programiz.com/cpp-programming/online-compiler/ ⋮

See how a CS professor is using our compiler for class assignment. Try Programiz PRO for Educators!

Programiz C++ Online Compiler Programiz PRO >

main.cpp Clear

```
1 #include <iostream>
2 int main()
3 {
4     int integer1, integer2, sum; /*declaration */
5     cout<<"Enter first integer: \n" ; /* prompt */
6     cin>>integer1 ; /* read an integer */
7     cout<<"Enter second integer: \n" ; /* prompt */
8     cin<<integer2; /* read an integer */
9     sum = integer1 + integer2; /* assignment of sum */
10    cout<<"Sum is : "<<sum; /* print sum */
11
12    return 0; /* indicate that program ended successfully */
13 }
14
```

Output

```
ERROR!
/ttmp/ACDe8gI7Wp/main.cpp:6:1: error: 'cin' was not declared in this scope
; did you mean 'std::cin'?
6 | cin>>integer1 ;             /* read an integer */
| ^~~
| std::cin
/usr/local/include/c++/14.2.0/iostream:62:18: note: 'std::cin' declared
here
62 |     extern istream cin;           //=< Linked to standard input
|          ^
|          ~~~
ERROR!
/ttmp/ACDe8gI7Wp/main.cpp:7:7: error: '\U00000201cEnter' was not declared
in this scope
7 | cout<<"Enter second integer: \n" ; /* prompt */
|           ^
|           ~~~~~
ERROR!
/ttmp/ACDe8gI7Wp/main.cpp:10:7: error: '\U00000201cSum' was not declared in
this scope
10 | cout<<"Sum is : "<<sum; /* print sum */
|           ^
```

FIXED RESULTS

Activity_Template_2022 (1) - Go X Online C++ Compiler - Program Y - Google Docs X Hands-on Activity 2.1: Data Typ X + programiz.com/cpp-programming/online-compiler/ See how a CS professor is using our compiler for class assignment. Try Programiz PRO for Educators! Programiz C++ Online Compiler Programiz PRO > main.cpp Run Output Enter first integer: | Clear

```
3
4 int main()
5 {
6     int integer1, integer2, sum; // declaration
7
8     cout << "Enter first integer: \n"; // prompt
9     cin >> integer1; // read an integer
10
11    cout << "Enter second integer: \n"; // prompt
12    cin >> integer2; // read an integer
13
14    sum = integer1 + integer2; // assignment of sum
15
16    cout << "Sum is: " << sum; // print sum
17
18    return 0; // indicate that program ended successfully
19 }
20
21
22
```

Type here to search 4:45 pm 07/08/2025

7. Supplementary Activity

1. Take a look at the code below: it assigns two integer values, manipulates them and finally outputs the result and bigresult variables. The problem is that the manipulations have been described using natural language, so the code is completely useless now. Act as an intelligent (naturally!) compiler and translate the formula into a real "C" code notation. Test your code using the data provided.

```
#include <iostream>
using namespace std;
int main(void)
{
    int xValue=5;
    int yValue=9;
    int result;
    int bigResult;
    /*
    increment xValue by 3
    decrement yValue by xValue
    multiply xValue times yValue giving result
    increment result by result
    decrement result by 1
    assign result modulo result to yValue
    increment result by result added to xValue
    assign result times result times result to bigResult increment result by xValue times yValue
    */
    cout<<"result: "<<result;
    cout<<"big result: "<< bigResult;
    return 0
}
```

Programiz C++ Online Compiler

main.cpp	Run	Output
<pre>1 #include<iostream> 2 3 int main(void) 4 5 { 6 7 int xValue= 5; 8 int yValue=9; 9 int result; 10 int bigResult; 11 12 xValue += 3; 13 yValue -= xValue; 14 result = xValue * yValue; 15 result += result; 16 result -= 1; 17 yValue = result % result; 18 result += result + xValue; 19 bigResult = result * result * result; 20 result += xValue * yValue; 21 22 std::cout<<"result: "<<result << std::endl; 23 24 std::cout<<"big result: "<< bigResult; 25 26 return 0; 27 28 }</pre>	  	result: 38 big result: 54872 *** Code Execution Successful ***

2. Complete the program below. Compute the accrued amount of money with a starting value of 100 and an annual interest rate of 1.5%. Compute and print the results for first three years. Your version of the program must print the same result as the expected output for every year. Compute each annual value on the basis of the previous year's value.

```
#include <iostream>
using namespace std;
int main()
{
float startValue = 100;
float interestRate = 0.015;
float firstYearValue;
float secondYearValue;
float thirdYearValue;
/* Your code */
```

Programiz C++ Online Compiler

main.cpp				Run	Output
<pre>1 #include<iostream> 2 3 int main() 4 5 { 6 float startValue = 100; 7 8 float interestRate = 0.015; 9 10 float firstYearValue; 11 12 float secondYearValue; 13 14 float thirdYearValue; 15 16 firstYearValue = startValue * (1 + interestRate); 17 secondYearValue = firstYearValue * (1 + interestRate); 18 thirdYearValue = secondYearValue * (1 + interestRate); 19 20 std::cout<<"After first year: "<<firstYearValue << std::endl; 21 std::cout<<"After second year: "<<secondYearValue << std::endl; 22 std::cout<<"After third year: "<<thirdYearValue << std::endl; 23 24 25 return 0; 26 27 }</pre>				Run	Output
					After first year: 101.5 After second year: 103.022 After third year: 104.568 --- Code Execution Successful ---

8. Conclusion

Through correcting this C++ programming errors, I have learned the importance of understanding both syntax and logic when writing and debugging code. I realize that small mistakes like using square brackets instead of curly braces, missing semicolons, or misusing input/output operators (>> and <<), can cause compilation errors that stop the program from running entirely. I also discovered how logic errors like assigning incorrect values or using the wrong variable names can produce incorrect results even if the code compiles. And also I learned that proper formatting is crucial when displaying output, especially when working with floating-point numbers. Using functions like fixed and setprecissions from the <iomanip> library ensures output matches expected precision. I also understood the importance of using standard double quotes (" ") instead of smart quotes (" ") which is not recognized by C++ compilers. Overall, this exercise improved my attention to detail and deepened my understanding of how to write clean, correct, and readable C++ code.

9. Assessment Rubric

Rubric for SO 7 (6)							Pts
Criteria	Ratings						
⌚ SO 7 PI 1 ILO4 Utilize lifelong learning skills in pursuit of personal development and excellence in professional practice. threshold: 4.8 pts	6 pts Excellent Educational interests and pursuits exist and flourish outside classroom requirements, knowledge and/or experiences are pursued independently and applies knowledge learned into practice	5 pts Good Educational interests and pursuits exist and flourish outside classroom requirements, knowledge and/or experiences are pursued independently	4 pts Satisfactory Look beyond classroom requirements, showing interest in pursuing knowledge independently	3 pts Unsatisfactory Begins to look beyond classroom requirements, showing interest in pursuing knowledge independently	2 pts Poor Relies on classroom instruction only	1 pts Very Poor No initiative or interest in acquiring new knowledge	6 pts
⌚ SO 7 PI 2 ILO4 Utilize lifelong learning skills in pursuit of personal development and excellence in professional practice. threshold: 4.8 pts	6 pts Excellent Completes an assigned task independently and practices continuous improvement	5 pts Good Completes an assigned task without supervision or guidance	4 pts Satisfactory Requires minimal guidance to complete an assigned task	3 pts Unsatisfactory Requires detailed or step-by-step instructions to complete a task	2 pts Poor Shows little interest to complete a task independently	1 pts Very Poor No interest to complete a task independently	6 pts
⌚ SO 7 PI 3 ILO4 Utilize lifelong learning skills in pursuit of personal development and excellence in professional practice. threshold: 4.8 pts	6 pts Excellent Synthesizes and integrates information from a variety of sources; formulates a clear and precise perspective; draws appropriate conclusions	5 pts Good Evaluate information from a variety of sources; formulates a clear and precise perspective.	4 pts Satisfactory Analyze information from a variety of sources; formulates a clear and precise perspective.	3 pts Unsatisfactory Apply the gathered information to formulate the problem	2 pts Poor Gather and summarized the information from a variety of sources but failed to formulate the problem	1 pts Very Poor Gather information from a variety of sources	6 pts
⌚ SO 7 PI 4 ILO4 Utilize lifelong learning skills in pursuit of personal development and excellence in professional practice. threshold: 4.8 pts	6 pts Excellent Ideas are combined in original and creative ways in line with the new and emerging technology trends to solve a problem or address an issue.	5 pts Good Ideas are creative and adapt the new knowledge to solve a problem or address an issue	4 pts Satisfactory Ideas are creative in solving a problem, or address an issue	3 pts Unsatisfactory Shows some creative ways to solve the problem	2 pts Poor Shows initiative and attempt to develop creative ideas to solve the problem	1 pts Very Poor Ideas are copied or restated from the sources consulted	6 pts

Total Points: 24