

Online Test 1 (4%)	OOP 2200 - 01
Student name	
Student ID	

Answer all of the following questions.

Q1. Write, compile, and run a **C++ program** that:

- Displays the following prompts:
 - Enter the length of the room:
 - Enter the width of the room:
- After each prompt is displayed, your program should use a **cin** object call to accept data from the keyboard for the displayed prompt.
- After the room's width is entered, your program should calculate and display the area of the room.
- The area displayed should be calculated by using the formula **area = length × width** and should be included in an appropriate message.

Q2. A student's letter grade is calculated according to the following schedule:

Numerical Grade	Letter Grade
Greater than or equal to 90	A
Less than 90 but greater than or equal to 80	B
Less than 80 but greater than or equal to 70	C
Less than 70 but greater than or equal to 60	D
Less than 60	F

- Using the above information, write, compile, and run a **C++ program** that accepts a student's numerical grade, converts the numerical grade to an equivalent letter grade, and displays the letter grade.

Q3. Write, compile, and run a **C++ program** that calculates and displays the square root value of a user-entered real number. Verify your program by calculating the square roots of this test data: 25, 16, 0, and 2. After finishing your verification, use your program to determine the square roots of 32.25, 42, 48, 55, 63, and 79.

Q4. Using a do-while statement, write, compile, and run a **C++ program** to accept a grade. The program should **request a grade continuously** as long as an invalid grade is entered. An invalid grade is any grade less than **0** or greater than **100**. After a valid grade has been entered, your program should display the value of the grade entered.

Submission Details

1. The name of this document should be "**YourName_Online_Test1.docx**".
2. Include a screenshot of the written programs (code) and the result after running programs.
3. Make sure your **code** and **comments** are readable.
4. Copied work will be graded to zero and reported as an academic integrity offence.

Question 1

```
1 // Test Question 1
2
3 #include <iostream>
4 using namespace std;
5
6 int main()
7 {
8     int length, area, width;
9     cout << "Enter length of room ";
10    cin >> length;
11    cout << "Enter Width of room ";
12    cin >> width;
13
14    //Calculate Area
15    area = length * width;
16    cout << "Area of room is:" << area;
17
18 }
19
20
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
> cd "C:\Users\Luv\AppData\Local\Temp\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFile }
tempCodeRunnerFile.cpp:2:1: error: expected declaration before '}' token
 2 | }
  | ^
PS C:\Users\Luv\AppData\Local\Temp> cd "C:\Users\Luv\AppData\Local\Temp\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRun
nerFile }
Enter length of roomcd "C:\Users\Luv\AppData\Local\Temp\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFile }
Enter Width of roomArea of room is:0
PS C:\Users\Luv\AppData\Local\Temp> cd "C:\Users\Luv\AppData\Local\Temp\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRun
nerFile }
Enter length of room 5
Enter Width of room 5
Area of room is:25
PS C:\Users\Luv\AppData\Local\Temp>
```

Question 2

```
1 // Test Question 2
2 #include <iostream>
3 using namespace std;
4
5 int main()
6 {
7     int grades;
8     cout << "Enter a your class Grade ";
9     cin >> grades;
10    if (grades >= 90){
11        cout << "You got an A";
12    }else if (grades >= 80 && grades < 90){
13        cout << "You got a B";
14    }else if (grades >= 70 && grades < 80){
15        cout << "You got a C";
16    }else if (grades >= 60 && grades < 70){
17        cout << "You got a D";
18    }else{
19        cout << "You got a F";
20    }
21 }
22 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Enter length of room 5
Enter Width of room 5
Area of room is:25
PS C:\Users\Luv\AppData\Local\Temp> cd "C:\Users\Luv\AppData\Local\Temp\" ; if (\$?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if (\$?) { .\tempCodeRunnerFile }
tempCodeRunnerFile.cpp: In function 'int main()':
tempCodeRunnerFile.cpp:12:31: error: 'grade' was not declared in this scope; did you mean 'grades'?
12 | }else if (grades >= 80 && grade < 90){
 | ^~~~~~
 | grades
PS C:\Users\Luv\AppData\Local\Temp> cd "C:\Users\Luv\AppData\Local\Temp\" ; if (\$?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if (\$?) { .\tempCodeRunnerFile }
Enter a your class Grade55
You got a F
PS C:\Users\Luv\AppData\Local\Temp> cd "C:\Users\Luv\AppData\Local\Temp\" ; if (\$?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if (\$?) { .\tempCodeRunnerFile }
Enter a your class Grade 85
You got a B
PS C:\Users\Luv\AppData\Local\Temp>

Question 3

```
1 // Test question 3
2 #include <iostream>
3 #include <cmath>
4 using namespace std;
5
6 int main()
7 {
8     int result, userValue;
9     cout << "Enter number to find square root of: ";
10    cin >> userValue;
11
12    //math
13    if (userValue < 0) {
14        cout << "Enter a postive number to find square root of: ";
15        cin >> userValue;
16    }else {
17        float result = sqrt(userValue);
18        cout << "The Square Root is " << result;
19    }
20
21 }
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

18 |         cout << "The Square Root is" << result
nerFile }
Enter number to find square root of: 69
nerFile }
Enter number to find square root of: -1
nerFile }
Enter number to find square root of: cd "C:\Users\Luv\AppData\Local\Temp\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?
PS C:\Users\Luv\AppData\Local\Temp> cd "C:\Users\Luv\AppData\Local\Temp\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?
nerFile }
PS C:\Users\Luv\AppData\Local\Temp> cd "C:\Users\Luv\AppData\Local\Temp\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?
nerFile }
PS C:\Users\Luv\AppData\Local\Temp> cd "C:\Users\Luv\AppData\Local\Temp\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?
nerFile }
Enter number to find square root of: 42
The Square Root is 6.48074
PS C:\Users\Luv\AppData\Local\Temp> cd "C:\Users\Luv\AppData\Local\Temp\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?
nerFile }
Enter number to find square root of: 48
The Square Root is 6.9282
PS C:\Users\Luv\AppData\Local\Temp> cd "C:\Users\Luv\AppData\Local\Temp\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?
nerFile }
Enter number to find square root of: 55
The Square Root is 7.4162
PS C:\Users\Luv\AppData\Local\Temp> cd "C:\Users\Luv\AppData\Local\Temp\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?
nerFile }
Enter number to find square root of: 63
The Square Root is 7.93725
PS C:\Users\Luv\AppData\Local\Temp> cd "C:\Users\Luv\AppData\Local\Temp\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?
nerFile }
Enter number to find square root of: 79
The Square Root is 8.88819
PS C:\Users\Luv\AppData\Local\Temp> 
```

Question 4

```
1 // Test Question 4
2
3 #include <iostream>
4 using namespace std;
5
6 int main()
7 {
8     int grades;
9     cout << "Enter a your class Grade ";
10    cin >> grades;
11    while (grades <100 && grades >= 0){
12        if (grades >= 90){
13            cout << "You got an A" <<endl;
14        }else if (grades >= 80 && grades < 90){
15            cout << "You got a B" <<endl;
16        }else if (grades >= 70 && grades < 80){
17            cout << "You got a C" <<endl;
18        }else if (grades >= 60 && grades < 70){
19            cout << "You got a D" <<endl;
20        }else{
21            cout << "You got a F" <<endl;
22        }
23        cout << "Enter a your class Grade ";
24        cin >> grades;
25    }
26
27 }
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Enter a your class Grade 88
You got a B
Enter a your class Grade 45
You got a F
Enter a your class Grade 66
You got a D
Enter a your class Grade 99
You got an A
Enter a your class Grade 77
You got a C
Enter a your class Grade 654654645
PS C:\Users\Luv\AppData\Local\Temp> 
```