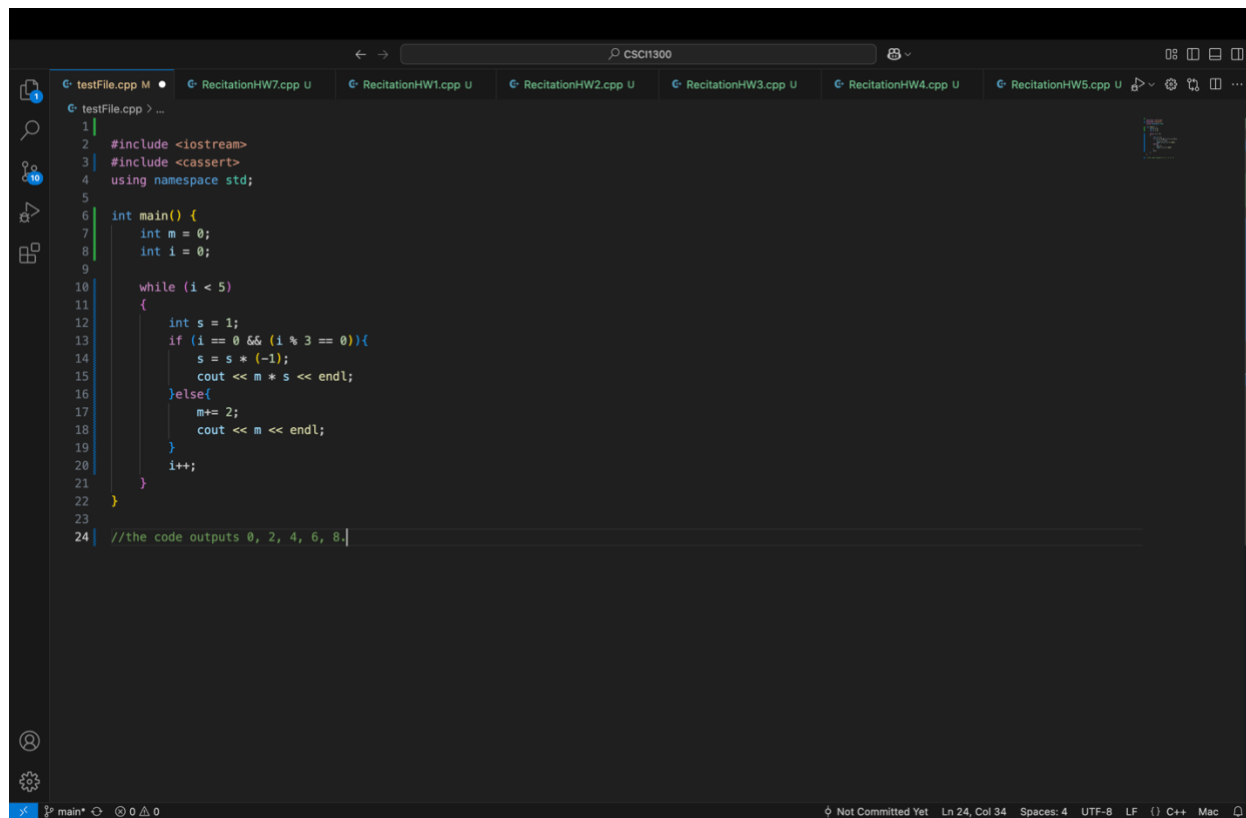


## Recitation Problem 7

```
HW5 > RecitationHW7.cpp > ...
1  /*
2  7.a: pseudocode
3  Start
4  Declare an double variable 'radius'.
5  Declare an double variable 'height'.
6
7  function 'cylinder volume'
8  pass in: radius
9  pass in: height
10 pass out: pi * radius * radius * height
11 Endfunction
12
13 function 'sphere volume'
14 pass in: radius
15 pass out: (4/3) * pi * radius * radius * radius
16 end
17
18 7.b: inputs
19 r = 1, h = 2, output = 2pi
20 r = 2, h = 1, output = 4pi
21
22 r = 2, output = 8pi
23 r = 4, output = 64pi
24 */
25 // 7.c: asserts, 7.d: code
26 #include <iostream>
27 #include <cmath>
28 #include <cassert>
29
30 double calculateCylindricalVolume(double radius, double height) {
31     return M_PI * radius * radius * height;
32 }
33
34 double calculateSphericalVolume(double radius) {
35     return (4/3) * M_PI * radius * radius * radius;
36 }
37
38 int main(){
39     // 7.c: asserts, 7.d: code
40     assert(calculateCylindricalVolume(1,2) == 2*M_PI);
41     assert(calculateCylindricalVolume(2,1) == 4*M_PI);
42     assert(calculateSphericalVolume(2) == 8*M_PI);
43     assert(calculateSphericalVolume(4) == 64*M_PI);
44 }
45
```

```
HW5 > RecitationHW7.cpp > ...
1  /*
2  7.a: pseudocode
3  Start
4  Declare an double variable 'radius'.
5  Declare an double variable 'height'.
6
7  function 'cylinder volume'
8  pass in: radius
9  pass in: height
10 pass out: pi * radius * radius * height
11 Endfunction
12
13 function 'sphere volume'
14 pass in: radius
15 pass out: (4/3) * pi * radius * radius * radius
16 end
17
18 7.b: inputs
19 r = 1, h = 2, output = 2pi
20 r = 2, h = 1, output = 4pi
21
22 r = 2, output = 8pi
23 r = 4, output = 64pi
24 */
25 // 7.c: asserts, 7.d: code
26 #include <iostream>
27 #include <cmath>
28 #include <cassert>
29
30 double calculateCylindricalVolume(double radius, double height) {
31     return M_PI * radius * radius * height;
32 }
33
34 double calculateSphericalVolume(double radius) {
35     return (4/3) * M_PI * radius * radius * radius;
36 }
37
38 int main(){
39     assert(calculateCylindricalVolume(1,2) == 2*M_PI);
40     assert(calculateCylindricalVolume(2,1) == 4*M_PI);
41     assert(calculateSphericalVolume(2) == 8*M_PI);
42     assert(calculateSphericalVolume(4) == 64*M_PI);
43 }
44
45
```

## Recitation Problem 6



```
1
2 #include <iostream>
3 #include <cassert>
4 using namespace std;
5
6 int main() {
7     int m = 0;
8     int i = 0;
9
10    while (i < 5)
11    {
12        int s = 1;
13        if (i == 0 && (i % 3 == 0)){
14            s = s * (-1);
15            cout << m * s << endl;
16        }else{
17            m+= 2;
18            cout << m << endl;
19        }
20        i++;
21    }
22 }
23
24 //the code outputs 0, 2, 4, 6, 8.
```

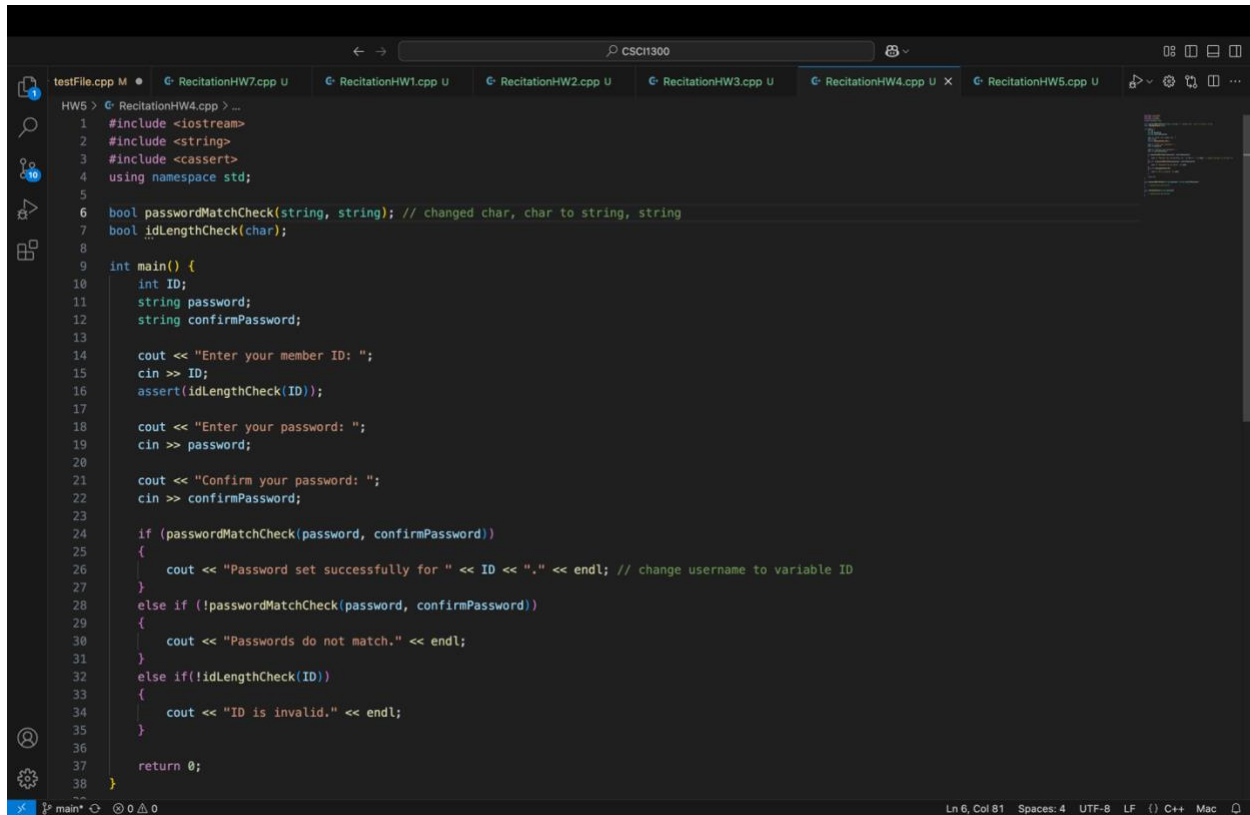
The screenshot shows a C++ IDE with a dark theme. The main editor window displays a C++ program. The program includes `<iostream>` and `<cassert>`, and uses the `std` namespace. The `main` function initializes `m = 0` and `i = 0`. It enters a `while (i < 5)` loop. Inside the loop, it declares `s = 1`. An `if` statement checks if `i == 0` and `(i % 3 == 0)`. If true, it multiplies `s` by `-1` and prints `m * s`. Otherwise, it increments `m` by 2 and prints `m`. In both cases, it increments `i` by 1. The program ends with a comment indicating the output: `//the code outputs 0, 2, 4, 6, 8.`

## Recitation Problem 5

```
HW5 > RecitationHW5.cpp > main()
1 #include <iostream>
2 #include <string>
3 #include <cassert>
4 using namespace std;
5
6 double getPrice(double area, string color){
7     assert(area>0); double cost = 0.0;
8     if (color == "green"){
9         cost = 4;
10    }
11    else if (color == "red"){
12        cost = 3;
13    }
14    else if (color == "orange"){
15        cost = 2;
16    }
17    else if (color == "blue"){
18        cost = 1;
19    }
20    return area * cost;
21 }
22
23 int main()
24 {
25     string color, shape;
26     int area_choice;
27     double radius;
28     double area = 0;
29
30     cout << "Enter the area of the frame: (1) 5x5 (2) 4x6 (3) 8x10" << endl;
31     cin >> area_choice;
32
33     assert(area_choice == 1 || area_choice == 2 || area_choice == 3);
34     if(area_choice == 1){
35         area = 5*5;
36     }
37     else if (area_choice == 2){
38         area = 4*6;
39     }
40 }
```

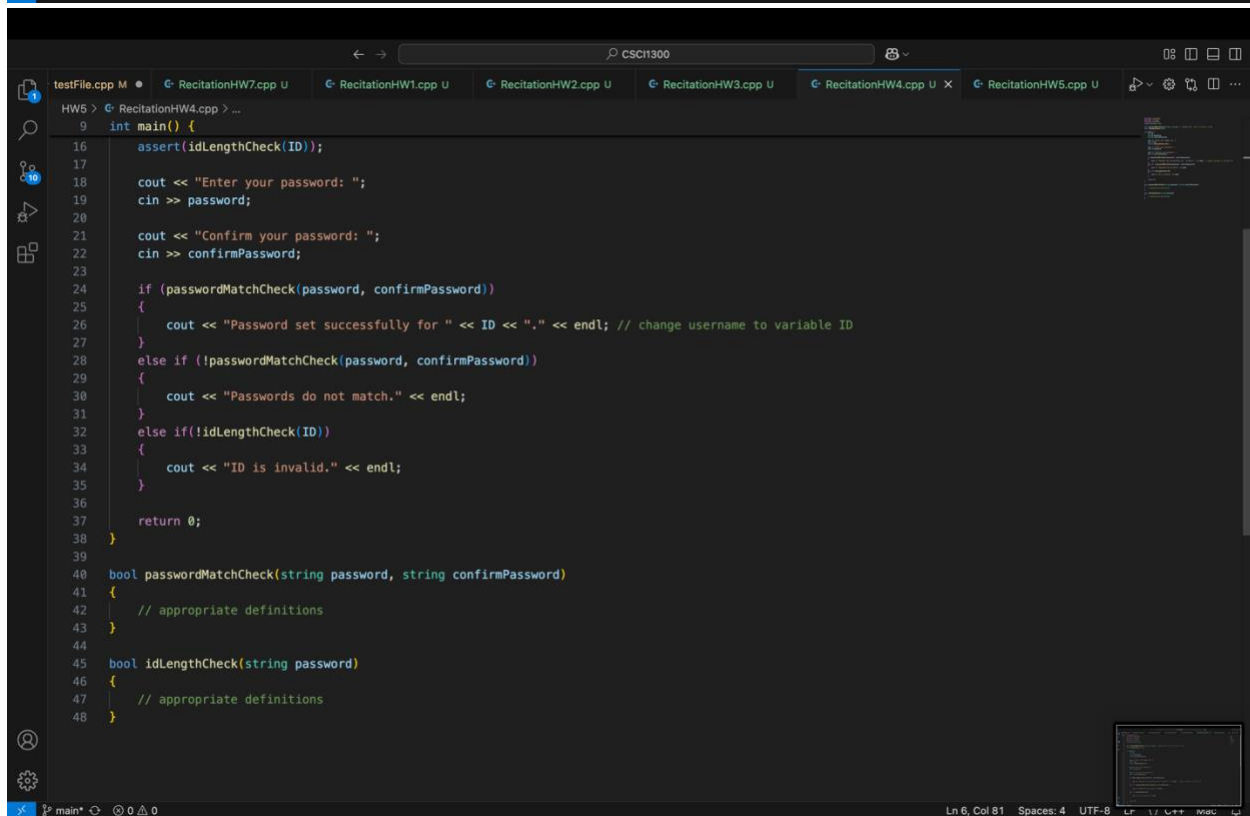
```
HW5 > RecitationHW5.cpp > main()
22
23 int main()
24 {
25     string color, shape;
26     int area_choice;
27     double radius;
28     double area = 0;
29
30     cout << "Enter the area of the frame: (1) 5x5 (2) 4x6 (3) 8x10" << endl;
31     cin >> area_choice;
32
33     assert(area_choice == 1 || area_choice == 2 || area_choice == 3);
34     if(area_choice == 1){
35         area = 5*5;
36     }
37     else if (area_choice == 2){
38         area = 4*6;
39     }
40     else if (area_choice == 3){
41         area = 8*10;
42     }
43
44     cout << "Enter the color of the frame: (green, red, orange, blue): ";
45     cin >> color;
46     assert(color == "green" || color == "red" || color == "orange" || color == "blue");
47
48     double price = getPrice(area, color);
49
50     cout << "You will receive a " << color << " color frame with a price of $" << price << ". ";
51     cout << "Thank you for your business." << endl;
52
53     return 0;
54 }
```

## Recitation Problem 4



```
testFile.cpp M • RecitationHW7.cpp U RecitationHW1.cpp U RecitationHW2.cpp U RecitationHW3.cpp U RecitationHW4.cpp U X RecitationHW5.cpp U
HW5 > RecitationHW4.cpp > ...
1 #include <iostream>
2 #include <string>
3 #include <cassert>
4 using namespace std;
5
6 bool passwordMatchCheck(string, string); // changed char, char to string, string
7 bool idLengthCheck(char);
8
9 int main() {
10     int ID;
11     string password;
12     string confirmPassword;
13
14     cout << "Enter your member ID: ";
15     cin >> ID;
16     assert(idLengthCheck(ID));
17
18     cout << "Enter your password: ";
19     cin >> password;
20
21     cout << "Confirm your password: ";
22     cin >> confirmPassword;
23
24     if (passwordMatchCheck(password, confirmPassword))
25     {
26         cout << "Password set successfully for " << ID << "." << endl; // change username to variable ID
27     }
28     else if (!passwordMatchCheck(password, confirmPassword))
29     {
30         cout << "Passwords do not match." << endl;
31     }
32     else if (!idLengthCheck(ID))
33     {
34         cout << "ID is invalid." << endl;
35     }
36
37     return 0;
38 }
```

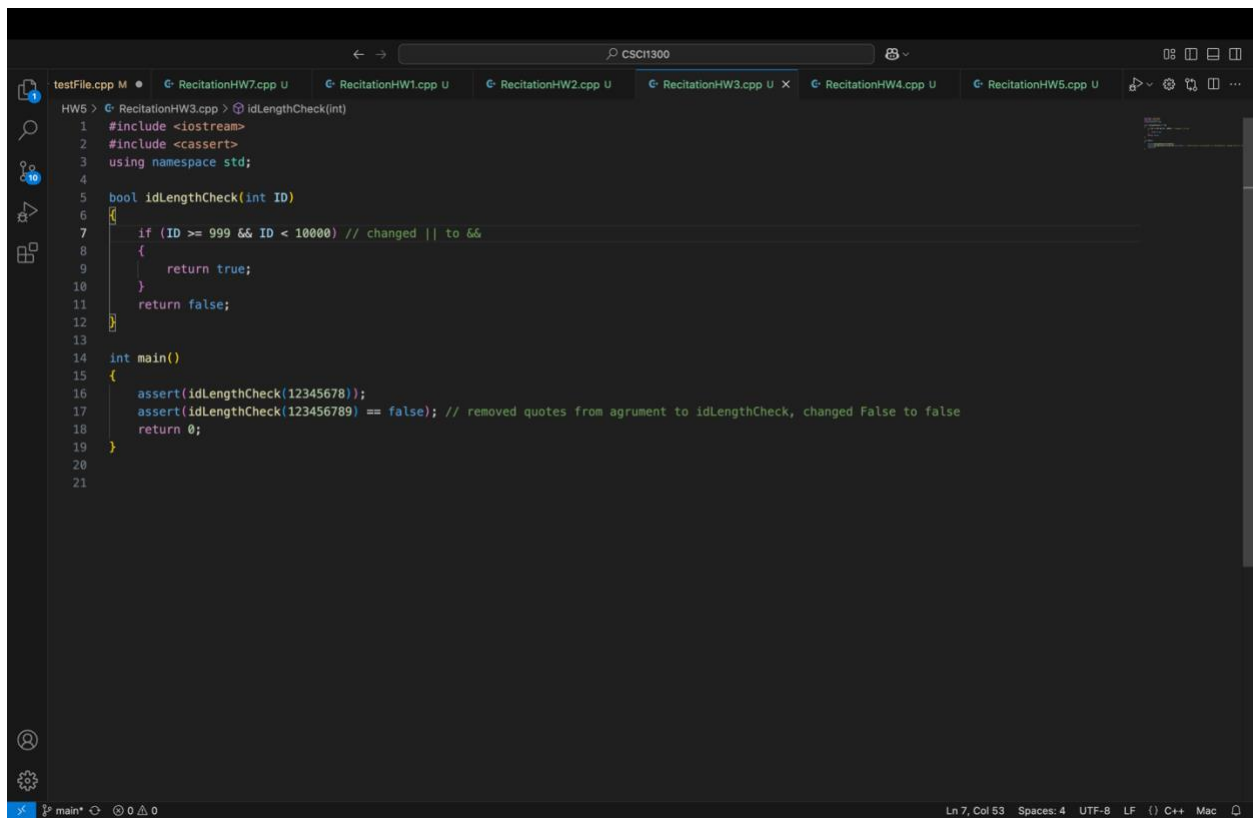
Ln 6, Col 81 Spaces: 4 UTF-8 LF C++ Mac



```
testFile.cpp M • RecitationHW7.cpp U RecitationHW1.cpp U RecitationHW2.cpp U RecitationHW3.cpp U RecitationHW4.cpp U X RecitationHW5.cpp U
HW5 > RecitationHW4.cpp > ...
9 int main() {
16     assert(idLengthCheck(ID));
17
18     cout << "Enter your password: ";
19     cin >> password;
20
21     cout << "Confirm your password: ";
22     cin >> confirmPassword;
23
24     if (passwordMatchCheck(password, confirmPassword))
25     {
26         cout << "Password set successfully for " << ID << "." << endl; // change username to variable ID
27     }
28     else if (!passwordMatchCheck(password, confirmPassword))
29     {
30         cout << "Passwords do not match." << endl;
31     }
32     else if (!idLengthCheck(ID))
33     {
34         cout << "ID is invalid." << endl;
35     }
36
37     return 0;
38 }
39
40 bool passwordMatchCheck(string password, string confirmPassword)
41 {
42     // appropriate definitions
43 }
44
45 bool idLengthCheck(string password)
46 {
47     // appropriate definitions
48 }
```

Ln 6, Col 81 Spaces: 4 UTF-8 LF C++ Mac

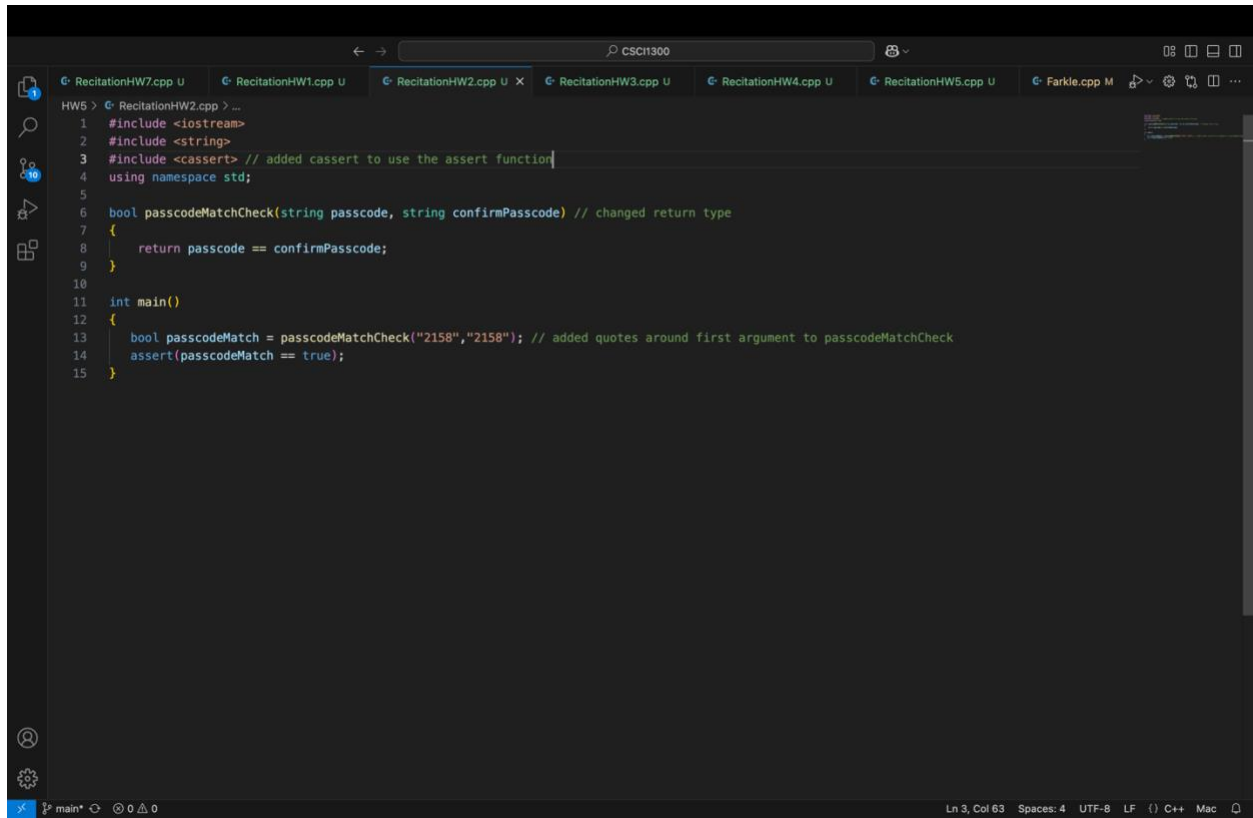
## Recitation Problem 3



```
testFile.cpp M • RecitationHW7.cpp U RecitationHW1.cpp U RecitationHW2.cpp U RecitationHW3.cpp U x RecitationHW4.cpp U RecitationHW5.cpp U
HW5 > RecitationHW3.cpp > idLengthCheck(int)
1 #include <iostream>
2 #include <cassert>
3 using namespace std;
4
5 bool idLengthCheck(int ID)
6 {
7     if (ID >= 999 && ID < 10000) // changed || to &&
8     {
9         return true;
10    }
11    return false;
12 }
13
14 int main()
15 {
16     assert(idLengthCheck(12345678));
17     assert(idLengthCheck(123456789) == false); // removed quotes from agrument to idLengthCheck, changed False to false
18     return 0;
19 }
20
21
```

Ln 7, Col 53 Spaces: 4 UTF-8 LF C++ Mac

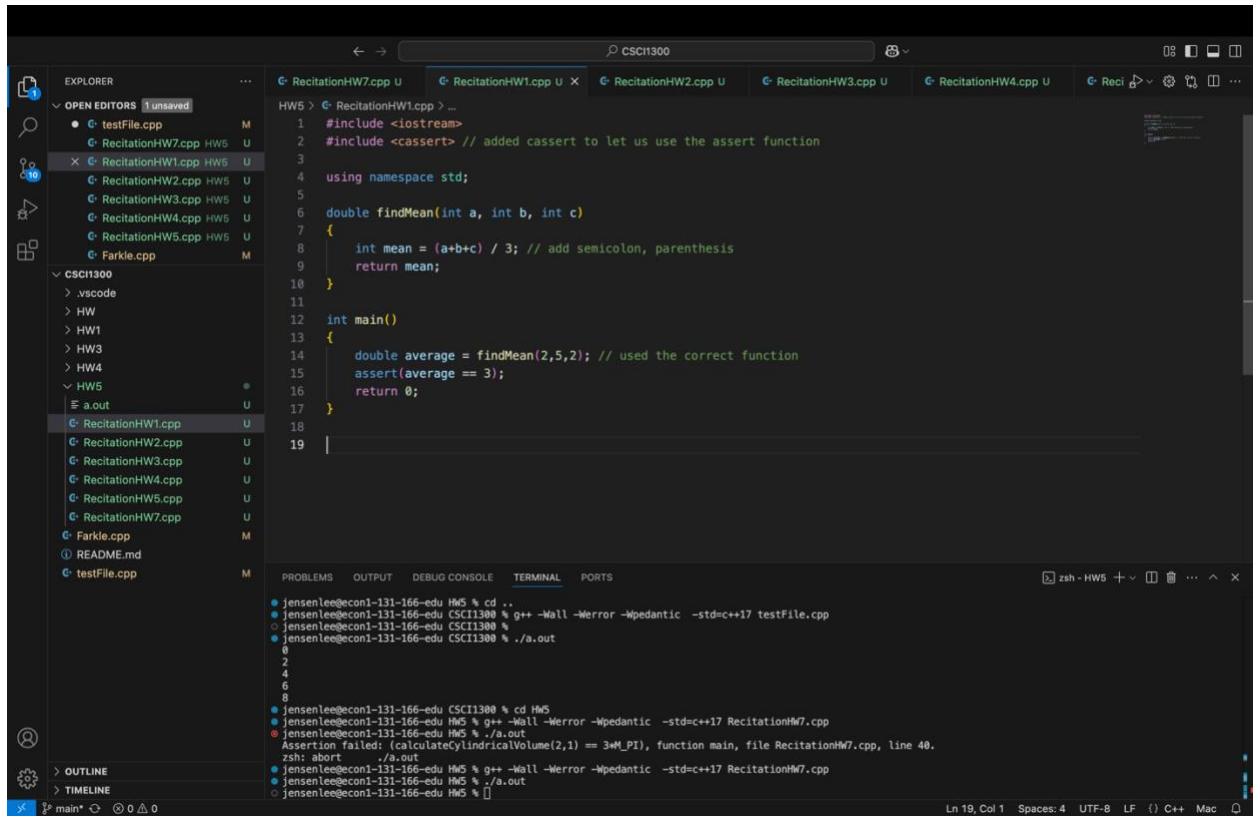
## Recitation Problem 2



```
HW5 > RecitationHW2.cpp > ...
1  #include <iostream>
2  #include <string>
3  #include <cassert> // added cassert to use the assert function
4  using namespace std;
5
6  bool passcodeMatchCheck(string passcode, string confirmPasscode) // changed return type
7  {
8      return passcode == confirmPasscode;
9  }
10
11 int main()
12 {
13     bool passcodeMatch = passcodeMatchCheck("2158", "2158"); // added quotes around first argument to passcodeMatchCheck
14     assert(passcodeMatch == true);
15 }
```

Ln 3, Col 63 Spaces: 4 UTF-8 LF ( ) C++ Mac

## Recitation Problem 1



The screenshot shows a Visual Studio Code editor window with a C++ file named `RecitationHW1.cpp` open. The file contains a function `findMean` and a `main` function. The `main` function calls `findMean(2,5,2)` and asserts that the result is 3. The terminal shows the output of the program, which is `2`, `4`, `6`, and `8`. The status bar at the bottom indicates the current line is 19, column 1, with 4 spaces, in UTF-8 encoding, on a Mac.

```
1 #include <iostream>
2 #include <cassert> // added cassert to let us use the assert function
3
4 using namespace std;
5
6 double findMean(int a, int b, int c)
7 {
8     int mean = (a+b+c) / 3; // add semicolon, parenthesis
9     return mean;
10 }
11
12 int main()
13 {
14     double average = findMean(2,5,2); // used the correct function
15     assert(average == 3);
16     return 0;
17 }
18
19
```

Terminal Output:

```
jensenlee@econ1-131-166-edu HW5 % cd ..
jensenlee@econ1-131-166-edu CSC11300 % g++ -Wall -Werror -Wpedantic -std=c++17 testFile.cpp
jensenlee@econ1-131-166-edu CSC11300 % ./a.out
2
4
6
8
jensenlee@econ1-131-166-edu CSC11300 % cd HW5
jensenlee@econ1-131-166-edu HW5 % g++ -Wall -Werror -Wpedantic -std=c++17 RecitationHW7.cpp
jensenlee@econ1-131-166-edu HW5 % ./a.out
Assertion failed: (calculateCylindricalVolume(2,1) == 3*M_PI), function main, file RecitationHW7.cpp, line 40.
zsh: abort ./a.out
jensenlee@econ1-131-166-edu HW5 % g++ -Wall -Werror -Wpedantic -std=c++17 RecitationHW7.cpp
jensenlee@econ1-131-166-edu HW5 % ./a.out
jensenlee@econ1-131-166-edu HW5 %
```