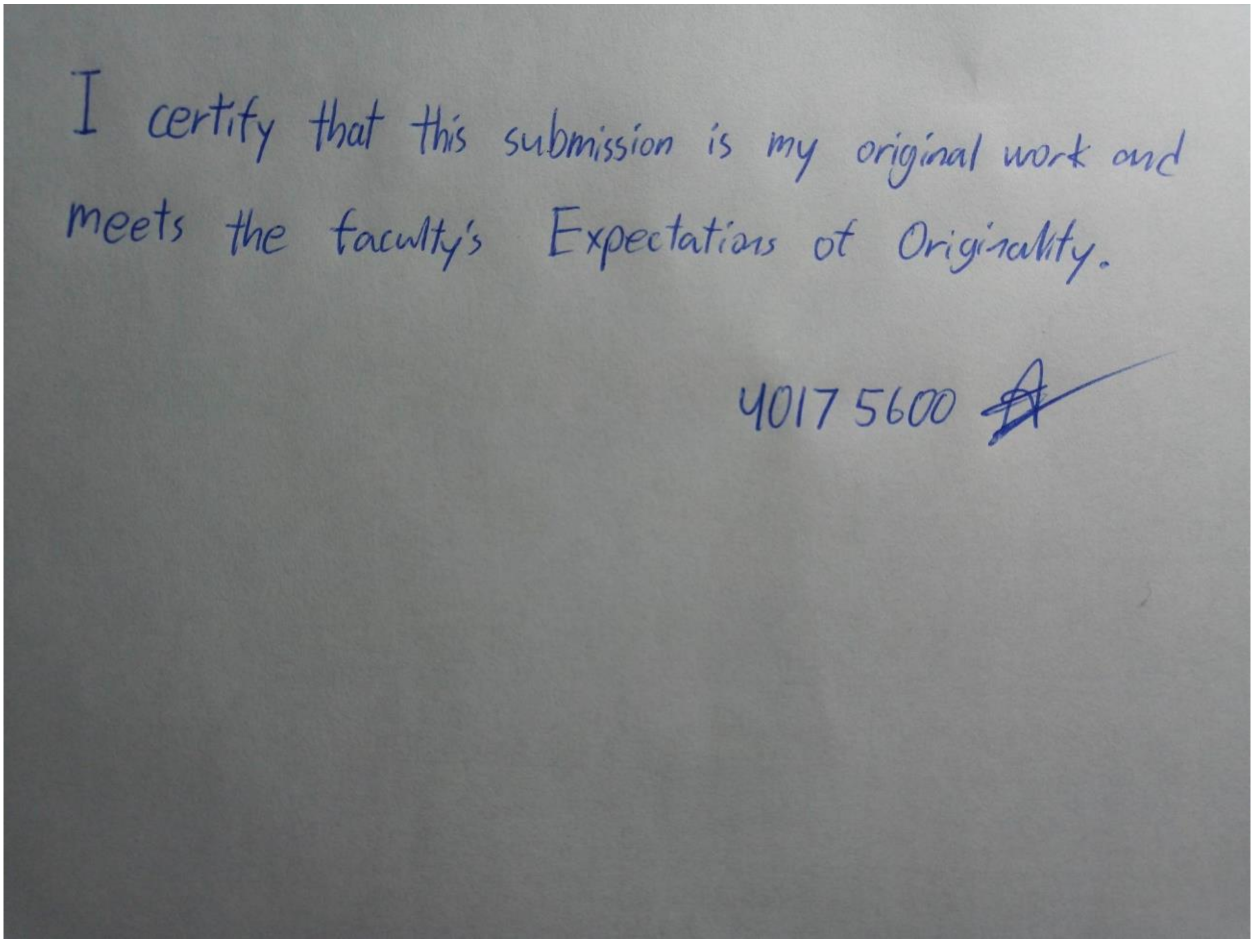
Hei Wang Andre Law

4017 5600

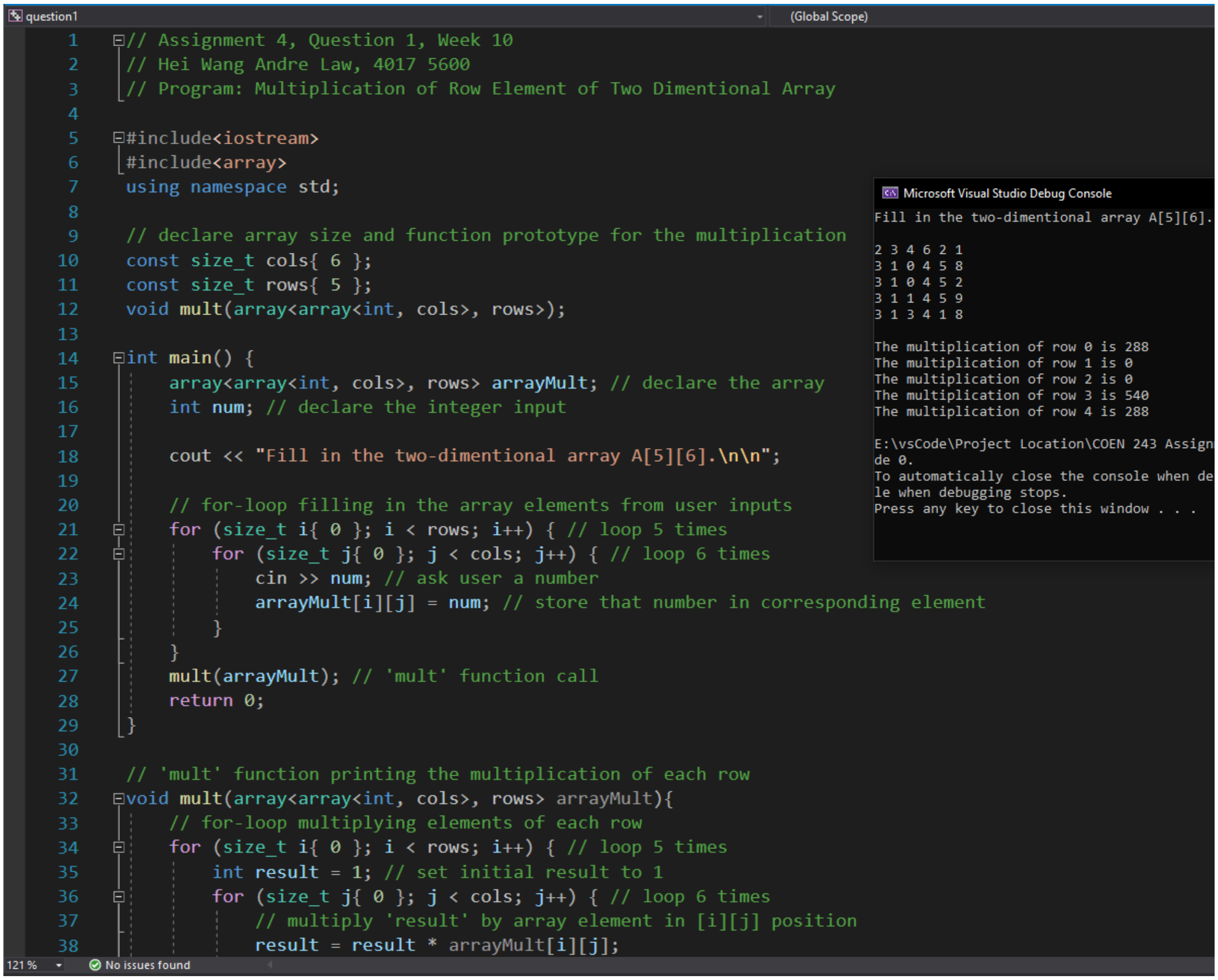
Assignment 4



I certify that this submission is my original work and meets the faculty's Expectations of Originality.

4017 5600

Question 1



```cpp
// Assignment 4, Question 1, Week 10
// Hei Wang Andre Law, 4017 5600
// Program: Multiplication of Row Element of Two Dimentional Array

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

// declare array size and function prototype for the multiplication
const size_t cols{ 6 };
const size_t rows{ 5 };
void mult(array<array<int, cols>, rows>);

int main() {
    array<array<int, cols>, rows> arrayMult; // declare the array
    int num; // declare the integer input

    cout << "Fill in the two-dimentional array A[5][6].\n\n";

    // for-loop filling in the array elements from user inputs
    for (size_t i{ 0 }; i < rows; i++) { // loop 5 times
        for (size_t j{ 0 }; j < cols; j++) { // loop 6 times
            cin >> num; // ask user a number
            arrayMult[i][j] = num; // store that number in corresponding element
        }
    }
    mult(arrayMult); // 'mult' function call
    return 0;
}

// 'mult' function printing the multiplication of each row
void mult(array<array<int, cols>, rows> arrayMult){
    // for-loop multiplying elements of each row
    for (size_t i{ 0 }; i < rows; i++) { // loop 5 times
        int result = 1; // set initial result to 1
        for (size_t j{ 0 }; j < cols; j++) { // loop 6 times
            // multiply 'result' by array element in [i][j] position
            result = result * arrayMult[i][j];
```

```
Fill in the two-dimentional array A[5][6].

2 3 4 6 2 1
3 1 0 4 5 8
3 1 0 4 5 2
3 1 1 4 5 9
3 1 3 4 1 8

The multiplication of row 0 is 288
The multiplication of row 1 is 0
The multiplication of row 2 is 0
The multiplication of row 3 is 540
The multiplication of row 4 is 288

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le when debugging stops.
Press any key to close this window . . .
```
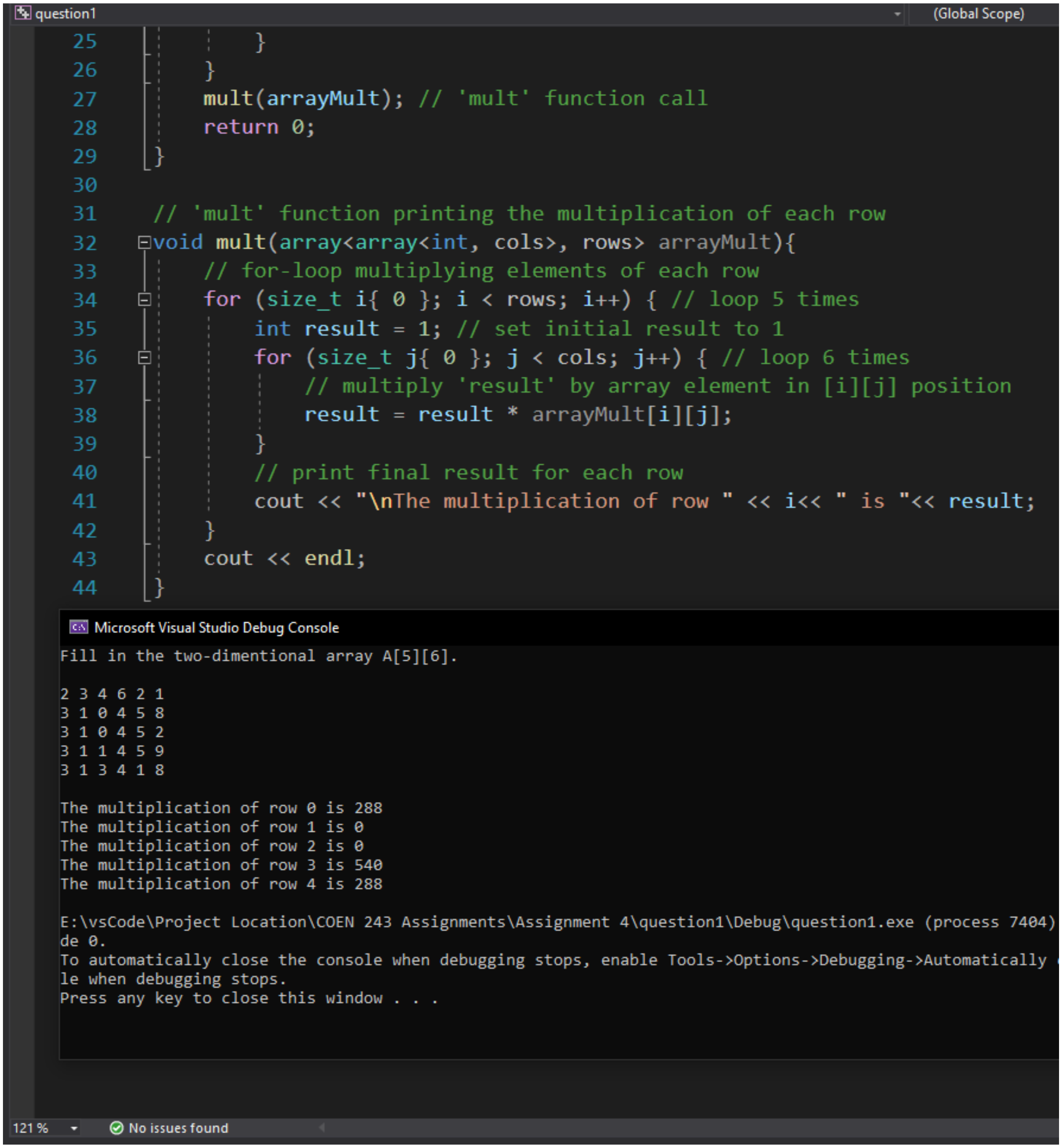

Question 1



```cpp
        }
    }
    mult(arrayMult); // 'mult' function call
    return 0;
}

// 'mult' function printing the multiplication of each row
void mult(array<array<int, cols>, rows> arrayMult){
    // for-loop multiplying elements of each row
    for (size_t i{ 0 }; i < rows; i++) { // loop 5 times
        int result = 1; // set initial result to 1
        for (size_t j{ 0 }; j < cols; j++) { // loop 6 times
            // multiply 'result' by array element in [i][j] position
            result = result * arrayMult[i][j];
        }
        // print final result for each row
        cout << "\nThe multiplication of row " << i<< " is "<< result;
    }
    cout << endl;
}
```

```
Fill in the two-dimentional array A[5][6].

2 3 4 6 2 1
3 1 0 4 5 8
3 1 0 4 5 2
3 1 1 4 5 9
3 1 3 4 1 8

The multiplication of row 0 is 288
The multiplication of row 1 is 0
The multiplication of row 2 is 0
The multiplication of row 3 is 540
The multiplication of row 4 is 288

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de 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically
le when debugging stops.
Press any key to close this window . . .
```
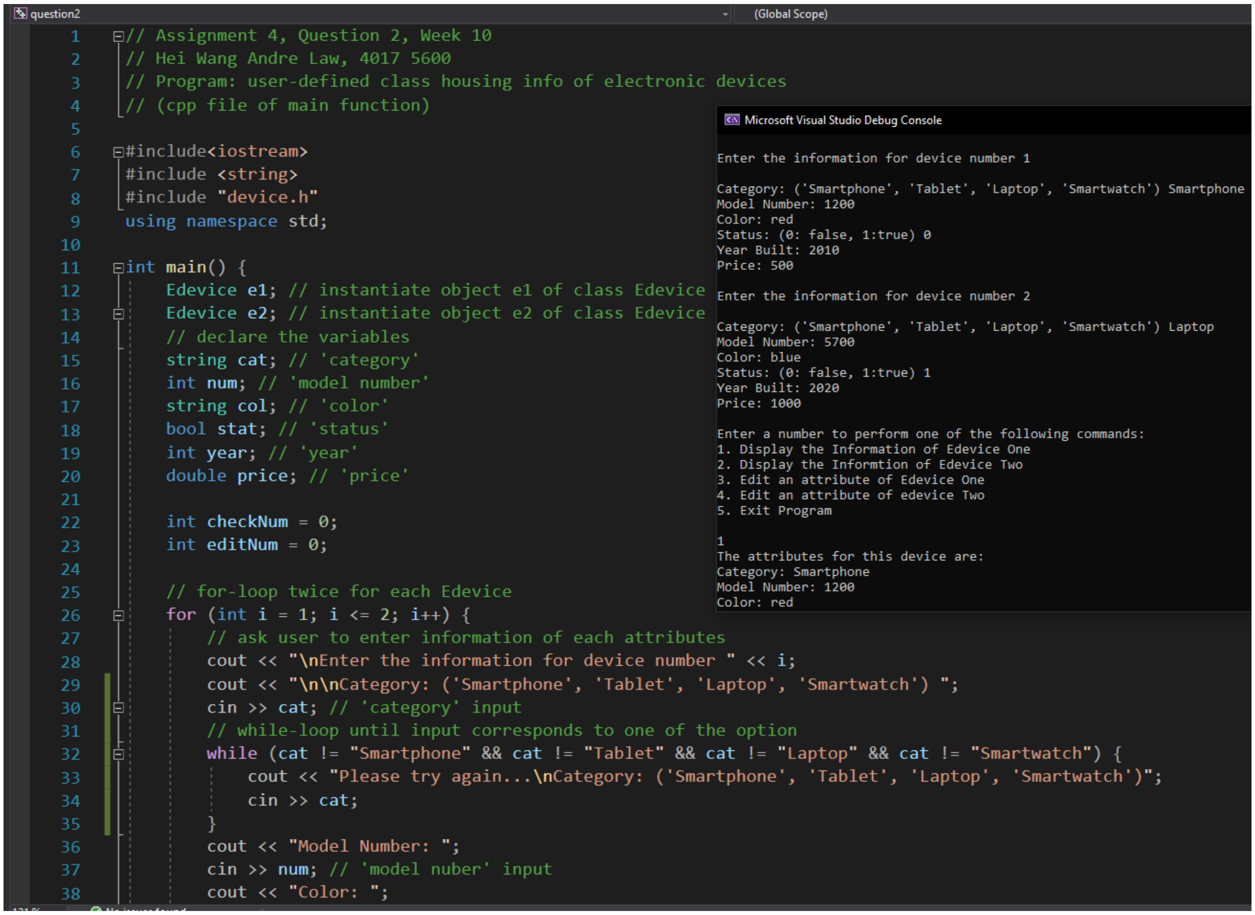
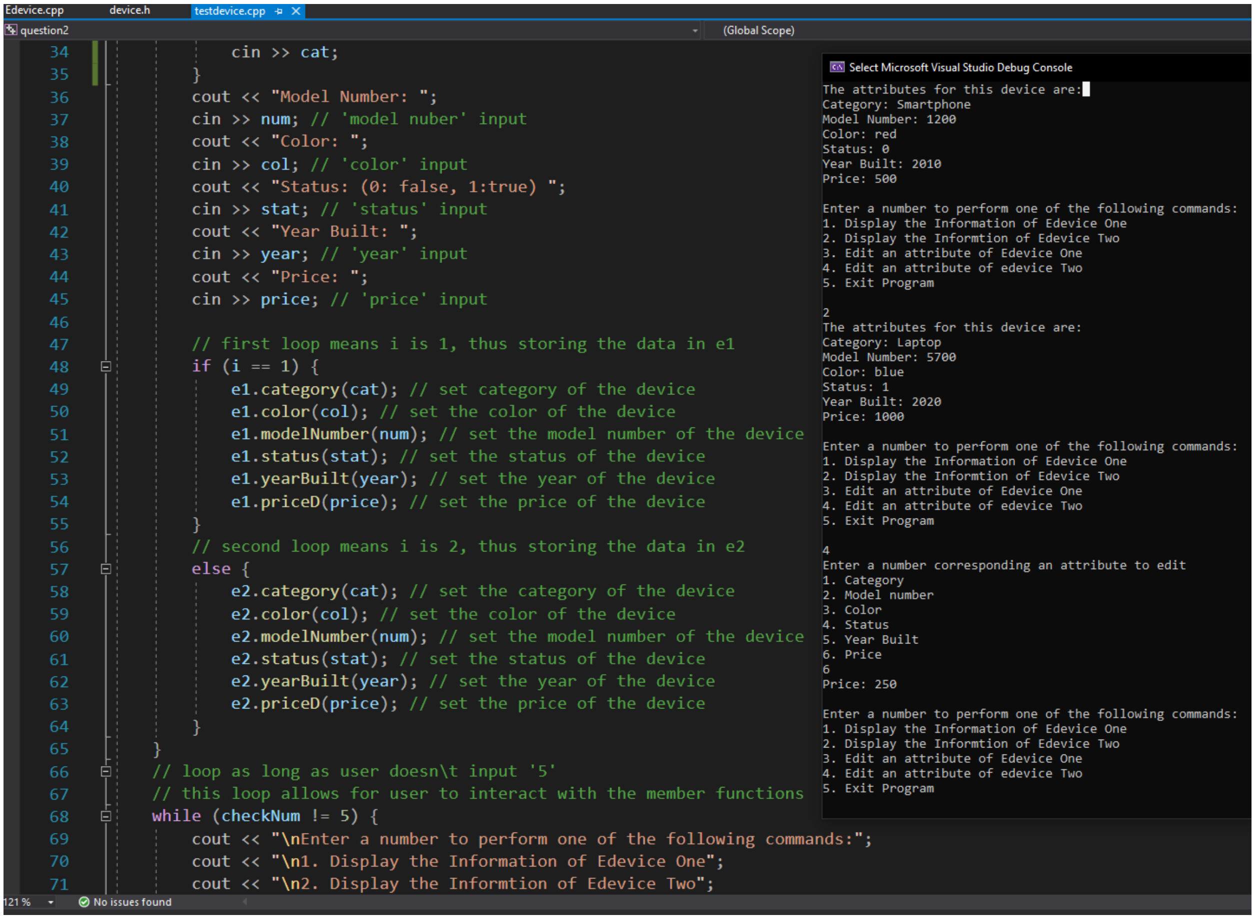

Question 2, testdevice.cpp



```cpp
// Assignment 4, Question 2, Week 10
// Hei Wang Andre Law, 4017 5600
// Program: user-defined class housing info of electronic devices
// (cpp file of main function)

#include<iostream>
#include <string>
#include "device.h"
using namespace std;

int main() {
    Edevice e1; // instantiate object e1 of class Edevice
    Edevice e2; // instantiate object e2 of class Edevice
    // declare the variables
    string cat; // 'category'
    int num; // 'model number'
    string col; // 'color'
    bool stat; // 'status'
    int year; // 'year'
    double price; // 'price'

    int checkNum = 0;
    int editNum = 0;

    // for-loop twice for each Edevice
    for (int i = 1; i <= 2; i++) {
        // ask user to enter information of each attributes
        cout << "\nEnter the information for device number " << i;
        cout << "\n\nCategory: ('Smartphone', 'Tablet', 'Laptop', 'Smartwatch') ";
        cin >> cat; // 'category' input
        // while-loop until input corresponds to one of the option
        while (cat != "Smartphone" && cat != "Tablet" && cat != "Laptop" && cat != "Smartwatch") {
            cout << "Please try again...\nCategory: ('Smartphone', 'Tablet', 'Laptop', 'Smartwatch')";
            cin >> cat;
        }
        cout << "Model Number: ";
        cin >> num; // 'model nuber' input
        cout << "Color: ";
```

```
Enter the information for device number 1

Category: ('Smartphone', 'Tablet', 'Laptop', 'Smartwatch') Smartphone
Model Number: 1200
Color: red
Status: (0: false, 1:true) 0
Year Built: 2010
Price: 500

Enter the information for device number 2

Category: ('Smartphone', 'Tablet', 'Laptop', 'Smartwatch') Laptop
Model Number: 5700
Color: blue
Status: (0: false, 1:true) 1
Year Built: 2020
Price: 1000

Enter a number to perform one of the following commands:
1. Display the Information of Edevice One
2. Display the Informtion of Edevice Two
3. Edit an attribute of Edevice One
4. Edit an attribute of edevice Two
5. Exit Program

1
The attributes for this device are:
Category: Smartphone
Model Number: 1200
Color: red
```

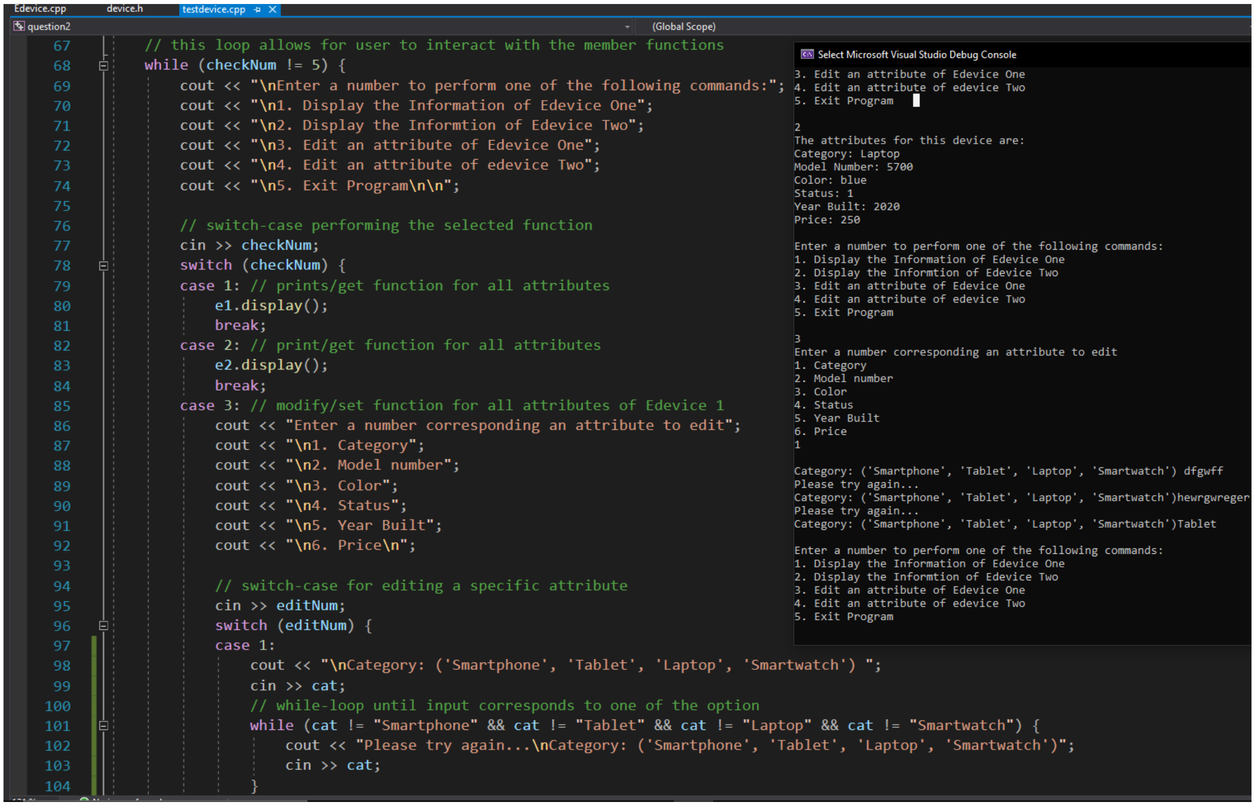
Question 2, testdevice.cpp



```cpp
                cin >> cat;
            }
            cout << "Model Number: ";
            cin >> num; // 'model nuber' input
            cout << "Color: ";
            cin >> col; // 'color' input
            cout << "Status: (0: false, 1:true) ";
            cin >> stat; // 'status' input
            cout << "Year Built: ";
            cin >> year; // 'year' input
            cout << "Price: ";
            cin >> price; // 'price' input

            // first loop means i is 1, thus storing the data in e1
            if (i == 1) {
                e1.category(cat); // set category of the device
                e1.color(col); // set the color of the device
                e1.modelNumber(num); // set the model number of the device
                e1.status(stat); // set the status of the device
                e1.yearBuilt(year); // set the year of the device
                e1.priceD(price); // set the price of the device
            }
            // second loop means i is 2, thus storing the data in e2
            else {
                e2.category(cat); // set the category of the device
                e2.color(col); // set the color of the device
                e2.modelNumber(num); // set the model number of the device
                e2.status(stat); // set the status of the device
                e2.yearBuilt(year); // set the year of the device
                e2.priceD(price); // set the price of the device
            }
        }
        // loop as long as user doesn\t input '5'
        // this loop allows for user to interact with the member functions
        while (checkNum != 5) {
            cout << "\nEnter a number to perform one of the following commands:";
            cout << "\n1. Display the Information of Edevice One";
            cout << "\n2. Display the Informtion of Edevice Two";
```

```
The attributes for this device are:
Category: Smartphone
Model Number: 1200
Color: red
Status: 0
Year Built: 2010
Price: 500

Enter a number to perform one of the following commands:
1. Display the Information of Edevice One
2. Display the Informtion of Edevice Two
3. Edit an attribute of Edevice One
4. Edit an attribute of edevice Two
5. Exit Program

2
The attributes for this device are:
Category: Laptop
Model Number: 5700
Color: blue
Status: 1
Year Built: 2020
Price: 1000

Enter a number to perform one of the following commands:
1. Display the Information of Edevice One
2. Display the Informtion of Edevice Two
3. Edit an attribute of Edevice One
4. Edit an attribute of edevice Two
5. Exit Program

4
Enter a number corresponding an attribute to edit
1. Category
2. Model number
3. Color
4. Status
5. Year Built
6. Price
6
Price: 250

Enter a number to perform one of the following commands:
1. Display the Information of Edevice One
2. Display the Informtion of Edevice Two
3. Edit an attribute of Edevice One
4. Edit an attribute of edevice Two
5. Exit Program
```

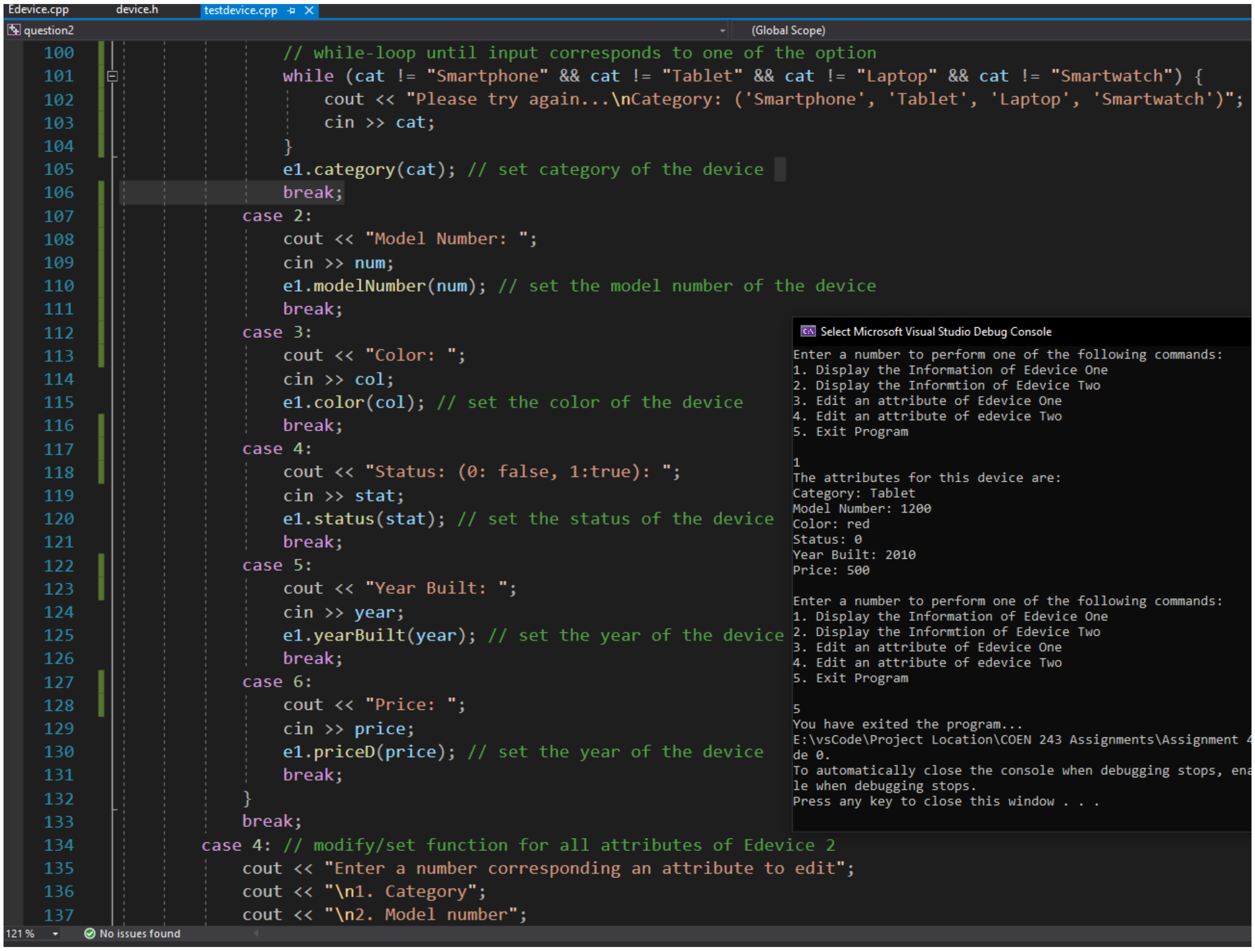
Question 2, testdevice.cpp



```cpp
    // this loop allows for user to interact with the member functions
    while (checkNum != 5) {
        cout << "\nEnter a number to perform one of the following commands:";
        cout << "\n1. Display the Information of Edevice One";
        cout << "\n2. Display the Informtion of Edevice Two";
        cout << "\n3. Edit an attribute of Edevice One";
        cout << "\n4. Edit an attribute of edevice Two";
        cout << "\n5. Exit Program\n\n";

        // switch-case performing the selected function
        cin >> checkNum;
        switch (checkNum) {
        case 1: // prints/get function for all attributes
            e1.display();
            break;
        case 2: // print/get function for all attributes
            e2.display();
            break;
        case 3: // modify/set function for all attributes of Edevice 1
            cout << "Enter a number corresponding an attribute to edit";
            cout << "\n1. Category";
            cout << "\n2. Model number";
            cout << "\n3. Color";
            cout << "\n4. Status";
            cout << "\n5. Year Built";
            cout << "\n6. Price\n";

            // switch-case for editing a specific attribute
            cin >> editNum;
            switch (editNum) {
            case 1:
                cout << "\nCategory: ('Smartphone', 'Tablet', 'Laptop', 'Smartwatch') ";
                cin >> cat;
                // while-loop until input corresponds to one of the option
                while (cat != "Smartphone" && cat != "Tablet" && cat != "Laptop" && cat != "Smartwatch") {
                    cout << "Please try again...\nCategory: ('Smartphone', 'Tablet', 'Laptop', 'Smartwatch')";
                    cin >> cat;
                }
```

```
3. Edit an attribute of Edevice One
4. Edit an attribute of edevice Two
5. Exit Program

2
The attributes for this device are:
Category: Laptop
Model Number: 5700
Color: blue
Status: 1
Year Built: 2020
Price: 250

Enter a number to perform one of the following commands:
1. Display the Information of Edevice One
2. Display the Informtion of Edevice Two
3. Edit an attribute of Edevice One
4. Edit an attribute of edevice Two
5. Exit Program

3
Enter a number corresponding an attribute to edit
1. Category
2. Model number
3. Color
4. Status
5. Year Built
6. Price
1

Category: ('Smartphone', 'Tablet', 'Laptop', 'Smartwatch') dfgwff
Please try again...
Category: ('Smartphone', 'Tablet', 'Laptop', 'Smartwatch')hewrgwreger
Please try again...
Category: ('Smartphone', 'Tablet', 'Laptop', 'Smartwatch')Tablet

Enter a number to perform one of the following commands:
1. Display the Information of Edevice One
2. Display the Informtion of Edevice Two
3. Edit an attribute of Edevice One
4. Edit an attribute of edevice Two
5. Exit Program
```

Question 2, testdevice.cpp

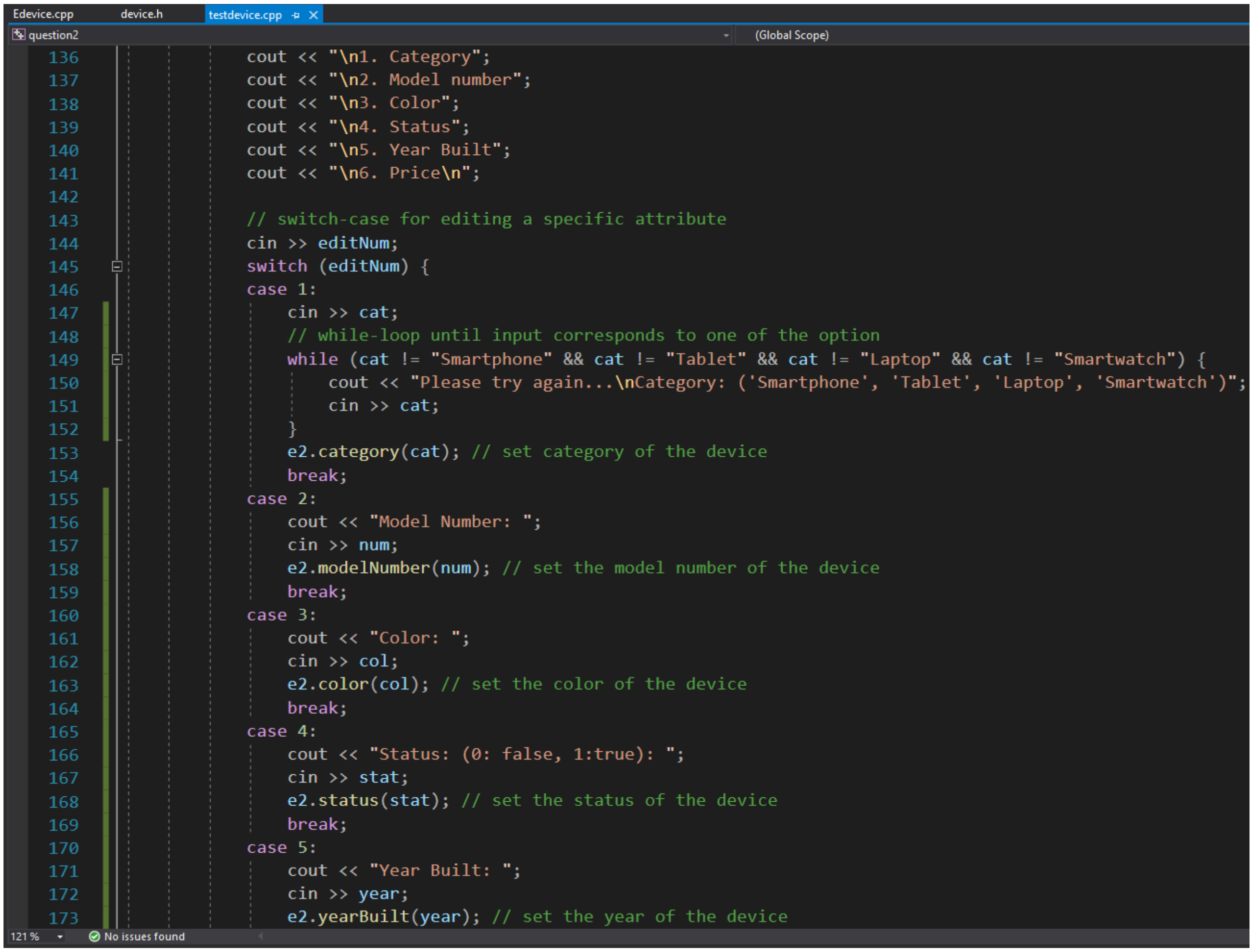


```cpp
                // while-loop until input corresponds to one of the option
                while (cat != "Smartphone" && cat != "Tablet" && cat != "Laptop" && cat != "Smartwatch") {
                    cout << "Please try again...\nCategory: ('Smartphone', 'Tablet', 'Laptop', 'Smartwatch')";
                    cin >> cat;
                }
                e1.category(cat); // set category of the device
                break;
            case 2:
                cout << "Model Number: ";
                cin >> num;
                e1.modelNumber(num); // set the model number of the device
                break;
            case 3:
                cout << "Color: ";
                cin >> col;
                e1.color(col); // set the color of the device
                break;
            case 4:
                cout << "Status: (0: false, 1:true): ";
                cin >> stat;
                e1.status(stat); // set the status of the device
                break;
            case 5:
                cout << "Year Built: ";
                cin >> year;
                e1.yearBuilt(year); // set the year of the device
                break;
            case 6:
                cout << "Price: ";
                cin >> price;
                e1.priceD(price); // set the year of the device
                break;
            }
            break;
        case 4: // modify/set function for all attributes of Edevice 2
            cout << "Enter a number corresponding an attribute to edit";
            cout << "\n1. Category";
            cout << "\n2. Model number";
```

Select Microsoft Visual Studio Debug Console

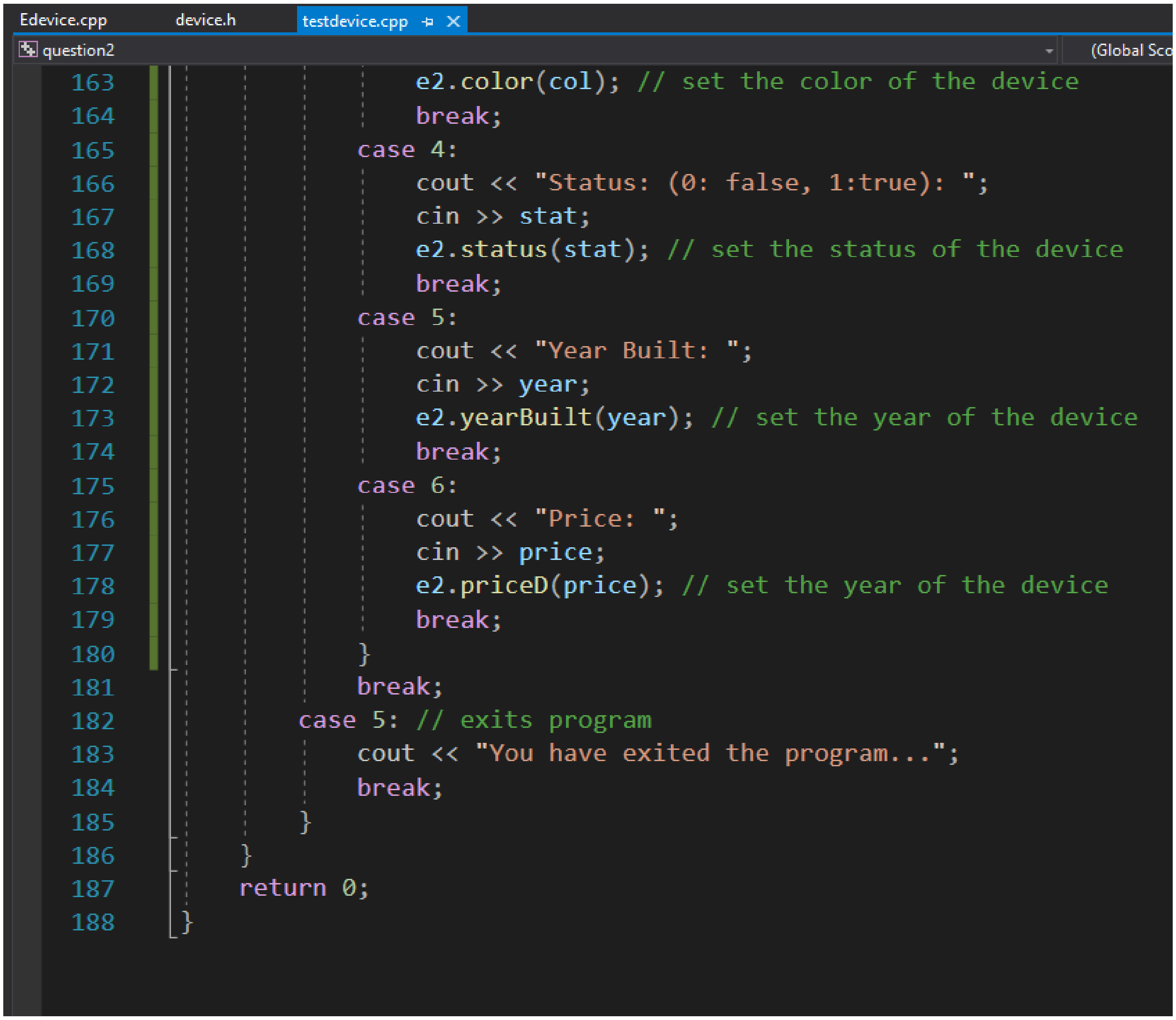
```
Enter a number to perform one of the following commands:
1. Display the Information of Edevice One
2. Display the Informtion of Edevice Two
3. Edit an attribute of Edevice One
4. Edit an attribute of edevice Two
5. Exit Program

1
The attributes for this device are:
Category: Tablet
Model Number: 1200
Color: red
Status: 0
Year Built: 2010
Price: 500

Enter a number to perform one of the following commands:
1. Display the Information of Edevice One
2. Display the Informtion of Edevice Two
3. Edit an attribute of Edevice One
4. Edit an attribute of edevice Two
5. Exit Program

5
You have exited the program...
E:\vsCode\Project Location\COEN 243 Assignments\Assignment 4
de 0.
To automatically close the console when debugging stops, ena
le when debugging stops.
Press any key to close this window . . .
```

Question 2, testdevice.cpp



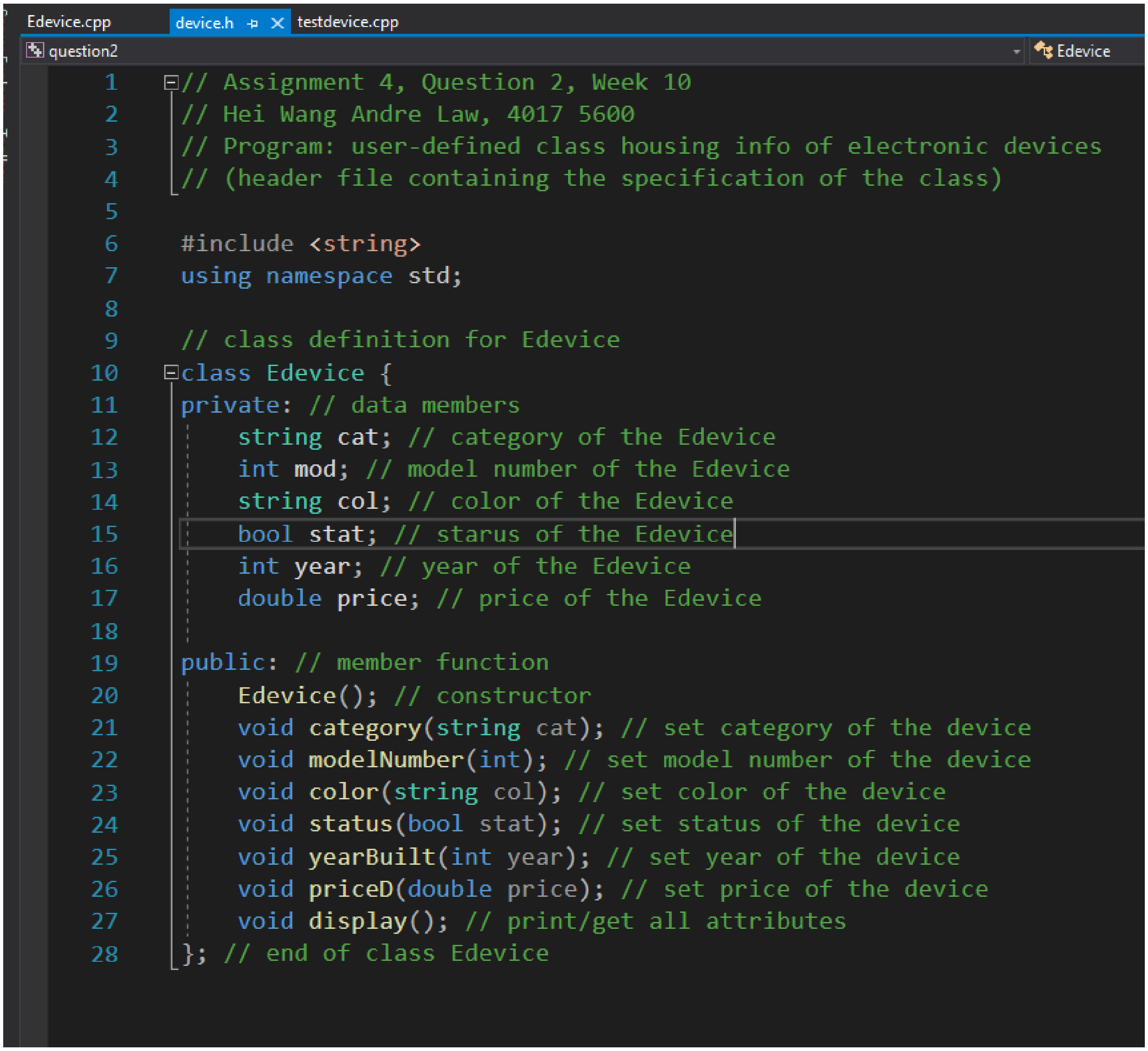
```cpp
            cout << "\n1. Category";
            cout << "\n2. Model number";
            cout << "\n3. Color";
            cout << "\n4. Status";
            cout << "\n5. Year Built";
            cout << "\n6. Price\n";

            // switch-case for editing a specific attribute
            cin >> editNum;
            switch (editNum) {
            case 1:
                cin >> cat;
                // while-loop until input corresponds to one of the option
                while (cat != "Smartphone" && cat != "Tablet" && cat != "Laptop" && cat != "Smartwatch") {
                    cout << "Please try again...\nCategory: ('Smartphone', 'Tablet', 'Laptop', 'Smartwatch')";
                    cin >> cat;
                }
                e2.category(cat); // set category of the device
                break;
            case 2:
                cout << "Model Number: ";
                cin >> num;
                e2.modelNumber(num); // set the model number of the device
                break;
            case 3:
                cout << "Color: ";
                cin >> col;
                e2.color(col); // set the color of the device
                break;
            case 4:
                cout << "Status: (0: false, 1:true): ";
                cin >> stat;
                e2.status(stat); // set the status of the device
                break;
            case 5:
                cout << "Year Built: ";
                cin >> year;
                e2.yearBuilt(year); // set the year of the device
```

Question 2, testdevice.cpp



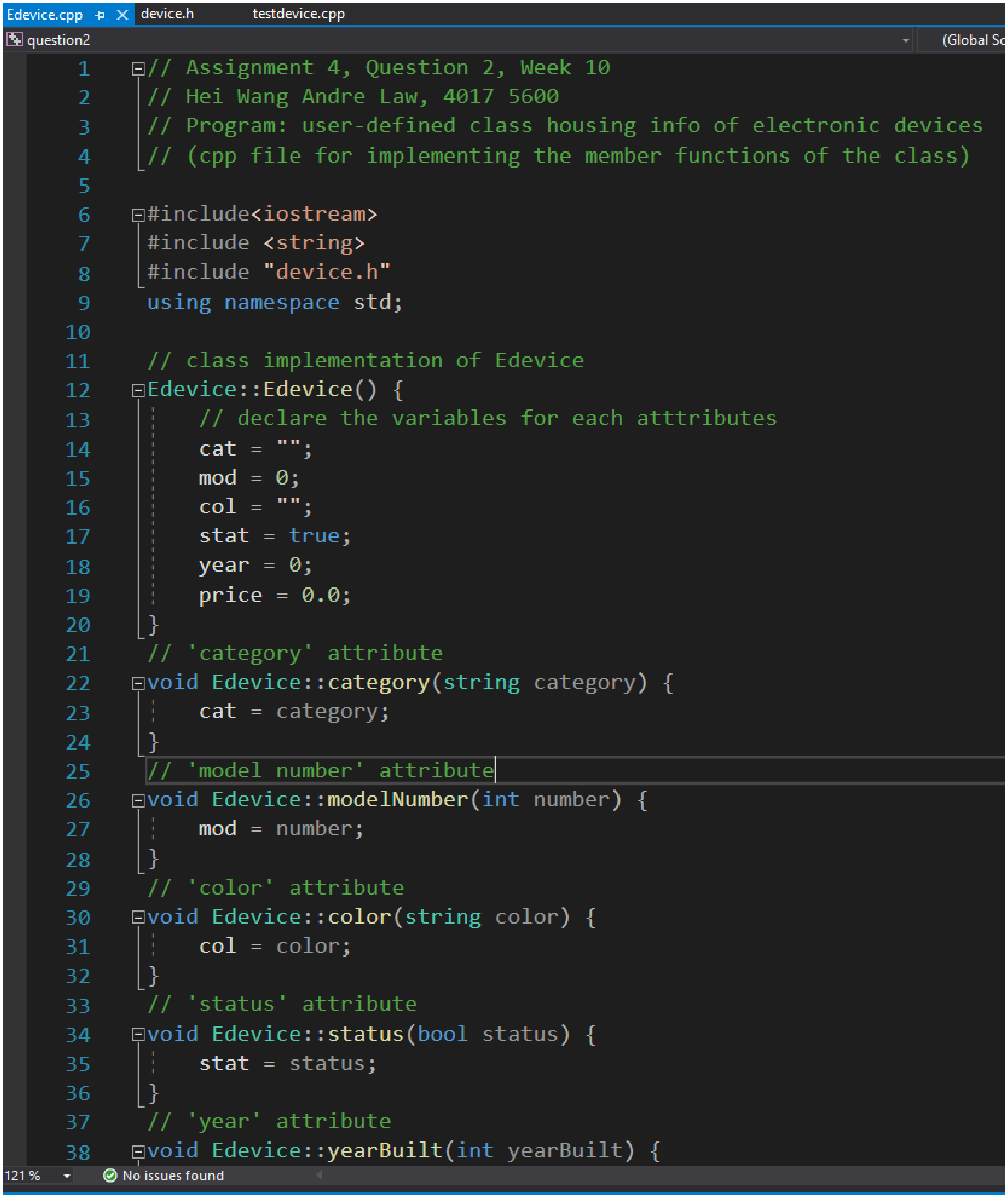
```
                e2.color(col); // set the color of the device
                break;
            case 4:
                cout << "Status: (0: false, 1:true): ";
                cin >> stat;
                e2.status(stat); // set the status of the device
                break;
            case 5:
                cout << "Year Built: ";
                cin >> year;
                e2.yearBuilt(year); // set the year of the device
                break;
            case 6:
                cout << "Price: ";
                cin >> price;
                e2.priceD(price); // set the year of the device
                break;
            }
            break;
        case 5: // exits program
            cout << "You have exited the program...";
            break;
        }
    }
    return 0;
}
```

Question 2, device.h



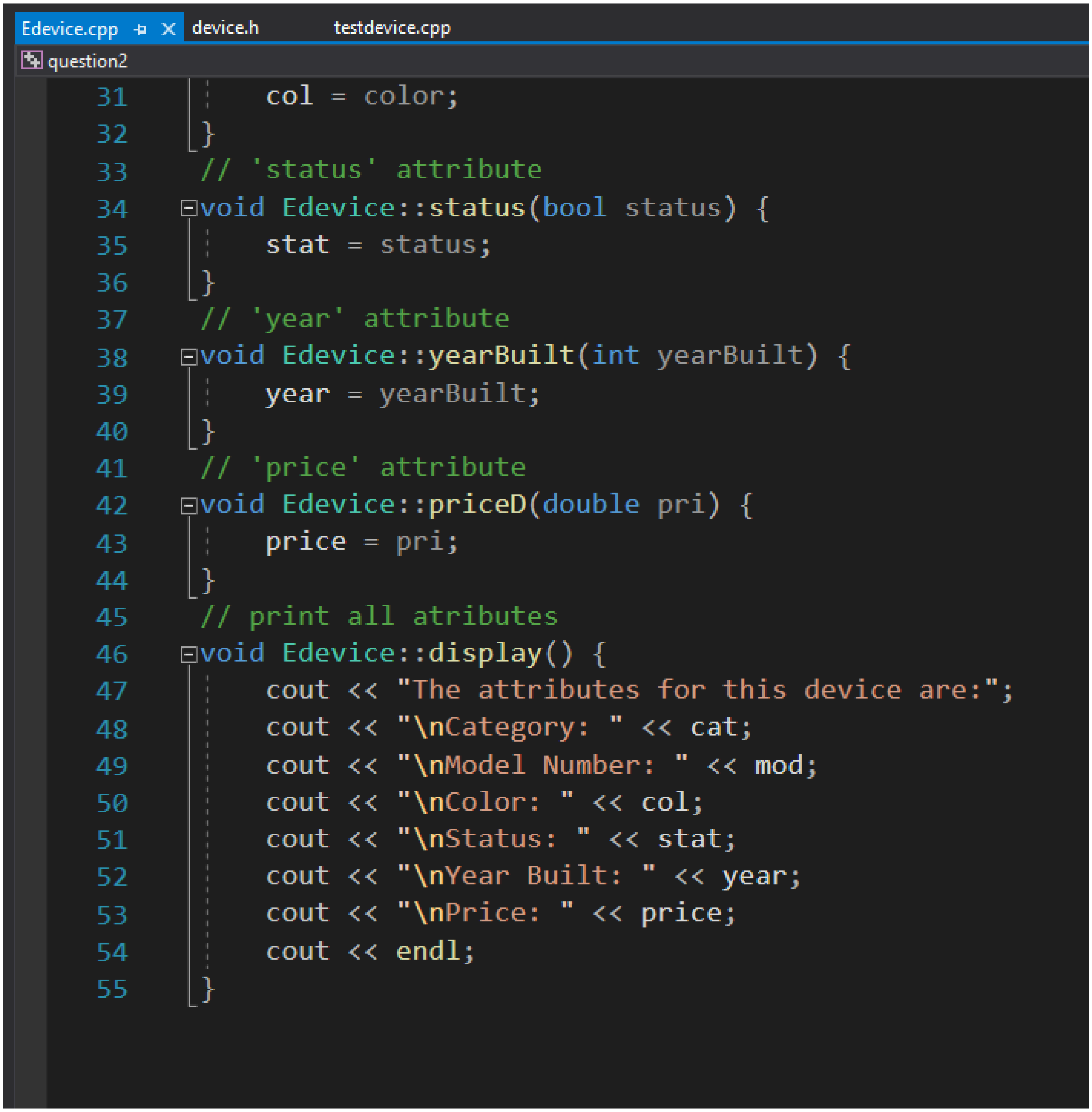
```
// Assignment 4, Question 2, Week 10
// Hei Wang Andre Law, 4017 5600
// Program: user-defined class housing info of electronic devices
// (header file containing the specification of the class)

#include <string>
using namespace std;

// class definition for Edevice
class Edevice {
private: // data members
    string cat; // category of the Edevice
    int mod; // model number of the Edevice
    string col; // color of the Edevice
    bool stat; // starus of the Edevice
    int year; // year of the Edevice
    double price; // price of the Edevice

public: // member function
    Edevice(); // constructor
    void category(string cat); // set category of the device
    void modelNumber(int); // set model number of the device
    void color(string col); // set color of the device
    void status(bool stat); // set status of the device
    void yearBuilt(int year); // set year of the device
    void priceD(double price); // set price of the device
    void display(); // print/get all attributes
}; // end of class Edevice
```

Question 2, Edevice.cpp



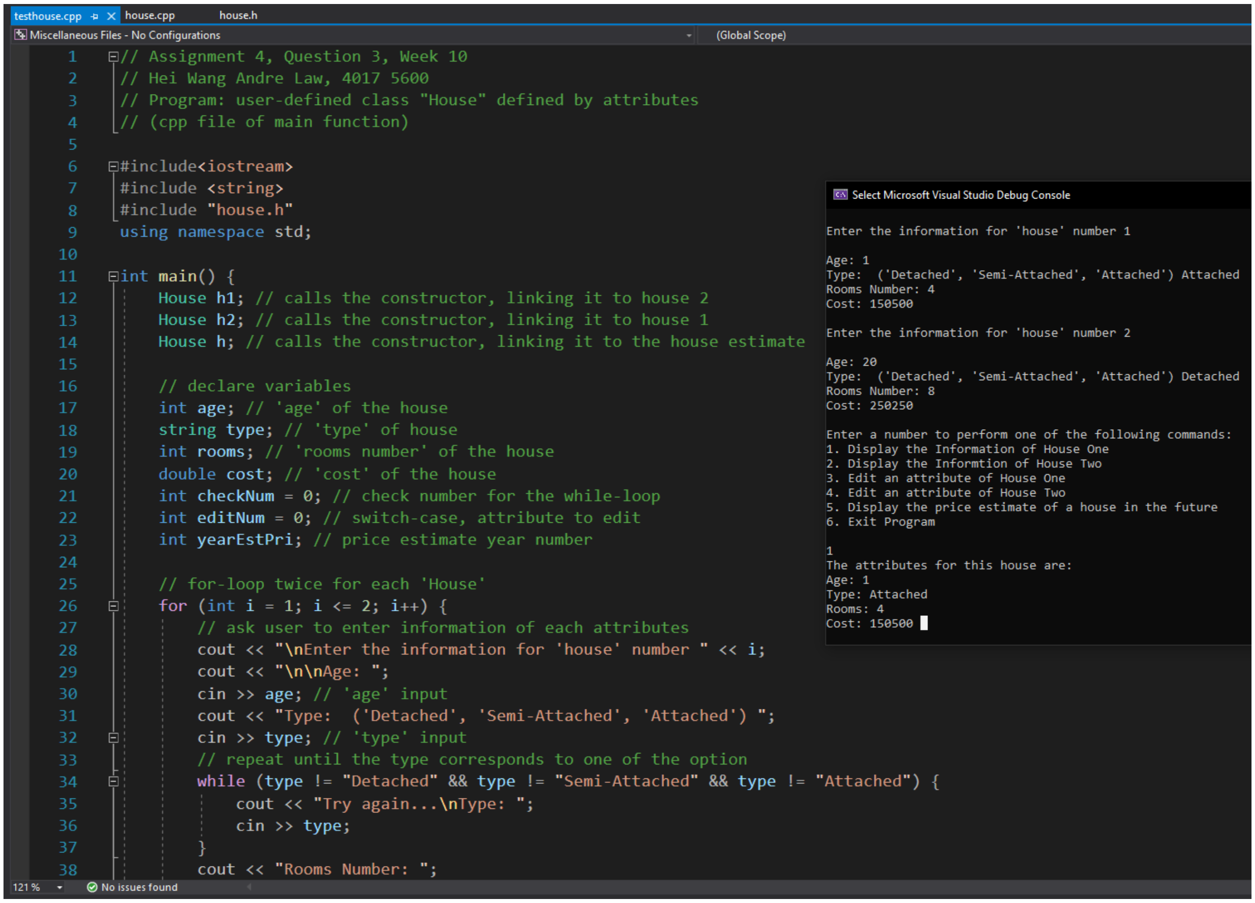
```cpp
// Assignment 4, Question 2, Week 10
// Hei Wang Andre Law, 4017 5600
// Program: user-defined class housing info of electronic devices
// (cpp file for implementing the member functions of the class)

#include<iostream>
#include <string>
#include "device.h"
using namespace std;

// class implementation of Edevice
Edevice::Edevice() {
    // declare the variables for each atttributes
    cat = "";
    mod = 0;
    col = "";
    stat = true;
    year = 0;
    price = 0.0;
}
// 'category' attribute
void Edevice::category(string category) {
    cat = category;
}
// 'model number' attribute
void Edevice::modelNumber(int number) {
    mod = number;
}
// 'color' attribute
void Edevice::color(string color) {
    col = color;
}
// 'status' attribute
void Edevice::status(bool status) {
    stat = status;
}
// 'year' attribute
void Edevice::yearBuilt(int yearBuilt) {
```

Question 2, Edevice.cpp



```cpp
    col = color;
}
// 'status' attribute
void Edevice::status(bool status) {
    stat = status;
}
// 'year' attribute
void Edevice::yearBuilt(int yearBuilt) {
    year = yearBuilt;
}
// 'price' attribute
void Edevice::priceD(double pri) {
    price = pri;
}
// print all atributes
void Edevice::display() {
    cout << "The attributes for this device are:";
    cout << "\nCategory: " << cat;
    cout << "\nModel Number: " << mod;
    cout << "\nColor: " << col;
    cout << "\nStatus: " << stat;
    cout << "\nYear Built: " << year;
    cout << "\nPrice: " << price;
    cout << endl;
}
```

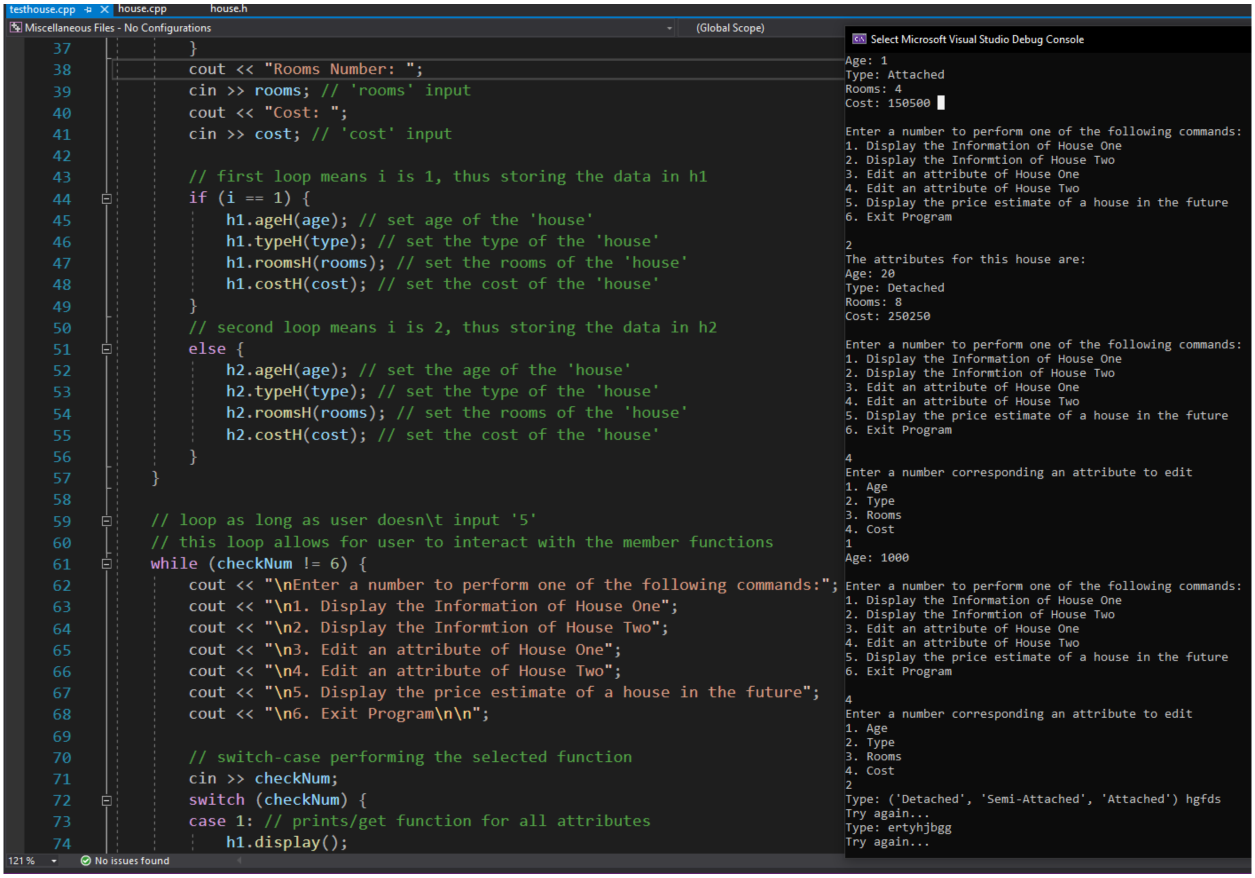
Question 3, testhouse.cpp


testhouse.cpp
house.cpp
house.h
Miscellaneous Files - No Configurations
(Global Scope)
Select Microsoft Visual Studio Debug Console
121 %
No issues found

```cpp
// Assignment 4, Question 3, Week 10
// Hei Wang Andre Law, 4017 5600
// Program: user-defined class "House" defined by attributes
// (cpp file of main function)

#include<iostream>
#include <string>
#include "house.h"
using namespace std;

int main() {
    House h1; // calls the constructor, linking it to house 2
    House h2; // calls the constructor, linking it to house 1
    House h; // calls the constructor, linking it to the house estimate

    // declare variables
    int age; // 'age' of the house
    string type; // 'type' of house
    int rooms; // 'rooms number' of the house
    double cost; // 'cost' of the house
    int checkNum = 0; // check number for the while-loop
    int editNum = 0; // switch-case, attribute to edit
    int yearEstPri; // price estimate year number

    // for-loop twice for each 'House'
    for (int i = 1; i <= 2; i++) {
        // ask user to enter information of each attributes
        cout << "\nEnter the information for 'house' number " << i;
        cout << "\n\nAge: ";
        cin >> age; // 'age' input
        cout << "Type:  ('Detached', 'Semi-Attached', 'Attached') ";
        cin >> type; // 'type' input
        // repeat until the type corresponds to one of the option
        while (type != "Detached" && type != "Semi-Attached" && type != "Attached") {
            cout << "Try again...\nType: ";
            cin >> type;
        }
        cout << "Rooms Number: ";
```

```
Enter the information for 'house' number 1

Age: 1
Type:  ('Detached', 'Semi-Attached', 'Attached') Attached
Rooms Number: 4
Cost: 150500

Enter the information for 'house' number 2

Age: 20
Type:  ('Detached', 'Semi-Attached', 'Attached') Detached
Rooms Number: 8
Cost: 250250

Enter a number to perform one of the following commands:
1. Display the Information of House One
2. Display the Informtion of House Two
3. Edit an attribute of House One
4. Edit an attribute of House Two
5. Display the price estimate of a house in the future
6. Exit Program

1
The attributes for this house are:
Age: 1
Type: Attached
Rooms: 4
Cost: 150500
```

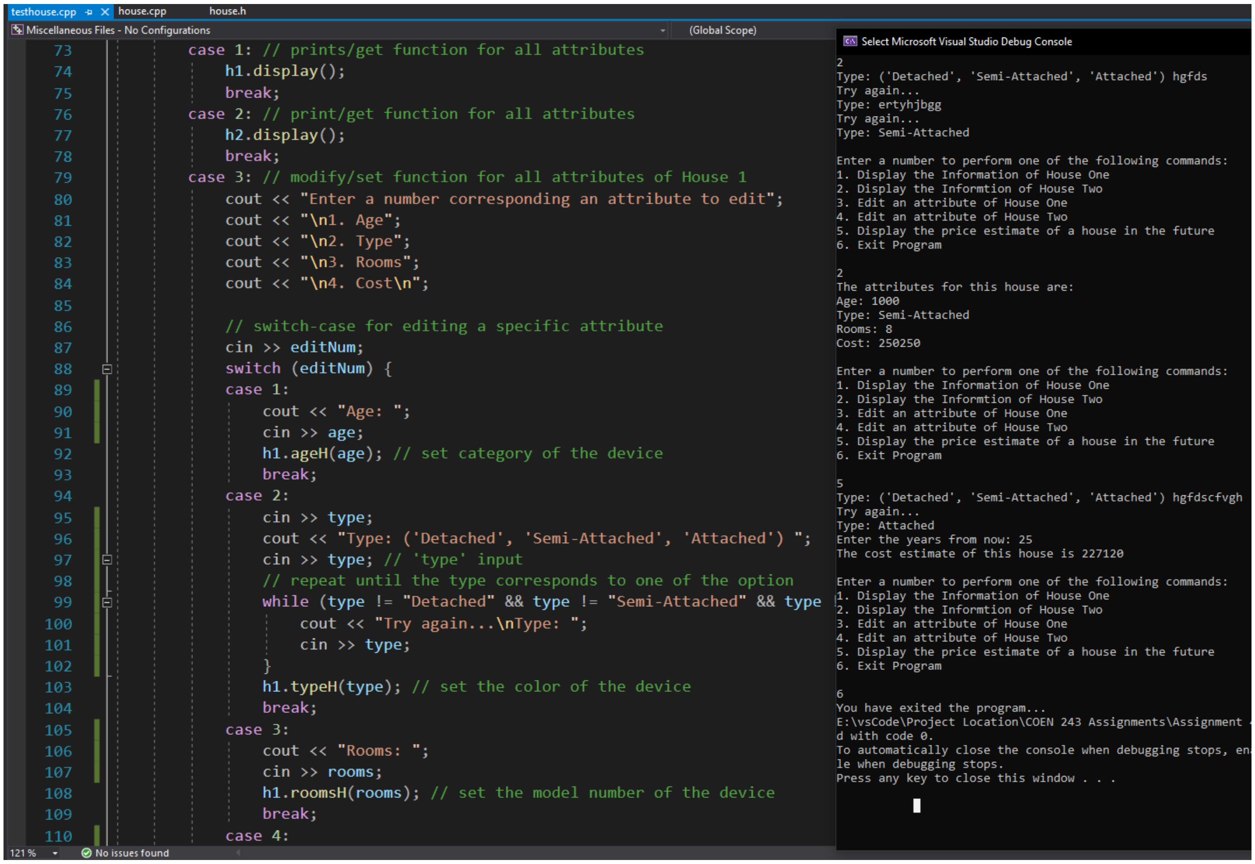
Question 3, testhouse.cpp


testhouse.cpp
house.cpp
house.h
Miscellaneous Files - No Configurations
(Global Scope)
Select Microsoft Visual Studio Debug Console
121 %
No issues found

```cpp
        }
        cout << "Rooms Number: ";
        cin >> rooms; // 'rooms' input
        cout << "Cost: ";
        cin >> cost; // 'cost' input

        // first loop means i is 1, thus storing the data in h1
        if (i == 1) {
            h1.ageH(age); // set age of the 'house'
            h1.typeH(type); // set the type of the 'house'
            h1.roomsH(rooms); // set the rooms of the 'house'
            h1.costH(cost); // set the cost of the 'house'
        }
        // second loop means i is 2, thus storing the data in h2
        else {
            h2.ageH(age); // set the age of the 'house'
            h2.typeH(type); // set the type of the 'house'
            h2.roomsH(rooms); // set the rooms of the 'house'
            h2.costH(cost); // set the cost of the 'house'
        }
    }

    // loop as long as user doesn\t input '5'
    // this loop allows for user to interact with the member functions
    while (checkNum != 6) {
        cout << "\nEnter a number to perform one of the following commands:";
        cout << "\n1. Display the Information of House One";
        cout << "\n2. Display the Informtion of House Two";
        cout << "\n3. Edit an attribute of House One";
        cout << "\n4. Edit an attribute of House Two";
        cout << "\n5. Display the price estimate of a house in the future";
        cout << "\n6. Exit Program\n\n";

        // switch-case performing the selected function
        cin >> checkNum;
        switch (checkNum) {
        case 1: // prints/get function for all attributes
            h1.display();
```

```
Age: 1
Type: Attached
Rooms: 4
Cost: 150500

Enter a number to perform one of the following commands:
1. Display the Information of House One
2. Display the Informtion of House Two
3. Edit an attribute of House One
4. Edit an attribute of House Two
5. Display the price estimate of a house in the future
6. Exit Program

2
The attributes for this house are:
Age: 20
Type: Detached
Rooms: 8
Cost: 250250

Enter a number to perform one of the following commands:
1. Display the Information of House One
2. Display the Informtion of House Two
3. Edit an attribute of House One
4. Edit an attribute of House Two
5. Display the price estimate of a house in the future
6. Exit Program

4
Enter a number corresponding an attribute to edit
1. Age
2. Type
3. Rooms
4. Cost
1
Age: 1000

Enter a number to perform one of the following commands:
1. Display the Information of House One
2. Display the Informtion of House Two
3. Edit an attribute of House One
4. Edit an attribute of House Two
5. Display the price estimate of a house in the future
6. Exit Program

4
Enter a number corresponding an attribute to edit
1. Age
2. Type
3. Rooms
4. Cost
2
Type: ('Detached', 'Semi-Attached', 'Attached') hgfds
Try again...
Type: ertyhjbgg
Try again...
```

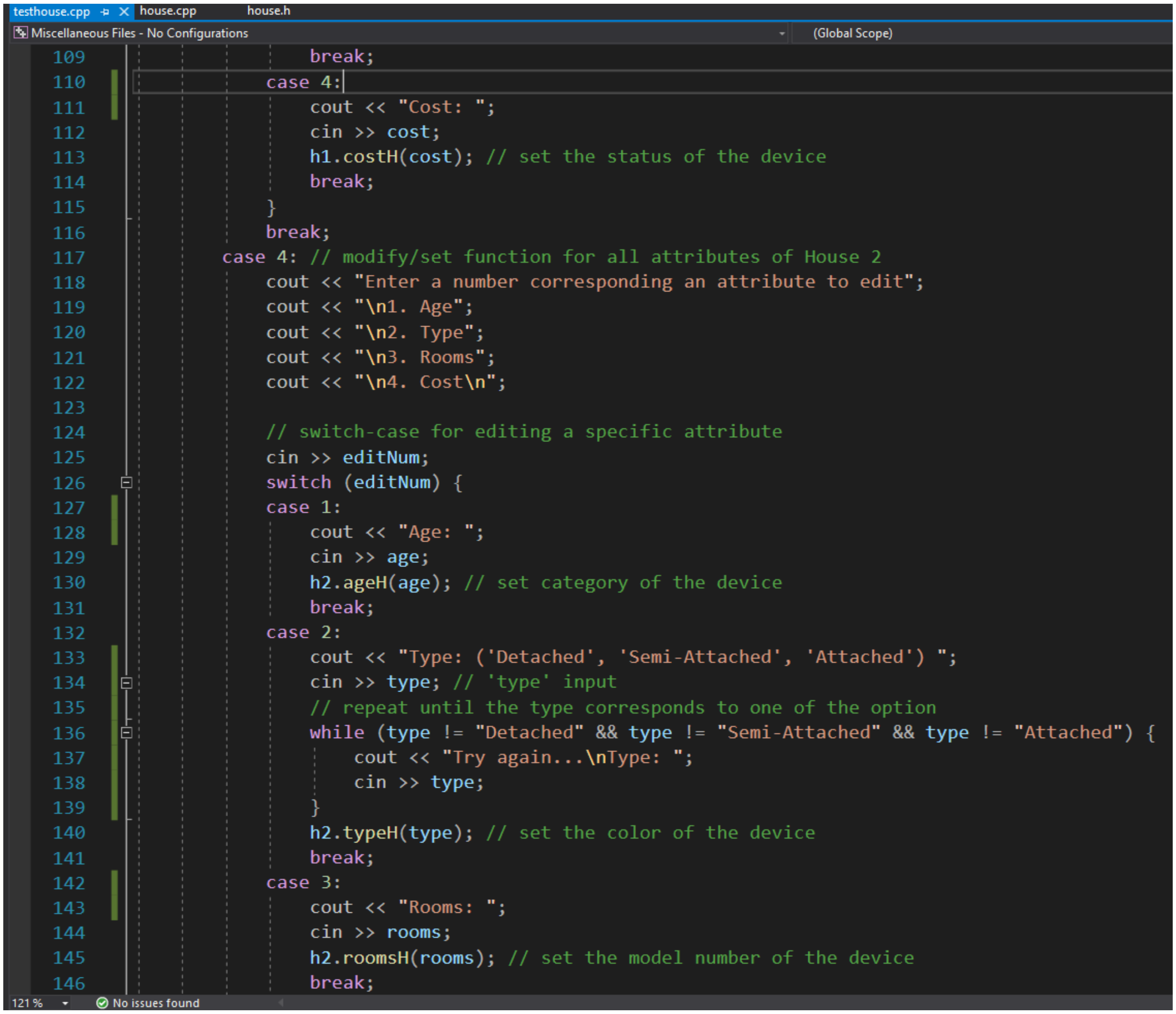
Question 3, testhouse.cpp


testhouse.cpp
house.cpp
house.h
Miscellaneous Files - No Configurations
(Global Scope)
Select Microsoft Visual Studio Debug Console
121 %
No issues found

```cpp
        case 1: // prints/get function for all attributes
            h1.display();
            break;
        case 2: // print/get function for all attributes
            h2.display();
            break;
        case 3: // modify/set function for all attributes of House 1
            cout << "Enter a number corresponding an attribute to edit";
            cout << "\n1. Age";
            cout << "\n2. Type";
            cout << "\n3. Rooms";
            cout << "\n4. Cost\n";

            // switch-case for editing a specific attribute
            cin >> editNum;
            switch (editNum) {
            case 1:
                cout << "Age: ";
                cin >> age;
                h1.ageH(age); // set category of the device
                break;
            case 2:
                cin >> type;
                cout << "Type: ('Detached', 'Semi-Attached', 'Attached') ";
                cin >> type; // 'type' input
                // repeat until the type corresponds to one of the option
                while (type != "Detached" && type != "Semi-Attached" && type
                    cout << "Try again...\nType: ";
                    cin >> type;
                }
                h1.typeH(type); // set the color of the device
                break;
            case 3:
                cout << "Rooms: ";
                cin >> rooms;
                h1.roomsH(rooms); // set the model number of the device
                break;
            case 4:
```

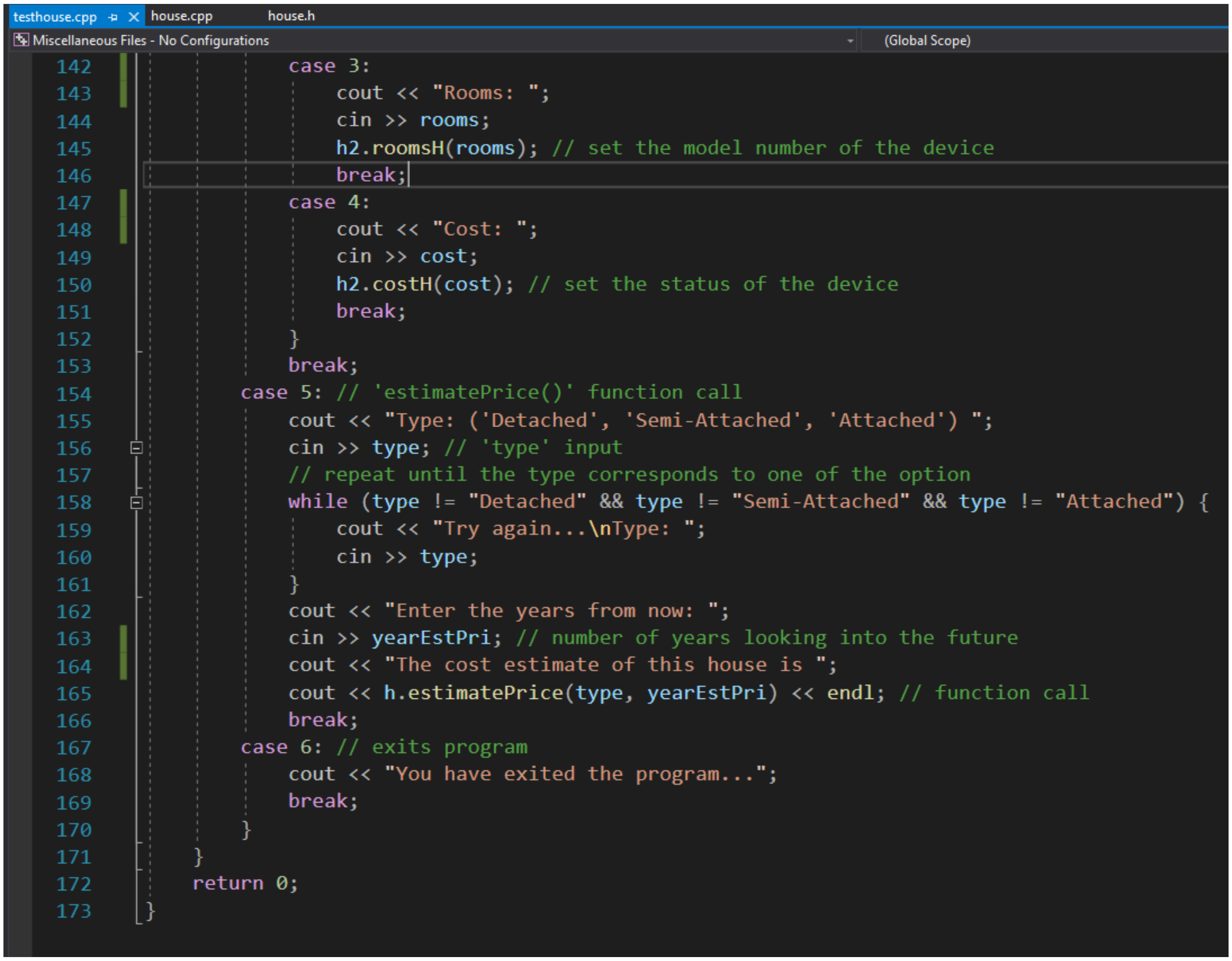
```
2
Type: ('Detached', 'Semi-Attached', 'Attached') hgfds
Try again...
Type: ertyhjbgg
Try again...
Type: Semi-Attached

Enter a number to perform one of the following commands:
1. Display the Information of House One
2. Display the Informtion of House Two
3. Edit an attribute of House One
4. Edit an attribute of House Two
5. Display the price estimate of a house in the future
6. Exit Program

2
The attributes for this house are:
Age: 1000
Type: Semi-Attached
Rooms: 8
Cost: 250250

Enter a number to perform one of the following commands:
1. Display the Information of House One
2. Display the Informtion of House Two
3. Edit an attribute of House One
4. Edit an attribute of House Two
5. Display the price estimate of a house in the future
6. Exit Program

5
Type: ('Detached', 'Semi-Attached', 'Attached') hgfdscfvgh
Try again...
Type: Attached
Enter the years from now: 25
The cost estimate of this house is 227120

Enter a number to perform one of the following commands:
1. Display the Information of House One
2. Display the Informtion of House Two
3. Edit an attribute of House One
4. Edit an attribute of House Two
5. Display the price estimate of a house in the future
6. Exit Program

6
You have exited the program...
E:\vsCode\Project Location\COEN 243 Assignments\Assignment
d with code 0.
To automatically close the console when debugging stops, en
le when debugging stops.
Press any key to close this window . . .
```

Question 3, testhouse.cpp



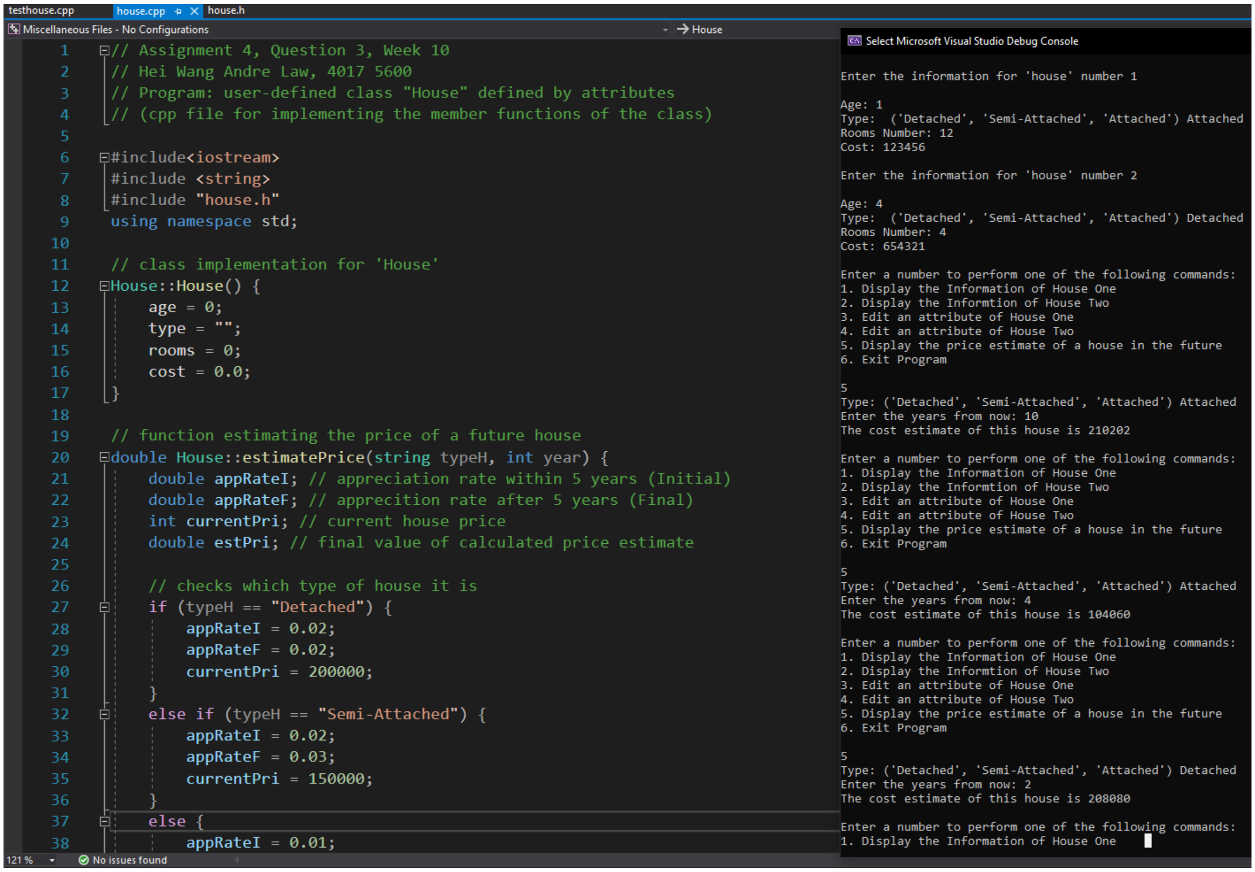
```
        break;
    case 4:
        cout << "Cost: ";
        cin >> cost;
        h1.costH(cost); // set the status of the device
        break;
    }
    break;
case 4: // modify/set function for all attributes of House 2
    cout << "Enter a number corresponding an attribute to edit";
    cout << "\n1. Age";
    cout << "\n2. Type";
    cout << "\n3. Rooms";
    cout << "\n4. Cost\n";

    // switch-case for editing a specific attribute
    cin >> editNum;
    switch (editNum) {
    case 1:
        cout << "Age: ";
        cin >> age;
        h2.ageH(age); // set category of the device
        break;
    case 2:
        cout << "Type: ('Detached', 'Semi-Attached', 'Attached') ";
        cin >> type; // 'type' input
        // repeat until the type corresponds to one of the option
        while (type != "Detached" && type != "Semi-Attached" && type != "Attached") {
            cout << "Try again...\nType: ";
            cin >> type;
        }
        h2.typeH(type); // set the color of the device
        break;
    case 3:
        cout << "Rooms: ";
        cin >> rooms;
        h2.roomsH(rooms); // set the model number of the device
        break;
```

Question 3, testhouse.cpp



```
            case 3:
                cout << "Rooms: ";
                cin >> rooms;
                h2.roomsH(rooms); // set the model number of the device
                break;
            case 4:
                cout << "Cost: ";
                cin >> cost;
                h2.costH(cost); // set the status of the device
                break;
            }
            break;
        case 5: // 'estimatePrice()' function call
            cout << "Type: ('Detached', 'Semi-Attached', 'Attached') ";
            cin >> type; // 'type' input
            // repeat until the type corresponds to one of the option
            while (type != "Detached" && type != "Semi-Attached" && type != "Attached") {
                cout << "Try again...\nType: ";
                cin >> type;
            }
            cout << "Enter the years from now: ";
            cin >> yearEstPri; // number of years looking into the future
            cout << "The cost estimate of this house is ";
            cout << h.estimatePrice(type, yearEstPri) << endl; // function call
            break;
        case 6: // exits program
            cout << "You have exited the program...";
            break;
        }
    }
    return 0;
}
```

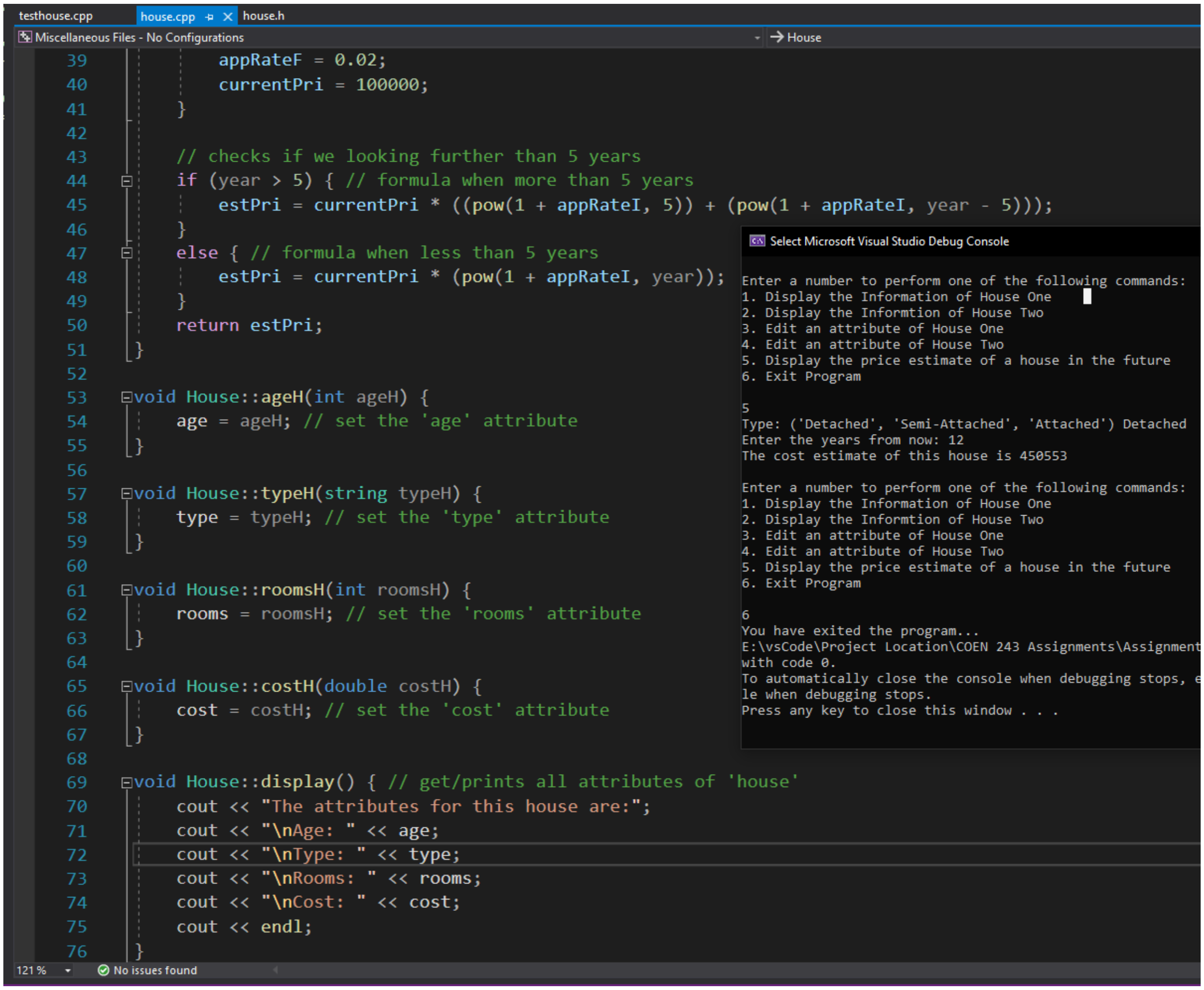
Question 3, house.cpp


testhouse.cpp
house.cpp
house.h
Miscellaneous Files - No Configurations
House
Select Microsoft Visual Studio Debug Console
121 %
No issues found

```cpp
// Assignment 4, Question 3, Week 10
// Hei Wang Andre Law, 4017 5600
// Program: user-defined class "House" defined by attributes
// (cpp file for implementing the member functions of the class)

#include<iostream>
#include <string>
#include "house.h"
using namespace std;

// class implementation for 'House'
House::House() {
    age = 0;
    type = "";
    rooms = 0;
    cost = 0.0;
}

// function estimating the price of a future house
double House::estimatePrice(string typeH, int year) {
    double appRateI; // appreciation rate within 5 years (Initial)
    double appRateF; // apprecition rate after 5 years (Final)
    int currentPri; // current house price
    double estPri; // final value of calculated price estimate

    // checks which type of house it is
    if (typeH == "Detached") {
        appRateI = 0.02;
        appRateF = 0.02;
        currentPri = 200000;
    }
    else if (typeH == "Semi-Attached") {
        appRateI = 0.02;
        appRateF = 0.03;
        currentPri = 150000;
    }
    else {
        appRateI = 0.01;
```

```
Enter the information for 'house' number 1

Age: 1
Type:  ('Detached', 'Semi-Attached', 'Attached') Attached
Rooms Number: 12
Cost: 123456

Enter the information for 'house' number 2

Age: 4
Type:  ('Detached', 'Semi-Attached', 'Attached') Detached
Rooms Number: 4
Cost: 654321

Enter a number to perform one of the following commands:
1. Display the Information of House One
2. Display the Informtion of House Two
3. Edit an attribute of House One
4. Edit an attribute of House Two
5. Display the price estimate of a house in the future
6. Exit Program

5
Type: ('Detached', 'Semi-Attached', 'Attached') Attached
Enter the years from now: 10
The cost estimate of this house is 210202

Enter a number to perform one of the following commands:
1. Display the Information of House One
2. Display the Informtion of House Two
3. Edit an attribute of House One
4. Edit an attribute of House Two
5. Display the price estimate of a house in the future
6. Exit Program

5
Type: ('Detached', 'Semi-Attached', 'Attached') Attached
Enter the years from now: 4
The cost estimate of this house is 104060

Enter a number to perform one of the following commands:
1. Display the Information of House One
2. Display the Informtion of House Two
3. Edit an attribute of House One
4. Edit an attribute of House Two
5. Display the price estimate of a house in the future
6. Exit Program

5
Type: ('Detached', 'Semi-Attached', 'Attached') Detached
Enter the years from now: 2
The cost estimate of this house is 208080

Enter a number to perform one of the following commands:
1. Display the Information of House One
```

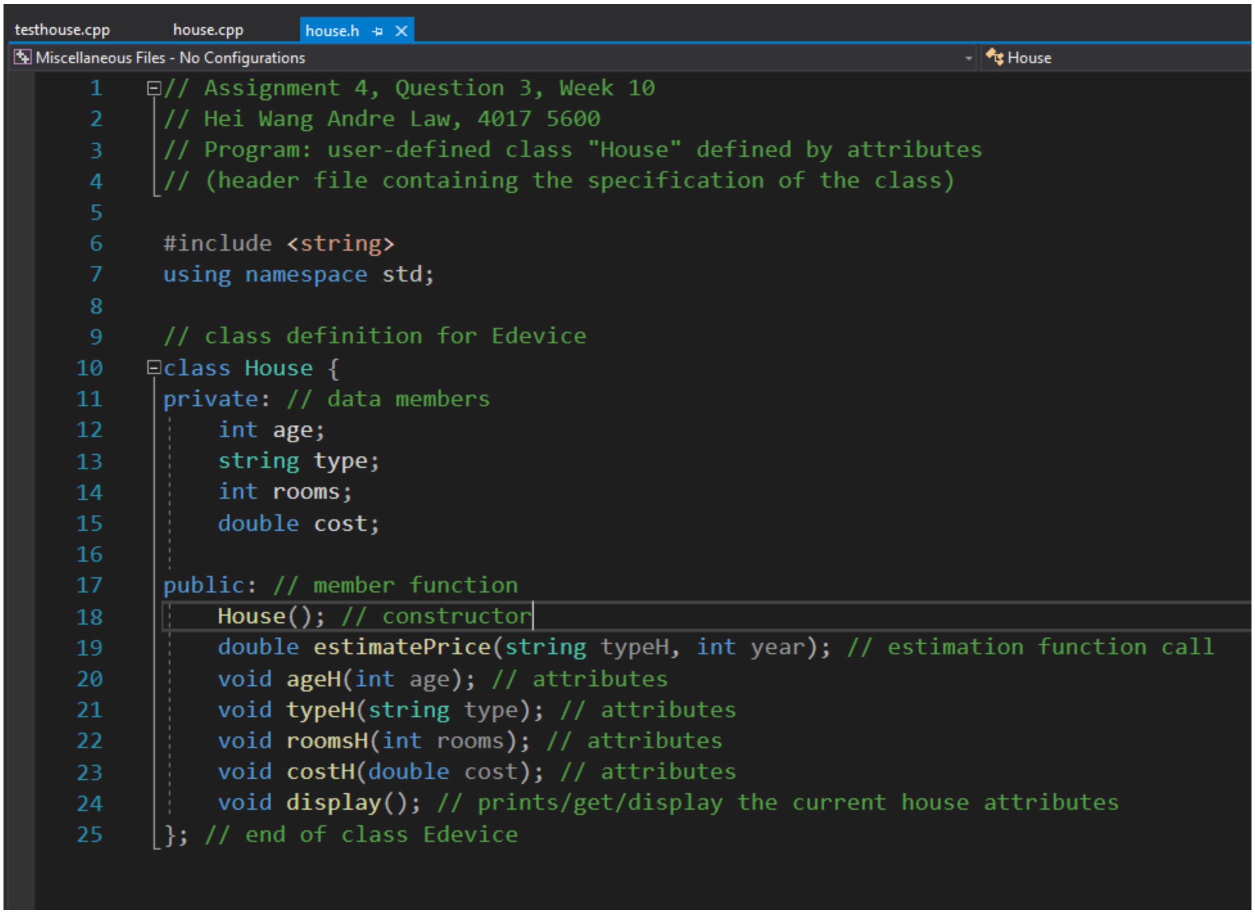
Question 3, house.cpp


testhouse.cpp
house.cpp
house.h
Miscellaneous Files - No Configurations
House
Select Microsoft Visual Studio Debug Console
121 %
No issues found

```cpp
        appRateF = 0.02;
        currentPri = 100000;
    }

    // checks if we looking further than 5 years
    if (year > 5) { // formula when more than 5 years
        estPri = currentPri * ((pow(1 + appRateI, 5)) + (pow(1 + appRateI, year - 5)));
    }
    else { // formula when less than 5 years
        estPri = currentPri * (pow(1 + appRateI, year));
    }
    return estPri;
}

void House::ageH(int ageH) {
    age = ageH; // set the 'age' attribute
}

void House::typeH(string typeH) {
    type = typeH; // set the 'type' attribute
}

void House::roomsH(int roomsH) {
    rooms = roomsH; // set the 'rooms' attribute
}

void House::costH(double costH) {
    cost = costH; // set the 'cost' attribute
}

void House::display() { // get/prints all attributes of 'house'
    cout << "The attributes for this house are:";
    cout << "\nAge: " << age;
    cout << "\nType: " << type;
    cout << "\nRooms: " << rooms;
    cout << "\nCost: " << cost;
    cout << endl;
}
```

```
Enter a number to perform one of the following commands:
1. Display the Information of House One
2. Display the Informtion of House Two
3. Edit an attribute of House One
4. Edit an attribute of House Two
5. Display the price estimate of a house in the future
6. Exit Program

5
Type: ('Detached', 'Semi-Attached', 'Attached') Detached
Enter the years from now: 12
The cost estimate of this house is 450553

Enter a number to perform one of the following commands:
1. Display the Information of House One
2. Display the Informtion of House Two
3. Edit an attribute of House One
4. Edit an attribute of House Two
5. Display the price estimate of a house in the future
6. Exit Program

6
You have exited the program...
E:\vsCode\Project Location\COEN 243 Assignments\Assignment
with code 0.
To automatically close the console when debugging stops, e
le when debugging stops.
Press any key to close this window . . .
```

Question 3, house.h



```cpp
// Assignment 4, Question 3, Week 10
// Hei Wang Andre Law, 4017 5600
// Program: user-defined class "House" defined by attributes
// (header file containing the specification of the class)

#include <string>
using namespace std;

// class definition for Edevice
class House {
private: // data members
    int age;
    string type;
    int rooms;
    double cost;

public: // member function
    House(); // constructor
    double estimatePrice(string typeH, int year); // estimation function call
    void ageH(int age); // attributes
    void typeH(string type); // attributes
    void roomsH(int rooms); // attributes
    void costH(double cost); // attributes
    void display(); // prints/get/display the current house attributes
}; // end of class Edevice
```