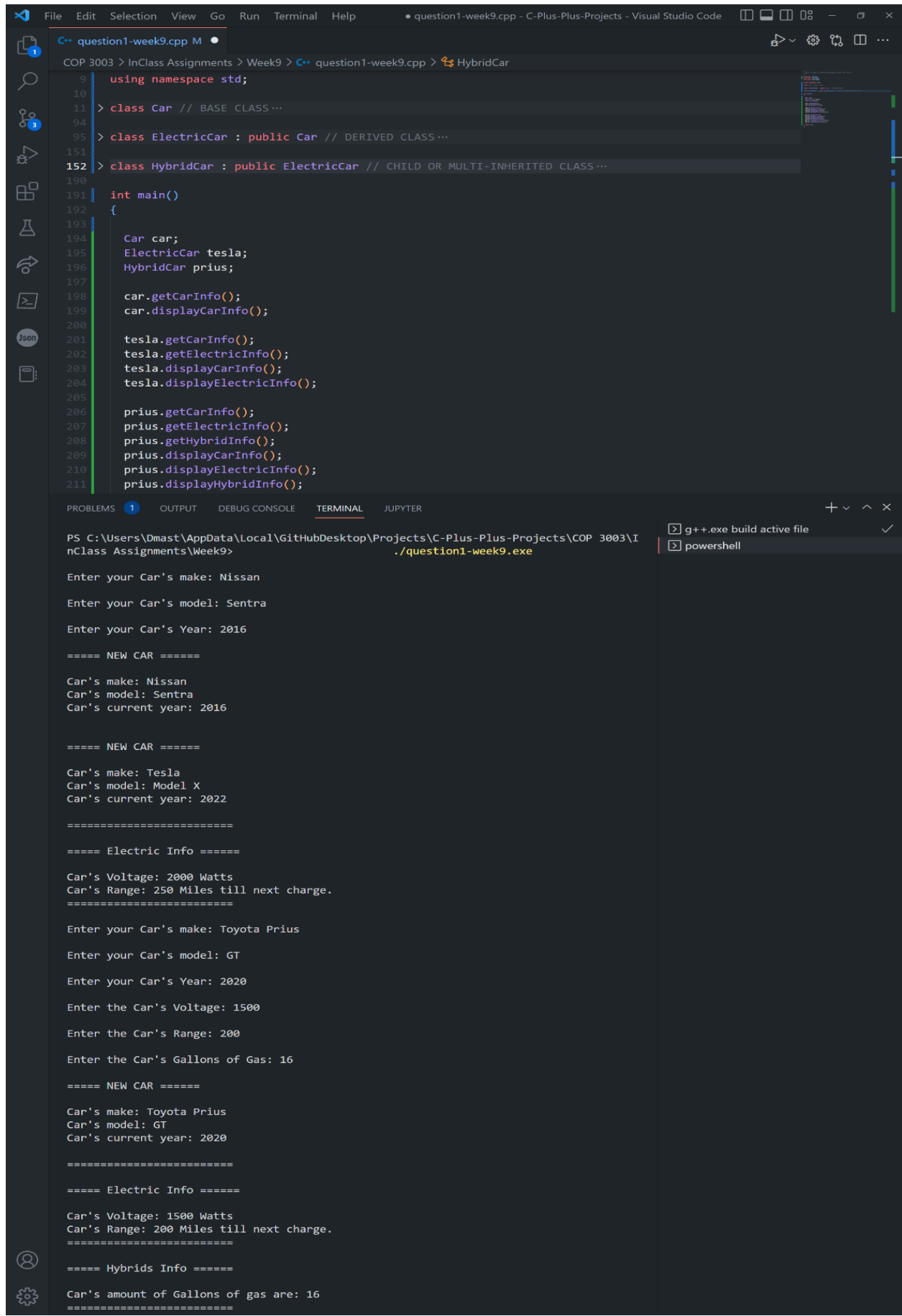


WEEK 9 IN CLASS ASSIGNMENT

Question 1:



The screenshot displays the Visual Studio Code interface. The editor window shows a C++ file named `question1-week9.cpp` with the following code:

```
9   using namespace std;
10
11  > class Car // BASE CLASS ...
12
13  > class ElectricCar : public Car // DERIVED CLASS ...
14
15  > class HybridCar : public ElectricCar // CHILD OR MULTI-INHERITED CLASS ...
16
17  int main()
18  {
19
20      Car car;
21      ElectricCar tesla;
22      HybridCar prius;
23
24      car.getCarInfo();
25      car.displayCarInfo();
26
27      tesla.getCarInfo();
28      tesla.getElectricInfo();
29      tesla.displayCarInfo();
30      tesla.displayElectricInfo();
31
32      prius.getCarInfo();
33      prius.getElectricInfo();
34      prius.getHybridInfo();
35      prius.displayCarInfo();
36      prius.displayElectricInfo();
37      prius.displayHybridInfo();
38  }
```

The terminal window shows the execution of the program. It prompts the user to enter car details and displays the output for three different cars: a Nissan Sentra, a Tesla Model X, and a Toyota Prius. The output for each car includes its make, model, current year, and electric information (voltage, range, and gallons of gas).

```
PS C:\Users\Dmast\AppData\Local\GitHubDesktop\Projects\C-Plus-Plus-Projects\COP 3003\InClass Assignments\Week9> .\question1-week9.exe

Enter your Car's make: Nissan

Enter your Car's model: Sentra

Enter your Car's Year: 2016

===== NEW CAR =====

Car's make: Nissan
Car's model: Sentra
Car's current year: 2016

===== NEW CAR =====

Car's make: Tesla
Car's model: Model X
Car's current year: 2022

===== Electric Info =====

Car's Voltage: 2000 Watts
Car's Range: 250 Miles till next charge.

Enter your Car's make: Toyota Prius

Enter your Car's model: GT

Enter your Car's Year: 2020

Enter the Car's Voltage: 1500

Enter the Car's Range: 200

Enter the Car's Gallons of Gas: 16

===== NEW CAR =====

Car's make: Toyota Prius
Car's model: GT
Car's current year: 2020

===== Electric Info =====

Car's Voltage: 1500 Watts
Car's Range: 200 Miles till next charge.

===== Hybrids Info =====

Car's amount of Gallons of gas are: 16
```

Question 2:

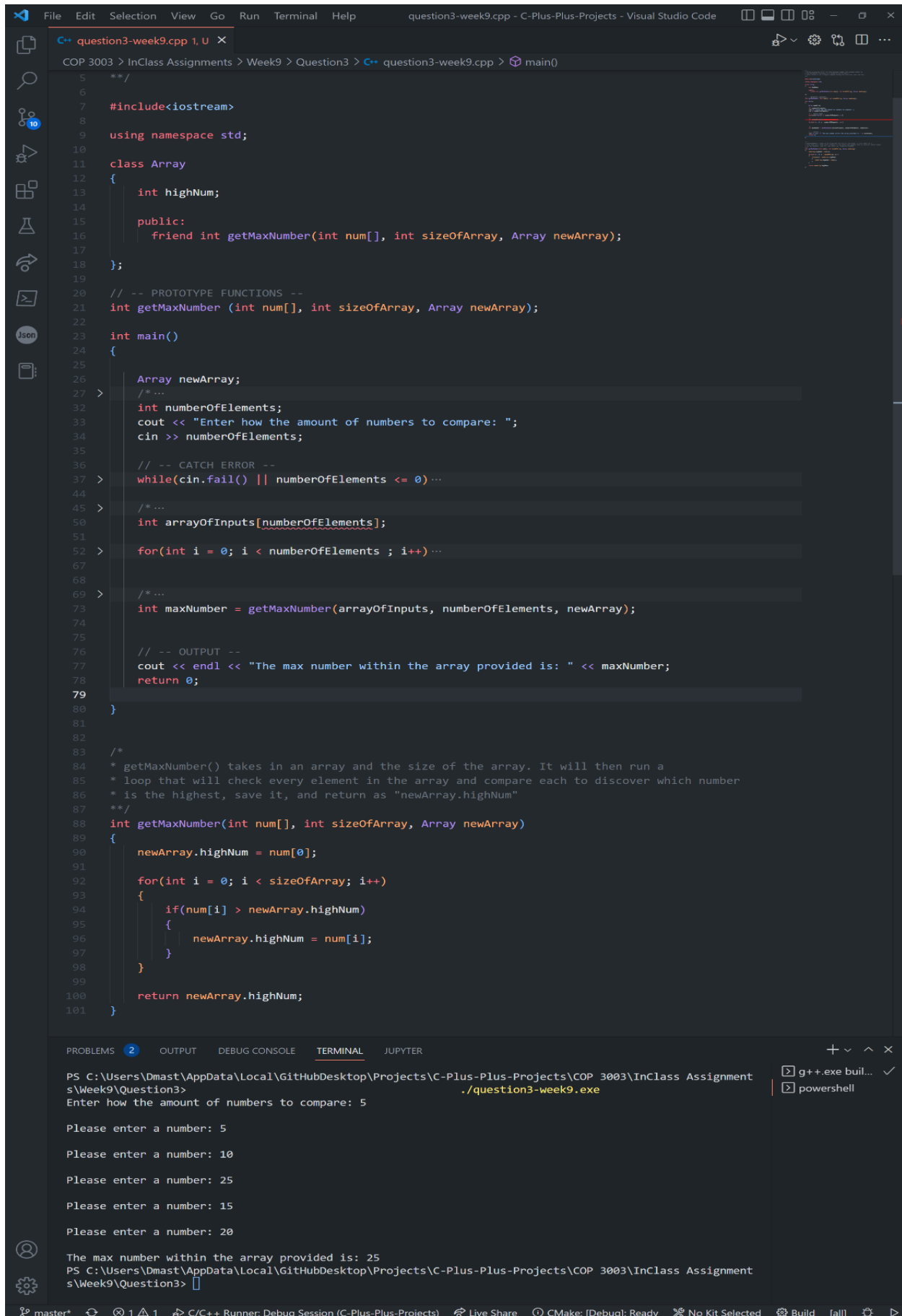
The screenshot displays the Visual Studio Code editor with a C++ project titled "question2-week9.cpp". The code implements a multilevel inheritance system for managing patient bills. It defines three classes: `Patient` (base class), `Surgery` (derived from `Patient`), and `Bill` (derived from `Surgery`). The `main` function creates a `Bill` object and calls methods to input patient information, display patient and surgery details, and calculate the total cost.

```
1  /*
2   * Using multilevel inheritance write a program to manage patient bills in a hospital
3   */
4
5  #include <string>
6  #include <cstring>
7  #include <iostream>
8
9  using namespace std;
10
11 > class Patient // BASE CLASS ...
12
13
14
15
16
17
18
19
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75
76
77
78
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83
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85
86
87
88
89
90
91
92
93
94
95 > class Surgery : public Patient // DERIVED CLASS ...
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97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134 > class Bill : public Surgery // CHILD OR MULTI-INHERITED CLASS ...
135
136
137
138
139
140
141
142
143
144
145
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161
162
163
164
165
166
167
168
169
170
171
172
173 int main()
174 {
175     Bill newPatient;
176
177     newPatient.getPatientInfo();
178     newPatient.getTypeOfSurgery();
179     newPatient.getBillPrice();
180     newPatient.displayPatientInfo();
181     newPatient.displaySurgeryInfo();
182     newPatient.displayBillPrice();
183
184     return 0;
185 }
```

The terminal window shows the execution of the program. It prompts the user for patient information (name, gender, age) and surgery details (type, price). The output displays the entered information and the total cost of the surgery.

```
PS C:\Users\Dmast\AppData\Local\GitHubDesktop\Projects\C-Plus-Plus-Projects\COP 3003\InClass Assignments\Week9\Question2> ./question2-week9.exe
Enter your Patient's name: Danny Joseph
Enter your Patient's gender: Male
Enter your Patient's age: 30
Enter the Patient's type of Surgery: Vasectomy
Enter the price of the surgery: 3000
===== NEW Patient =====
Patient's name: Danny Joseph
Patient's gender: Male
Patient's age: 30
=====
===== Surgery Info =====
Patient had a Vasectomy performed.
=====
===== TOTAL COST =====
Total Cost is: 3000
=====
PS C:\Users\Dmast\AppData\Local\GitHubDesktop\Projects\C-Plus-Plus-Projects\COP 3003\InClass Assignments\Week9\Question2>
```

Question 3:



```
5  **/
6
7  #include<iostream>
8
9  using namespace std;
10
11  class Array
12  {
13  |   int highNum;
14  |
15  |   public:
16  |       friend int getMaxNumber(int num[], int sizeOfArray, Array newArray);
17  |
18  | };
19
20  // -- PROTOTYPE FUNCTIONS --
21  int getMaxNumber (int num[], int sizeOfArray, Array newArray);
22
23  int main()
24  {
25
26  |   Array newArray;
27  |   /* ...
32  |   int numberOfElements;
33  |   cout << "Enter how the amount of numbers to compare: ";
34  |   cin >> numberOfElements;
35  |
36  |   // -- CATCH ERROR --
37  |   while(cin.fail() || numberOfElements <= 0) ...
44  |
45  |   /* ...
50  |   int arrayOfInputs[numberOfElements];
51  |
52  |   for(int i = 0; i < numberOfElements ; i++) ...
67  |
68  |
69  |   /* ...
73  |   int maxNumber = getMaxNumber(arrayOfInputs, numberOfElements, newArray);
74  |
75  |
76  |   // -- OUTPUT --
77  |   cout << endl << "The max number within the array provided is: " << maxNumber;
78  |   return 0;
79  |
80  | }
81
82
83  /*
84  * getMaxNumber() takes in an array and the size of the array. It will then run a
85  * loop that will check every element in the array and compare each to discover which number
86  * is the highest, save it, and return as "newArray.highNum"
87  */
88  int getMaxNumber(int num[], int sizeOfArray, Array newArray)
89  {
90  |   newArray.highNum = num[0];
91  |
92  |   for(int i = 0; i < sizeOfArray; i++)
93  |   {
94  |       |   if(num[i] > newArray.highNum
95  |       |   {
96  |       |       |   newArray.highNum = num[i];
97  |       |   }
98  |   }
99  |
100  |   return newArray.highNum;
101  | }
```

PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL JUPYTER

```
PS C:\Users\Dmast\AppData\Local\GitHubDesktop\Projects\C-Plus-Plus-Projects\COP 3003\InClass Assignment
s\Week9\Question3> .\question3-week9.exe
Enter how the amount of numbers to compare: 5

Please enter a number: 5

Please enter a number: 10

Please enter a number: 25

Please enter a number: 15

Please enter a number: 20

The max number within the array provided is: 25
PS C:\Users\Dmast\AppData\Local\GitHubDesktop\Projects\C-Plus-Plus-Projects\COP 3003\InClass Assignment
s\Week9\Question3> |
```

g++.exe build... ✓
powershell

master* 1 C/C++ Runner: Debug Session (C-Plus-Plus-Projects) Live Share CMake: [Debug]: Ready No Kit Selected Build [all]