```cpp
1   #include <stdio.h>
2   #include <String>
3   #include <iostream>
4   #include <time.h>
5   #include <cstdlib>
6   #include <cmath>
7   #include "progress.h"
8   #include "question.h"
9   #include "ui.h"
10  #include "test_question.h"
11  #include "test_progress.h"
12  #include "test_ui.h"
13  #include "test.h"
14
15  int main(int argc) {
16
17      if (argc == 2) {
18          // Check the number of arguements.  If there is more than one, test mode
19
20          test testing; // Create a new testing object
21
22          // Execute the tests on our Testing object
23          testing.executeTests();
24
25          // Pause so we can see the output
26          system("PAUSE");
27      }
28      else {
29          ui mainUI;             // Create a UI object
30          progress students[100]; // Student progress tracker
31          int stu = 0;           // The number of students already stored
32          question questions;    // Create a question object
33          int menuChoice = 1;    // The choice the user makes on a menu
34          int userAnswer = 0;    // The user's answer to a question
35          bool secondTry = false; // Whether this is their second try
36          int i = 0;             // Loop counter variable
37
38          while (menuChoice != 0) {
39              // While it's not the menu choice to exit the program
40
41              // Show our lovely header
42              mainUI.genHeader();
43
44              // Show our main menu
45              mainUI.genMainMenu();
46
47              // Ask the user what they want to do
48              menuChoice = mainUI.getAnswer();
49
50              if (menuChoice == 1) {
51                  // If it's the menu choice for answering questions
52
53                  // Intitialize a student object
```

```cpp
54                  students[stu].setStudentName(mainUI.askStudentName());
55                  questions.setLevel(mainUI.askLevel());
56                  questions.setOp(mainUI.askOperation());
57                  students[stu].activate();
58
59                  // Generate a new question
60                  questions.generateQuestion();
61
62                  // Ask the user ten questions
63                  while (i < 10) {
64                      mainUI.askQuestion(questions.getNumOne(),
65                          questions.getNumTwo(), questions.getOp(), secondTry);
66
67                      if (questions.checkAnswer(mainUI.getAnswer())) {
68                          // If the answer is true, increment counter and
69                          // generate a new question
70                          students[stu].answerTrue();
71                          questions.generateQuestion();
72                          secondTry = false;
73                          mainUI.answerEchoResult(true);
74                          i++;
75                      }
76                      else {
77                          // If the answer is false, increment counter and
78                          // check to see if the student is on their second try...
79                          students[stu].answerFalse();
80                          if (secondTry) {
81                              // ... If so, new question
82                              questions.generateQuestion();
83                              secondTry = false;
84                              i++;
85                          }
86                          else {
87                              // ... If not, flag it so it is a second try
88                              secondTry = true;
89                          }
90
91                          // Output to the user
92                          mainUI.answerEchoResult(false);
93                      }
94                  }
95
96                  // Reset the counter and increment the number of students
97                  i = 0;
98                  stu++;
99              }
100             else if (menuChoice == 2) {
101                 // If it's the menu choice for seeing answers, output them
102                 for (int i = 0; students[i].getActive(); i++) {
103                     mainUI.echoStudentScores(students[i]);
104                 }
105             }
106             else if (-1 > menuChoice || menuChoice > 3) {
```

```cpp
107                    // Invalid menu choice, let the user know
108                    mainUI.answerChoiceNotVaild();
109                    mainUI.genHeader();
110                    mainUI.genMainMenu();
111                }
112                else {
113                    // Do nothing, the loop will terminate
114                }
115            }
116        }
117
118        // Tell the OS we're done and happy :)
119        return 0;
120 }
```