ECE 1574 Spring 2014

Final Exam Study Guide

How to Solve It

1. What are the four steps of problem solving?
2. How are the four steps of problem solving related to programming?

Programming: Principles and Practice Using C++

Chapter 1

1. What is software?
2. What do most programmers refer to when they say that programming is interesting?
3. How are computers used in our day to day life?
4. What are the ideals for programmers?

Chapter 2

5. Are computers “smart” or “dumb”?
6. What is the one function all C++ programs must have?
7. What are the steps that take C++ source code and create an executable?

Chapter 3

8. What is an object?
9. What is an object's type?
10. What is a variable?
11. What is a variable definition?
12. What is a value?
13. How does “get from”, >>, work?
14. What is an assignment?
15. What is an initialization?
16. How is assignment different from initialization?
17. What is a valid name in C++?

Chapter 4

18. What is I/O?
19. What is abstraction?
20. What is “divide and conquer”?
21. How does abstraction and divide and conquer help programmers solve difficult problems?

22. What is an expression?
23. How does C++ compute mathematical expressions?
24. What does C++ do with mixed type expressions, e.g. 7 + 2.5?
25. How does C++ choose between alternatives?
26. How does C++ repeat statements?
27. What is a function in C++?
28. What is the syntax of a function definition?
29. Why do we write functions?
30. What is a function declaration?
31. What is a vector?
32. How do you put data into a vector?
33. How do you access data in a vector?

Chapter 5

34. What are four different types of errors?
35. What are two different types of compile-time errors?
36. Which errors are easiest to find?
37. What are different sources for errors?
38. What are different ways to deal with errors?
39. What is debugging?

Chapter 6

40. This chapter is a combination of previous chapters and serves as a review.

Chapter 7

41. This chapter is a combination of previous chapters and serves as a review.

Chapter 8

42. What is a declaration?
43. What is a definition?
44. What typically goes in a header file?
45. What is scope?
46. What are the different types of scope?
47. What is in a function declaration?
48. What is pass-by-value?
49. What is pass-by-reference?
50. What is a reference?

Chapter 9

51. What is a class?
52. What is a struct?
53. How do classes and structs differ?
54. How are classes and structs the same?
55. What does a private access modifier do?

56. What does a public access modifier do?
57. Why should fields be private and methods public?
58. What is a constructor?
59. What is a default constructor?

Chapter 10

60. How do you open a file for reading or writing?
61. What happens if an input file doesn't exist when you open it?
62. What happens if an output file doesn't exist when you open it?
63. What happens to an output file when you open it?

Chapter 11

64. How do you format the width of an output field?
65. How do you format the precision of decimal output?

Chapter 17

66. What is a pointer?
67. How does a pointer differ from a reference?
68. How do you declare a pointer?
69. How can you allocate memory to a pointer?
70. How do you release or free a pointer?
71. What is NULL?
72. Where do pointers typically get their memory?
73. Where do automatic variables typically get their memory?
74. What is an array?
75. What is a destructor?

Chapter 18

76. This chapter filled in a few tiny cracks that were needed for pointers.

Scope Example:

For the next questions use this small program to answer the questions. Assume all #include and using directives as needed:

```
int x = 10;

int otherFunction()
{
     int z = x * 4;                    //line 10
     return z;                         //line 20
}

int function(int x)
{
```

```
    x = x * 2;                          //line 30
    int y = x + x + otherFunction();    //line 40
    return y;                           //line 50
}

int main()
{
    x = 0;                              //line 60
    int x = 7;                          //line 70
    cout << function(x);                //line 80

}
```

1. On line 10, what is the value for x on the right side of the equals sign?
   A) 10
   B) 7
   C) 0
   D) 14
   E) 28

2. On line 30, what is the value for x on the right side of the equals sign?
   A) 10
   B) 7
   C) 0
   D) 14
   E) 28

3. On line 40, what is the value for x on the right side of the equals sign?
   A) 10
   B) 7
   C) 0
   D) 14
   E) 28