ECE 417/617 Assignment #10

Read Chapters 22, 23, and 24 of Steve McConnell, *Code Complete*, 2nd edition, Microsoft Press, 2004.

Then answer the following questions.

Chapter 22: Developer Testing

111. What is the difference between "black-box testing" and "white-box testing"?

112. What is the difference between testing and debugging?

113. Name a well-known proponent of testing first.

114. Explain structured basis testing.

115. How does the Pareto principle (described later in the book) apply to software quality improvement?

116. How does Microsoft achieve 0.5 defects per 1000 lines of code?

117. What two techniques have achieved even better results than Microsoft's?

118. Identify a risk of writing test code that increases as the number of tests increases.

Chapter 23: Debugging

119. What terms does McConnell prefer to "bug", and why?

120. We have seen over and over again that the ratio of the best to worst programmers in terms of speed/effectiveness/etc. is up to 10 to 1. What is the ratio regarding debugging time after one round of debugging? After multiple rounds?

121. Read the section entitled, "The Devil's Guide to Debugging". McConnell's description would be humorous if it did not reflect reality at all. Have you ever noticed anyone approaching debugging this way?

122. Consider the following statement: "I know that I implemented the feature correctly, but my code is not working." What is wrong with the statement? If there is a problem in a program you wrote, whose fault is it?

Chapter 24: Refactoring

123. Refactoring will be needed even on a well-managed project. Why?

124. What is McConnell's Cardinal Rule of Software Evolution?

125. What is Martin Fowler's definition of "refactoring"?

126. McConnell lists a number of excellent reasons to refactor. Can you find any that, in your opinion, are not as compelling as the others? Why or why not?

127. Why should you avoid writing "design ahead" code?

128. List three pieces of advice for ensuring that the refactoring process is conducted safely.

129. Explain Figure 24-2.