Written Reponses: Software Engineering Exercise (SHAOTU JIA)

Exercise 5.1: How are software changes classified by their purpose? What is the most common purpose of the change?

Software changes purpose classification:

1. Perfective changes
2. Adaptive changes
3. Corrective changes
4. Protective changes

The most common purpose of the change is *perfective changes*. (Chapter 5.1.1)

Exercise 5.3: When is it permissible to do quick-fix changes?

The only acceptable circumstance for a quick-fix during the evolution stage is in the situation of an *emergency,* where human life or a substantial value is at stake. (Chapter 5.1.4 Strategy)

Exercise 5.5: What is a product backlog?

The *product backlog* is also called a *requirements database*, and in other contexts it is called a *project wish list* because it lists desired future product properties and functions. (Chapter 5.3)

Exercise 6.6 Describe a situation when a grep search fails. What would you do if this happened to you?

1. One possible failure is that the set of matches is empty, and this indicates that the sought word is not used in the code.
2. In another situation, the word is used in the code with a different meaning (as a homonym), and it occurrence does not indicate the significant concept location.

In both of these cases, the programmers have to use a different query and repeat the search. In formulating such a query, they often use the new knowledge they learned while they inspected the results of the previous unsuccessful queries.

3. Sometimes the query produces too many matches, and it is not practical to go through all of them.

In this situation, the programmers can formulate an additional query and do another search, this time searching only the set of the earlier matches.

4. A grep search often fails, and if the query does not produce a result, it may not be clear how to continue.
5. Grep often fails in a search for implicit concepts; their names usually do not appear in the code because there is no code, identifier, or comment that indicates the presence of the concept extension.

In case 4 and 5, programmers must use other concept location techniques.

Exercise 9.4 From the following function printPosition(), extract a new function that returns the position of the beginning of a given string in a given text.