BDSA exercise01

thwr, cafm, mhtr

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1 C#

Generics

Explain in your own words what the type constraints mean for both methods.

The first method compares based on T, and the second object compares based on U. This means they will be ranked on their seperate compareTo() methods

2 Software Engineering

Exercise 1

What is meant by "knowledge acquisition is not sequential"? Provide a concrete example of knowledge acquisition that illustrates this.

An example of this could be a programmer receiving a task from a customer, and designing a program to fit their needs based on personal opinion. Later, when consulting with the customer, the customer could give a piece of information that would change the entirety of the program. (e.g. as a frontend developer, making a website in JQuery, where the customer wants the website written in React, as the customer wants the possibility to make changes to the website in the future. Since JQuery is a bit outdated, the customer sees React as a better option)

Exercise 2

Specify which of the following decisions were made during requirements or system design:

System design

- "The ticket distributor will use PowerPC processor chips."
- "The ticket distributor is composed of a user interface subsystem, a subsystem for computing tariff, and a network subsystem managing communication with the central computer."

Requirements

- "The ticket distributor provides the traveler with an on-line help."

Exercise 3

In the following description, explain when the term account is used as an application domain concept and when as a solution domain concept:

"Assume you are developing an online system for managing bank accounts for mobile customers. A major design issue is how to provide access to the accounts when the customer cannot establish an online connection.

The two first instances of account are application domain concepts, as they are concerned with the problem at hand, rather then the solution. These instances refer to concepts that will have to be handled by the solution.
One proposal is that accounts are made available on the mobile computer, even if the server is not up. In this case, the accounts show the amounts from the last connected session."

The two last cases of account are used as solution domain concepts as they define objects, to help bridge the gap between the analysis design and the final working product. These two cases refer to a function that the final product will implement.

Exercise 4

A passenger aircraft is composed of several millions of individual parts and requires thousands of persons to assemble. A four-lane highway bridge is another example of complexity. The first version of Word for Windows, a word processor released by Microsoft in November 1989, required 55 person-years, resulted into 249,000 lines of source code, and was delivered 4 years late. Aircraft and highway bridges are usually delivered on time and below budget, whereas software is often not.

Discuss what are, in your opinion, the differences between developing an aircraft, a bridge, and a word processor, which would cause this situation.

When making physical objects as a airplane or a bridge it is a lot easier to predict problems, since they abide the laws of physics where as when making software it's almost impossible to predict problems, since software is abstract and not something you can touch and feel.

Exercise 5

Specify which of these statements are functional requirements and which are nonfunctional requirements:

Functional requirements

- "The TicketDistributor must enable a traveler to buy weekly passes."
- "The TicketDistributor must provide a phone number to call when it fails."

Non functional requirements

- "The TicketDistributor must always be available."
- "The TicketDistributor must be easy to use."
- "The TicketDistributor must be written in Java."

Exercise 6

What is the purpose of modeling?

- Create an abstraction of different systems to visualize and understand
- Answer questions regarding large or complex systems
- Remove unnecessary distractions
- It is cheaper to model a ticket system then creating a ticket system