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TCSS 360 Summer 2022

Written Assignment 1

1. **(4 points) What are the levels of visibility in Java from most visible to least visible? For each type of visibility clearly describe when that level is most appropriately used.**

Public.

This level of visibility is most appropriately used for final and static variables that are not going to be changed.

Protected.

This level of visibility is most appropriately used for inheritance only. This is for saying that a class will be a parent class. Classes that extend this class will inherit from the parent. Package level classes can access protected visibility.

Package.

This level of visibility is most appropriately used when other classes inside a package, or factory, need to be able to access things such as constructors.

Private.

This level of visibility is most appropriately used when protecting data from outside access. This will ensure that your software will not be broken by unexpected data, and if access is needed to this data, it can be given by writing a get method. Internal Classes can access this data.

1. **(10 points) From the Wikipedia link for the Systems Development Life Cycle (Links to an external site.), list each of the 10 phases in the life cycle and give a reasonable explanation of each IN YOUR OWN words (no copy/paste). Note this list is a bit different than the slides/notes that will presented in class. Be sure an give your answers via Wikipedia, not the slides -- I want you to see the differences between each, but you do not need to discuss those differences.**

Preliminary Analysis:

Find out what the problem that needs to be solved is, what the overall goal of the company is, see how the problem can be solved. Propose more than one way to solve the company’s problem. This is also the stage where cost analysis must be performed, which is finding the possible benefits and cost of implementing the proposed solutions.

Systems Analysis, Requirements Definition:

This stage of the life cycle is where more research must be done into how the system is currently operating. This includes asking end users questions about what they like and dislike about the current system, assessing pros and cons, as well as finding solutions to the cons of the current system.

Systems Design:

This stage is all about gathering details about the features and look of the new system. This stage includes pseudocode as well as diagrams.

Development:

This is where the code is written for the new system.

Integration and Testing:

As Developers, we must rigorously test our code to find bugs, errors, or any other usability issues prior to launch.

Acceptance, Installation, Deployment:

This is the final stage of production where the system is launched to run the business. By this point bugs should all be worked out as the software is live.

Maintenance:

This is maintaining code in the system to ensure it does not become obsolete. This can be though of as monitoring and improving the system while it is in a production environment.

Evaluation:

This is a chance to review the newly deployed system and ensure it meets the business’s needs. If there are any shortcomings, they are fixed during this stage of the life cycle. This will ensure that the business got solutions to their original problems.

Disposal:

This stage is where old systems are swapped out for new systems. This stage includes preserving or deleting sensitive data in accordance with the company’s security policies.

1. **(5 points) From the Naming and Style Guidelines document for our class on Canvas, list our naming conventions for:**

* **class names**

InCamelCase, starting with an uppercase letter.

* **instance variables/fields**

myFieldName, starts with my and uses camel case for the rest.

* **parameters to methods**

theName or thing1/2/3. Starting with *the* and using camel case for the rest. Additionally, starting in lower case and ending with a digit.

* **local variables**

inCamelCase. First word is not capitalized, but the following words are camel case.

* **constants/final variables/fields**

IN\_ALL\_CAPS\_WITH\_UNDERSCORES. This means all caps as per the java convention. One exception is that they can not start with any “special” prefixes such as MY\_, THE\_, etc.

1. **(2 points) From the Naming and Style Guidelines document, list when the final keyword should be used in your code.**

The final modifier is used in code on all method parameters, and on every field/Local variable that will remain unchanged during execution.

1. **(4 points) What is a mutable object? What is an immutable object? Why should we strive for objects that are immutable in our software designs?**