CS525 Quiz 1

Name: Student ID:

1. What is a design pattern?

Either one is fine: “descriptions of communicating objects and classes that are customized to solve a general design problem in a particular context”. Or “a design pattern is a general reusable solution to a commonly occurring problem within a given context in software design”

1. Why are design patterns important to software designers?

* To facilitate communication
* Right reuse of a design that has been tested in the market

1. What is a software framework?

Frameworks are semi-completed applications that need to be customized according to user requirements to become an application for a particular organization.

1. Why do we need software frameworks?

* Reduce the software development effort
* Frameworks provide generic services (or plumbing/boiler-plate)
* Frameworks reduce complexity
* Frameworks improve productivity, quality and consistency

1. Explain the 3 categories of GoF design patterns.

* Creational: patterns used to create objects. (Object creation).
* Structural: patterns that are concerned with class or object composition to put in place a certain capability or perform a certain task. (Micro-architecture).
* Behavioral: patterns that are concerned with communication between objects in a design solution. (Object interaction).

1. Name 3 design patterns for each category.

* Creational: Singleton, Prototype, Factory Method
* Structural: Adapter, Proxy, Façade
* Behavioral: Template Method, Iterator, Command

1. What is the intent of the Singleton pattern?

Ensure a class only has one instance, and provide a global point of access to it

1. Conceptually how to implement a Singleton? Please explain with necessary code snippets.

* Have a private constructor
* Provide a public static getInstance() method
* Store the instance with a private static field