This Reading assignment is accompanied by the question’s respected classes inside folder: Erfan Yeg\_Gritty Details Part 3

**1. When would you define a class abstract?**

You would declare a class as abstract when you would like to define the basic outline for subclasses extending the abstract class. This is used to achieve abstraction, which is the purpose of showing common functionality to the user, hiding internal details and processes.

**2. Create an abstract class for the following:**

* **Solid**
* Class Solid in folder Question #2
* **Create 2 subclasses of Solid:**
* **RectangularPrism**
* Class RectangularPrismin folder Question #2
* **Sphere**
* Class Sphere folder Question #2

All classes are located in Question #2 folder

**3. Create a chart to compare the similarities and differences between an abstract class and an interface.**

|  |  |
| --- | --- |
| **Abstract** | **Interface** |
| An abstract class does not support multiple inheritance | Interfaces support multiple inheritance |
| An abstract class can have abstract and non abstract methods | An Interface can have static and abstract (and default in JDK 8) methods and only those modifiers for methods |
| An abstract class is extended using the extends keyword | An interface is implemented using the implements keyword |
| An abstract class can have final/ non final, static/non static instance/local variables | An Interface has only static and final instance variables |
| An abstract class can have different class members (ex. Public, private, protected ...etc) | Interface class members are public by default |
| An abstract class can extend one class and implement multiple interfaces | An interface can extend other interfaces only |
| The abstract keyword defines an abstract class | The interface keyword defines an interface |

**4. When would you define a class as interface**

Interfaces like abstract classes are used to achieve abstraction, allowing them to show common functionality between classes, but they also offer multiple inheritance allowing multiple interfaces to be implemented leading to much more complicated class hierarchies.

**5. Create an interface for PersonRecord called PersonalInfo with these methods:**

* **Calendar getFileCreationDate();**
* **Int getCurrentAge(int birthYear);**

Both **PersonRecord** and **PersonalInfo** are located in folder Question #5

**6. Math.random();**

* **What values are returned by the method random()?**

The method random returns a random double type number from 0 - 0.99 inclusively with a slight bias

* **Write the code that will output values for the following ranges for both int and double:**
* **50 - 100 inclusive**

System.out.println ( 50 + (int) (Math.random()\*51)); //random int 50 - 100 inclusive

System.out.println (50.0 + (Math.random()\*51.0)); //random double 50 - 100 inclusive

* **500 - 600 inclusive**

System.out.println (500 + (int) (Math.random()\*101)); //random int 500 - 600 inclusive

System.out.println(500.0 + (Math.random()\*101.0)); //random double 500 - 600 inclusive