Task 11

Qus1:

1. **Public (public):**
   * **Class:** A public class can be accessed from any other class.
   * **Method:** A public method can be called from any other class.
   * **Variable:** A public variable is accessible from any other class.
2. **Private (private):**
   * **Class:** A private class is not allowed in Java. All classes are package-private by default.
   * **Method:** A private method can only be accessed within the same class.
   * **Variable:** A private variable is only accessible within the same class.
3. **Protected (protected):**
   * **Class:** A protected class is not allowed in Java. All classes are package-private by default.
   * **Method:** A protected method can be accessed within the same class, as well as by any subclass (even if the subclass is in a different package).
   * **Variable:** A protected variable is accessible within the same class, as well as by any subclass (even if the subclass is in a different package).
4. **No modifier :**
   * **Class:** If no modifier (package-private) is specified, the class is accessible only within the same package.
   * **Method:** If no modifier is specified, the method is accessible only within the same package.
   * **Variable:** If no modifier is specified, the variable is accessible only within the same package.

Qus:2

Exception:

An Exception is an unexpected event, which occurs during the execution of a program Ex: at run time, that disrupt the normal flow of the program instructions. It can ben handled by our program.

Ex: **Checked Exceptions:** SQLException, IOException

**Unchecked Exceptions:** ArrayIndexOutOfBoundException, NullPointerException, ArithmaticException

* + It belongs to  java.lang.Exception package.
  + Only checked exceptions are known to the compiler.
  + It is mainly caused by the application it self.
  + It have 2 types : 1.Checked exceptions and Unchecked exception

Error:

Errors are problems that mainly occur due to the lack of system resources. It cannot be caught or handled. It indicates a serious problem. It occurs at run time. These are always unchecked. Ex:  **OutOfMemoryError, LinkageError, AssertionError.**

* + It occurs at run time
  + It belongs to java.lang.Error package.
  + It is mostly caused by the environment in which the application is running.

Qus:3

**Checked exception:**

Checked exceptions are exceptions that are checked at compile-time. Java compiler checks if a method handles or declares the checked exception, and it requires the programmer to either catch the exception using a **try-catch** block or declare the exception using the **throws** clause in the method signature.

Ex: **IOException**, **SQLException**, and **ClassNotFoundException**.

**Unchecked exception:**

Unchecked exceptions, also known as runtime exceptions, are exceptions that are not checked at compile-time. These exceptions usually result from programming errors and are subclasses of **RuntimeException** or its subclasses.

Ex: **NullPointerException**, **ArrayIndexOutOfBoundsException**, and **ArithmeticException**.

----------------------------------------------------------------------------------------------------- next answers will be on java.