Java Week 5 Research

**OOP (Object Orientated Programming)**

The four pillars of Object Orientated Programming are abstraction, encapsulation, inheritance, and polymorphism1.

Abstraction is hiding the implementation of a program from the user. Only showing how the program functions. An example would be an employee object in a database. The user can see the employee data but can’t see how that data came to be. Like the calculation for pay, overtime, retirement calculations etc. The functionality of building the employee data is hidden from the user1 and 2.

Encapsulation is putting the data and code together as one. To access parts of the program the programmer identifies certain classes and methods as public, private, or protected. Public can be accessed by the entire program from anywhere in the program. Private can only be accessed within that class. Protected is only available to the classes and subclasses in the same package3.

Inheritance is when one class can access properties and methods from other classes within the package1. One class can use methods and properties from different classes, then add its own methods and properties.

Polymorphism is the ability to do multiple things in different ways. The ability to change and preform different jobs in different ways.

The difference between an object and a class in java is that a class hold all the properties of an object. Or an object is an instance in a class. An example of a class would be ‘animal’. Objects(instance) in a class would be, ‘dog’, ‘cat’, ‘elephant’, etc.

**Exceptions**

Exceptions are events in a program that are unwanted or unexpected5. Exceptions are either checked or unchecked. An example of a checked exception is when a program is compiled errors could be identified before the program is ran. Example is mismatch variables. An unchecked exception will not be identified when the program is compiled. Example is an array being out of range. The programmer might build an array with three elements. Then the programmer wants to identify the third element. It is out of range because arrays start at 0. So to identify the 3rd element would actually be in the second location.

1Four Main Object Orientated Programming Concepts of Java, <https://www.geeksforgeeks.org/four-main-object-oriented-programming-concepts-of-java/>

2 What are the 4 Pillars of OOPs, <https://www.quora.com/What-are-the-4-pillars-of-OOPs>

3Java protected keyword, <https://codegym.cc/groups/posts/java-protected-keyword>

4Difference between object and class. <https://www.javatpoint.com/difference-between-object-and-class>

5Exceptions in Java, <https://www.geeksforgeeks.org/exceptions-in-java/>