# Study Guide for Programming Roles

**Please do NOT look at Notes during the interview:** *This is grounds for failure*

**4 Pillars of OOP**

* **Encapsulation -** *is a concept of hiding data by wrapping up members into a single unit such as a Class. It provides security to data members by making the variable private, and then creating public getter/setter methods to access those variables.*
  + *Getters & Setters -*
  + *Access Control -*
  + *Access Modifiers -*
  + *Class Binding -*
* **Inheritance -** *the ability of creating a new class from an existing class. Inheritance is when an object acquires the property of another object. Inheritance allows a class (subclass) to acquire the properties and behavior of another class (super-class). It helps to reuse, customize and enhance the existing code.* 
  + *Hierarchical inheritance -*
  + *Parent Class vs. Child Class -*
* **Abstraction -** is another concept of hiding data from the user by either abstract classes or interfaces. *it has the ability to show only essential/necessary features of an entity/object to the outside world and hide the other irrelevant information.*
  + *Classes -*
  + *Properties -*
  + *Methods -*
  + *Parameters -*
  + *Constructors -*
  + *Default Constructors -*
* **Polymorphism –** Stems from *Inheritance*. *A subclass can define its own unique behavior and still share the same functionalities or behavior of its parent/base class. A subclass can have their own behavior and share some of its behavior from its parent class not the other way around. A parent class cannot have the behavior of its subclass.*
  + *Interfaces -*
  + *Abstract classes -*
  + *Overloading vs Overriding -*
  + *Runtime vs Compile-time* -

**SQL Syntax**

* + **Basic Queries -**
  + **Primary Keys -**
  + **Foreign Keys -**
  + **Normalization -**

**Data Structures**

* + *Arrays -*
  + *Arraylist -*
  + *Linkedlists -*
  + *Hash tables -*

**Define**

* + *Exception Handling -*
  + *Performance vs Scalability -*
  + *Agile vs Waterfall -*

**Problem Solving -** <https://www.youtube.com/watch?v=lLOALyWls2k>

**Coding Practice** - https://www.hackerrank.com/