

Homework Assignment 3

- a. The three major class relationships in OOP are parent, child, and abstract classes. A Parent class is an object or a collection of methods that perform higher functions. A child class may inherit these functions and variables from the parent and allows them to override the functions from the parent if necessary. This means that the parent class can serve as both its own class object or the framework for a child. Abstract classes, are essentially parent classes that only fill this role. Abstract classes can not be called for any case other than as a base for the children that extend it.
- b. Arrays and ArrayLists (ALs) are both ways of listing out data without the need to individually create variables for each data value. However, the key differences between them are size, efficiency, and data types. While arrays can hold both primitive types and objects, ALs can only store objects. If you intend to feed primitive types to an AL the type must be assigned with its wrapper class. Arrays are also immutable while ALs are mutable. Arrays are at a fixed size and require a custom function in order to be resized. ALs have this functionality built in as they grow and shrink as values are added and removed from them. These differences also affect their speed and size. ALs tend to take up more space since they only store objects and are slower since they take up more memory than a regular Array.
- c. Overloading is when you have two functions with the same name but take different parameters. This allows a function with one parameter to do something different from one with two parameters but the same name. Overriding allows a child function to have a function with the same name and the same parameters but to execute differently from its parent function.