**Week 5 Research Assignment**

**What are the four pillars of Object-Oriented Programming? Explain each pillar.**

The four pillars are Abstraction, Encapsulation, Inheritance, and Polymorphism. Abstraction is the process of taking data from a large pool, and only utilizing the pieces that are needed. There is additional data there, however, with Abstraction, the data can be removed, and certain pieces can be selected for use. Encapsulation is a private object within a class. This object cannot be accessed directly but can be called by other public objects. Inheritance is an object’s ability to ‘inherit’ or assume traits of another object. This is useful to reuse code. With inheritance, some aspects can also be overwritten to make unique. Polymorphism is a way to keep like classes together based on the actions within the class. For example, you can call the doctor and call your friend, and it can all be in the ‘phone call’ class.

**Sources**

<https://info.keylimeinteractive.com/the-four-pillars-of-object-oriented-programming>

<https://backend.turing.edu/module1/lessons/four_pillars_of_oop>

**What is the relationship between a Class and an Object?**

The Object is housed in the Class and contains the data. The Class is a way of organizing the Objects. The Class is the ‘big picture’ and the Objects are the pieces that make up that big picture. For example, there could be a Class of Trees, with the Objects being Pine, Spruce, and Maple. When initially created, Classes have not memory. Memory is attached when Objects are added to them.

**Sources**

<https://unstop.com/blog/difference-between-class-and-object>

https://www.geeksforgeeks.org/difference-between-class-and-object/

**What was your favorite thing you learned this week?**

The favorite thing I learned this week was how to put together all the new concepts and create the menu app. I enjoyed working through the different issues I encountered and troubleshooting until I was able to resolve the issue. It was fun seeing more of a ‘real life’ example from the code that I wrote.