Assignment 1: Written Portion

Collin Jones

Problem 2: HAS-A and IS-A

Relations 1, 2, 3, and 4 are all of type IS-A. This is because they each extend the general class structure provided in Duck into specific implementations; each is a type of "Duck".

Relations 5 and 6 are of type HAS-A. This is because these relations are between the Duck class and behavior interfaces which it can enact. The interfaces do not extend Duck, but provide specific behaviors for the class; thus, the Duck class holds a HAS-A relationship with the two behavior interfaces.

Relations 7, 8, and 9 are all of type IS-A. This is because each of the three quack behaviors are extensions of the QuackBehavior interface and provide specific implementation for it.

Problem 3: The Observer Design Pattern