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Homework Assignment 2

Design Decisions

In my program, the strategy is going to be set in the *Horse* class when enrolling a horse through the *Race* class. In the *Horse* class, there is a function called **resetStrategy()** that takes a strategy of type *StrategyBehavior* and initializes the horse's strategy based on which strategy was passed through. The rest of the inputs are set in the constructor. *StrategyBehavior* is an interface that has three classes that inherit from it to represent each different strategy: *EarlySprintStrategy*, *SteadyRunStrategy*, and *SlowStartStrategy*. In the interface, there is one function that they all share: **update()**. This takes the horse's speed and current distance run and calculates the distance at which the horse is next based on how the strategy works.

Other classes that I had were *Main* and *RaceTest* to test the different functions in my program. In my Race class, I have a function called **start()** that initiates the race. It calls **run()** which will do the different loop iterations by calling the update function of each Horse that calls the update function of its strategy and finds who the winner is. It then returns that winner and the start function sends that winner to a function named **printWinner()** to display the winner of the race. To manage the horses in the race, I used an ArrayList so that the size was dynamic to keep track of the size and so that I could fill it with Horse objects. I designed my program like this so that every class had its own functionality that did not overlap with another class. It allowed the program to be more organized and execute in a logical way.

Class Diagram