

Unit 9 Lab 1

Create the programs in repl.it, then copy the contents to a document and convert that document to a PDF. Submit the PDF.

1. Randle's Candles makes candles in various sizes. Create a class for the business named `Candle` that contains data fields for `color`, `height`, and `price` (`price` is a public field). Create get methods for all three fields. Create set methods for `color` and `height`, but not for `price`. Instead, when `height` is set, determine the price as \$2 per inch. Create a child class named `ScentedCandle` that contains an additional data field named `scent` and methods to get and set it. In the child class, override the parent's `setHeight()` method to set the price of a `ScentedCandle` object at \$3 per inch. Inside the `Main` class, create an object of each type and test each of the methods it has access to.
2. Create an `ItemSold` class for Tawny Pet Supply. Fields include an `invoiceNumber`, `description`, and `price`. Create get and set methods for each field. Create a subclass named `PetSold` that descends from `ItemSold` and includes three Boolean fields that indicate whether the pet has been vaccinated, neutered, and housebroken. Include get and set methods for these fields. In the `Main` class create two objects of each class and demonstrate that all the methods work correctly.
3. The developers of a free online game named Wholly Points have asked you to develop a class named `WhollyPointsPlayers` that holds data about a single player. The class contains the following fields: the player's `idNumber`, a `screenName`, and an array of integers that stores the highest score achieved in each of the 10 game levels called `highScores`. Include get and set methods for each field. The get and set methods for the scores should each require two parameters—one that represents the score achieved and one that represents the game level to be retrieved or assigned. Display an error message if the user attempts to assign or retrieve a score from a level that is out of range for the array scores. Additionally, no level except the first one should be set unless the user has earned at least 100 points at each previous level. If a user tries to set a score for a level that is not yet available, issue an error message. Create a class named `PremiumWhollyPointsPlayer` that descends from `WhollyPointsPlayer`. This class is instantiated when a user pays \$2.99 to have access to 40 additional levels of play. As in the free version of the game, a user cannot set a score for a level unless the user has earned at least 100 points at all previous levels. In the `Main` class, create at least two objects of each class and demonstrate that all methods work correctly.