CSY2030 Inheritance Lab

1. Design a class named *Artwork*. It should have the following properties:

   Artist Name
   Value in pounds

   Add a constructor and relevant getters and setters. Demonstrate your class by using it in a program to store at least 2 pieces of Art.

2. Create the following two sub-classes that extend your *Artwork* class from exercise 1.

   Sculpture that has the properties:
   - Material
   - Weight

   Painting that has the properties:
   - Paint Type (e.g. watercolour, acrylic, oil)
   - Canvas width
   - Canvas height

   Add relevant constructors (using *super*), getters and setters to your *Sculpture* and *Painting* classes. Your painting and sculpture classes must extend the base *Artwork* class. In your setters add validation for canvas width, weight and canvas height to prevent an artwork existing with a negative value for its size/weight. If an invalid painting is created you should show an error.

   Add at least one *Sculpture* object and one *Painting* object to your program and make calls to superclass and subclass methods.

3. Design a class named *Employee*. The class should keep the following information in fields:

- Employee Name
- Employee number
- Employee Hire date
- Hourly pay rate (a double)

Write one or more constructors and the appropriate getters and setters for the class. Also add a method called getPay() which takes a integer as an argument for the number of hours worked and returns the amount of pay they will get for those hours.

Next, write a sub-class named *ProductionWorker* that extends the *Employee* class. The *ProductionWorker* class should have a field to hold the following information:

- Shift (an Integer)

The workday is divided into two shifts: day and night. The shift field will be an integer value representing the shift that the employee works. The day shift is shift 1 and the night shift is shift 2.

Write a constructor (using *super*) and the appropriate getters and setters for *ProductionWorker*.

Also write a method in *ProductionWorker* called *getPay()* which takes a integer as an argument for the number of hours worked and returns the amount of pay they will get for those hours. In this method night shift workers get paid double and day shift workers get their normal hourly rate. This is *overriding*.

Create at least one Employee object and one *ProductionWorker* object to your program and make calls to superclass and subclass methods. Experiment with polymorphic variables.