**Purpose:** Work with exception handling.

**Purpose:** Exception handling is important because it allows us to handle problems that occur when we have runtime issues. It we have a runtime error, the program will general fault out and quit. With exception handling we can catch the problem preventing a major fault. In addition to catching faults, we can create our own error codes to prevent users from putting in incorrect data or having our program catch logical errors.

**Problem:** We are going to take homework 7 and add some exception handling to our classes. I have provided you with the student classes and the interface. You must add exception handling to check the input of the classification.

If you have 2 undergraduate objects one with “Freshman” and the other with “freshman”, and you compare the two, the strings are not the same. We have a method called **equalsIgnoreCase()** which would solve this issue. But what if someone misspelled “Freshman”, we do not have a method to catch that. You must add the functionality to catch these problems.

Write a new class called **InvalidClassificationException\_HW8**.java. This class must inherit the **Exception** class. This class needs to have a private String called message. It needs a constructor that takes a string to set the message to. It needs to override the toString() method to return the message from the class.

This exception will be used to catch invalid input. In both of the children student classes add some checking in the constructor and setclassification method to validate the input. For Undergraduate the strings should be “Freshman”, “Sophomore”, “Junior”, “Senior”. For Graduate it should be “Masters” and “Doctoral”. The compare method needs to throw the exception you created if the input does not correspond EXACTLY to one of the above strings.

In the event of a mismatch, you need to create a new exception object with the error message saying the input options for the appropriate class. This object must be thrown back out of the class.

**Input:** Write a test class, HW8.java, that creates at least 2 Undergrad objects and 2 Grad objects and populate them with information and different classifications. You must create these objects in a try-catch. Print out the comparison of the objects like in homework 7.