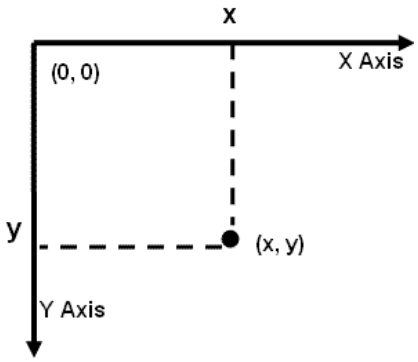
CSCI 2073 – Programming Assignment 1



A distant world, which we will imagine as a matrix of cells with dimensions 20 x 20, is inhabited by a variety of creatures. We will assume each dimension is indexed from 0 to 19, so that coordinates (0, 0) represent the upper left (i.e., Northwest) corner of the world. Every creature has a location in terms of (x, y) coordinates.

You are provided with an abstract class `Creature` that serves as a base class for representing various types of creatures. Your task is to write a subclass of Creature to represent Plip creatures. A Plip is a creature that has a certain number of life units and can absorb the sun's energy.

A Plip can move around the world by invoking the `move()` method, which is abstract in the superclass. Calling the method causes the Plip to move east by one cell unless it is adjacent to the world's eastern boundary (x = 19), in which case it moves west by one cell. Future moves will cause it to continue moving west until it hits the world's western boundary, which causes it to resume future moves in an eastern direction. A Plip loses two units of life when it moves (so it must have at least two life units before moving).

In addition, the Plip class should provide the following methods:

- void method `absorb()` which causes a Plip to gain one life unit from the sun (however, a Plip with zero life units will no longer be able to absorb life from the sun)
- int method `getLife()` to return the number of Plip life units
- `toString` which should return a String that is attractively labeled and includes, at a minimum, the Plip's life units as well as its location in (x,y) format.
- a constructor with signature `Plip(int lifeUnits, int x, int y)` to create a Plip with the given number of units of life at the given (x, y) coordinates (where $0 \le x \le 19$ and $0 \le y \le 19$)

To test the basic syntax and functionality of your class, the *Creature.java class* and the *PlipTest.java* program should be downloaded and stored in the same folder as your *Plip.java* solution. Compile and execute *PlipTest.* If this test program and your class do not work well together, you need to modify your class, not the test program. Once the test program works with your class as expected, submit the Plip.java file to codePost.io for final testing.

Be sure to document your code using Javadoc format. Each of your classes must have the following documentation at the top of the .java file:

```
/**

   Date:
   Course:
   Description:
   On my honor, I have neither given nor received unauthorized help while
   completing this assignment.
   Name and CWID.

*/
```

Each of your methods must have the following documentation preceding the method header:

```
/**
   Method description
   @param arg description of each arg        // One per argument
   @return description of value returned     // At most one per method
*/
public int sample(String arg)
{
}
```