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# Butterfly

**Language/Type:** Java classes constructors Critters fields implementing inheritance instance methods
**Related Links:** Critter.java
**Author:** Marty Stepp (on 2010/05/30)

*("Critter" classes come from the University of Washington's CSE 142 Critters homework assignment. See the assignment spec for more information.)*

Define a `Critter` class named `Butterfly` with the following behavior:

| | |
|---|---|
| **constructor** | `public Butterfly()` |
| **color** | yellow (`Color.YELLOW`) |
| **eating behavior** | never eats (this is the default behavior) |
| **fighting behavior** | always forfeits (this is the default behavior) |
| **movement behavior** | moves N, W, N, E, then repeats |
| **`toString`** | alternates between `"x"` and `"-"` on each move |

**Type your solution here:**

```
1  public class Butterfly extends Critter {
2      public int moves = 0;
3      public int alternator = 0;
4
5      public boolean eat() {
6          return false;
7      }
8
9      public Attack fight(String opponent) {
10         return Attack.FORFEIT;
11     }
12
13     public Color getColor() {
14         return Color.YELLOW;
15     }
16
17     public Direction getMove() {
18         this.moves++;
19         this.alternator++;
```

```
20          if (this.moves==1) {
21              return Direction.NORTH;
22          } else if (this.moves==2) {
23              return Direction.WEST;
24          } else if (this.moves==3) {
25              return Direction.NORTH;
26          } else {
27              this.moves=0;
28              return Direction.EAST;
29          }
30      }
31
32      public String toString() {
33          if (this.alternator % 2 == 0) {
34              return "x";
35          } else {
36              return "-";
37          }
38      }
39  }
```

This is an **inheritance problem.** Write a Java class using inheritance. (You do not need to write any `import` statements.)

Indent 4

Sound F/X

Highlighting

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## You passed 4 of 4 tests.

| | |
|---|---|
| **test #1:** | `constructor` |
| **console output:** | |
| **result:** | pass |
| **test #2:** | `getColor` |
| **console output:** | `"yellow"`<br>`"yellow"`<br>`"yellow"` |
| **result:** | pass |
| **test #3:** | `toString` |
| **console output:** | `toString after 20 moves: "x-x-x-x-x-x-x-x-x-x-"` |
| **result:** | pass |
| **test #4:** | `getMove` |
| **console output:** | `Butterfly 1 getMove: "NWNENWNENWNENWNENWNENWNE"`<br>`Butterfly 2 getMove: "NWNENWNENWNENWNENWNENWNE"` |
| **result:** | pass |

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