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| **AP Computer Science GridWorld Case Study (GWCS)** | |
| **GridWorldLab04** | **Altering Object Behavior** |

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| **Lab Objectives** |
| Alter existing methods.  Create new methods. | |

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| **Lab Prerequisites** |
| **Completed ExpoJava, Chapter 07 and completed GridWorldLab04** | |

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| **Lab Sequence of Steps** | |
| **#** | **Actions** | | **Comments** |
| **01** | **Alter the Actor Class act Method**  Alter the **act** method of the **Actor** class so that **Actor** objects will rotate 90 degrees instead of 180. | | **Location.HALF\_CIRCLE** is simply a constant which stores the value of **180**. |
| **02** | **Alter the Flower Class act Method**  Alter the **act** method of the **Flower** class so that **Flower** objects will get brighter instead of dimmer. | | You will need to make sure the values of **red**, **green** and **blue** do not exceed **255**. |
| **03** | **Alter the Rock Class act Method**  Alter the **act** method of the **Rock** class so that **Rock** objects have a 1% chance of simply ceasing to exist. | |  |
| **04** | **Alter the Bug Class act Method**  Alter the **act** method of the **Bug** class so that **Bug** objects will follow the following logic:  If a **Bug** object can move, it should move.  If a **Bug** object cannot move, it should do the following:  The **Bug** will turn a random number of times.  If the **Bug** made a right turn, it will become a random shade of green.  If the **Bug** made a left turn, it will become a random shade of blue.  If the **Bug** made a U-turn, it will become a random shade of red.  NOTE: This will require the creating of several new methods. | | Most of the work for this assignment is done in the **Bug** class.  A right turn means the **Bug** turned less than 4 times.  A left turn means the **Bug** turned more than 4 times.  A U-turn means the **Bug** turned exactly  4 times. |
| **05a** | **Create new Bug Class Method getNumTurns**  Add method **getNumTurns** to the **Bug** class.  This method will **return** a random **int** between 1 and 7. | |  |

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| **05b** | **Create new Bug Class Method rotate**  Add method **rotate** to the **Bug** class.  This method will have a single **int** parameter which will determine how many turns the **Bug** will perform when it rotates. | Example:  rotate(3) means the **turn** method  gets called 3 times. |
| **05c** | **Create new Bug Class Method setRandomRed**  Add method **setRandomRed** to the **Bug** class.  This method will change the color of the **Bug** object to a random shade  of red. | When create a new **Color**, the red  value is the first of the 3 numbers.  The other 2 numbers should be 0. |
| **05d** | **Create new Bug Class Method setRandomGreen**  Add method **setRandomGreen** to the **Bug** class.  This method will change the color of the **Bug** object to a random shade  of green. | When create a new **Color**, the green value is the second of the 3 numbers. |
| **05e** | **Create new Bug Class Method setRandomBlue**  Add method **setRandomBlue** to the **Bug** class.  This method will change the color of the **Bug** object to a random shade  of blue. | When create a new **Color**, the blue  value is the third of the 3 numbers. |