Thread.sleep() method <https://www.tutorialspoint.com/java/lang/thread_sleep_millis.htm>

<https://www.tutorialspoint.com/uml/uml_class_diagram.htm>

Basic Java 2D example from Ken's GH repo: <https://github.com/kwhitener/tc3-csci165-main/blob/master/week-4/Lab/Drawer.java>

<https://www.guru99.com/uml-class-diagram.html>

<https://app.diagrams.net/>

<http://zetcode.com/gfx/java2d/introduction/>

instance of to determine what creature

if (grid[x][y] instanceof Hobbit)

**jordan\_aYesterday at 9:57 AM**

I'm not in the class, and don't know exactly what you guys are up to, so just pre-emptively ignore this, but here is some thinking about this just for fun: We want to "trick" the Hobbit into thinking that it is in the center of the world, so that it chooses the shortest path to its target.

The original grid from Colin's example:

0 1 2 3 4 5 6 7 8 9

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0 | | | | | | | | | | |

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1 | | | | | | H | | | | |

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2 | | | | | | | | | | |

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3 | | | | | | | | | | |

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4 | | | | | | | | | | |

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5 | | | | | | | | | | |

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8 | | | | | | | | | | |

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9 | | | | | | I | | | | |

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We want the Hobbit to think it is the center of the world by reframing the grid centered on the Hobbit:

1 2 3 4 5 6 7 8 9 0

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7 | | | | | | | | | | |

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8 | | | | | | | | | | |

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9 | | | | | I | | | | | |

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0 | | | | | | | | | | |

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1 | | | | | H | | | | | |

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2 | | | | | | | | | | |

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3 | | | | | | | | | | |

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5 | | | | | | | | | | |

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6 | | | | | | | | | | |

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So transform each x and y according to this:

Let the Hobbit's x and y coordinates be given

by x' and y'

Let n be the grid width, and let m be the grid height

For each x and y row/column, imagine them as

a new coordinate system x0', x1', x2', ... etc

To get each new x' coordinate, apply this formula:

x0' = [(n // 2) + 1] + 0 + x' % n

x1' = [(n // 2) + 1] + 1 + x' % n

x2' = [(n // 2) + 1] + 2 + x' % n

... etc

To get each new y' coordinate, do the same:

y0' = [(m // 2) + 1] + 0 + y' % m

y1' = [(m // 2) + 1] + 1 + y' % m

y2' = [(m // 2) + 1] + 2 + y' % m

... etc

After applying the transformation:

x0' x1' x2' x3' x4' x5' x6' x7' x8' x9'

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y0' | | | | | | | | | | |

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y1' | | | | | | | | | | |

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y2' | | | | | I | | | | | |

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y3' | | | | | | | | | | |

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y4' | | | | | H | | | | | |

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y5' | | | | | | | | | | |

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y6' | | | | | | | | | | |

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y7' | | | | | | | | | | |

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y8' | | | | | | | | | | |

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y9' | | | | | | | | | | |

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Now the Hobbit can make decisions on where to go based on this new coordinate system [(mod n)] [(mod m)]