Module 3

Introduction to Modeling

Overview

- Agent based modeling
- Random walk
- Wiggle walk
- Sliders and global variables

Agent Based Modeling

- Useful for modeling complex adaptive systems
- Model consists of:
    - Agents
    - Environment
    - Interaction between them
- System adapts and changes over time

Agent Based Modeling

- Important parts:
  - The observer creates the world
  - The turtles are the agents
  - The patches represent the environment

Agent Based Modeling

- Abstractions for the model:
  - Agents who have rules
  - The environment in which they exist
  - Time during which the model runs

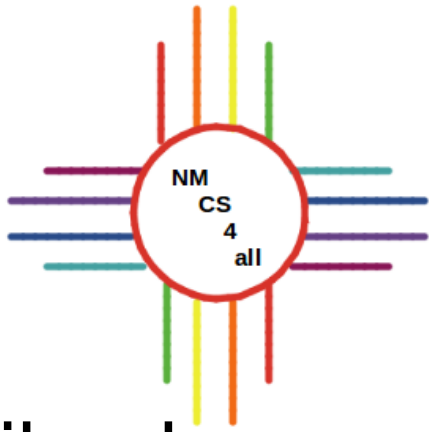
Random Walk

- Models things like:
  - Search paths of bees and ants
  - Stock market prices
  - Genetic drift of infectious diseases

Random Walk


```
to randomWalk
  ask turtles
  [
    set heading (random 360)
    forward 1
  ]
  tick
end
```

Wiggle Walk

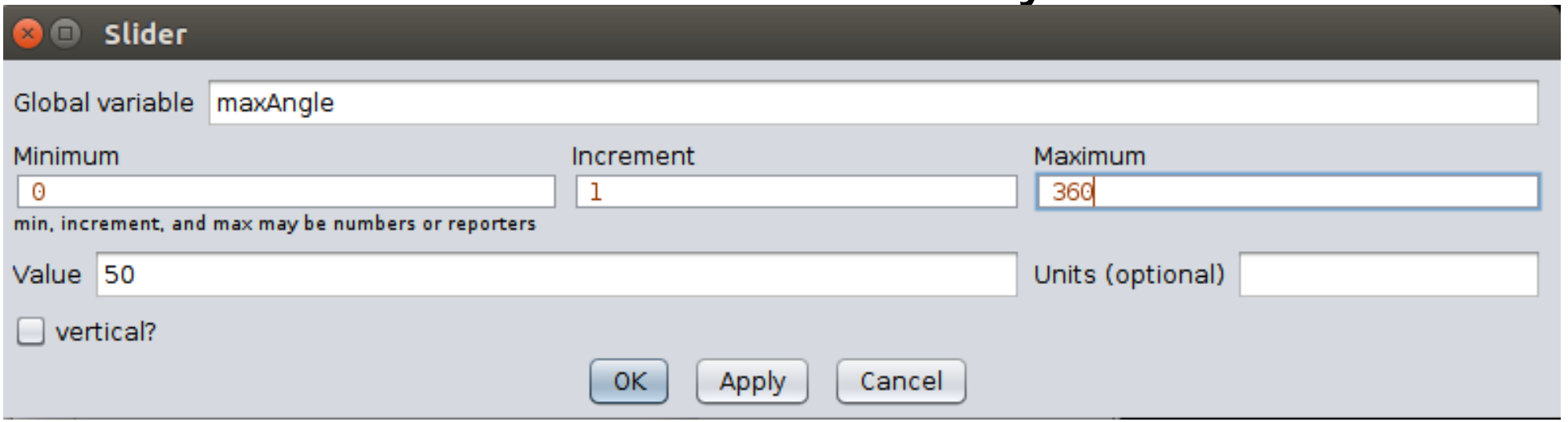


- Models the path of larger animals, like deer

```
to wiggleWalk
  ask turtles
  [
    left random 91
    right random 91
    forward 1
  ]
  tick
end
```

Sliders

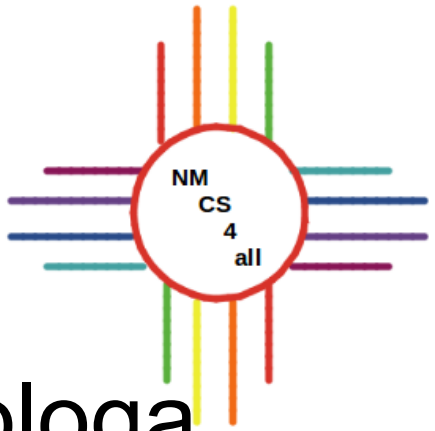
- Sliders represent global variables
- Global variables can be used anywhere



Sliders In Code


```
to wiggleWalk
  ask turtles
  [
    left random maxAngle
    right random maxAngle
    forward 1
  ]
  tick
end
```

Thank you for watching!



Slides created by Bianca Bologa

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Video recorded by Antonio Griego

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