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## NW4 Session 6

ALT3: Design and Create



LEAVING CERTIFICATE  
COMPUTER SCIENCE

# Session Overview

## Section 1

ALT Design Process - Reporting

## Section 2

ALT3: Design/Create and Feedback

## Section 3

Resources to support ALT 3 (modelling and simulation)

# Learning intentions

By the end of the day participants will have had the opportunity to:



enhance their understanding of the reporting requirements with regard to the coursework assessment (CWA)



work in groups to **design one** potential solution for ALT 3



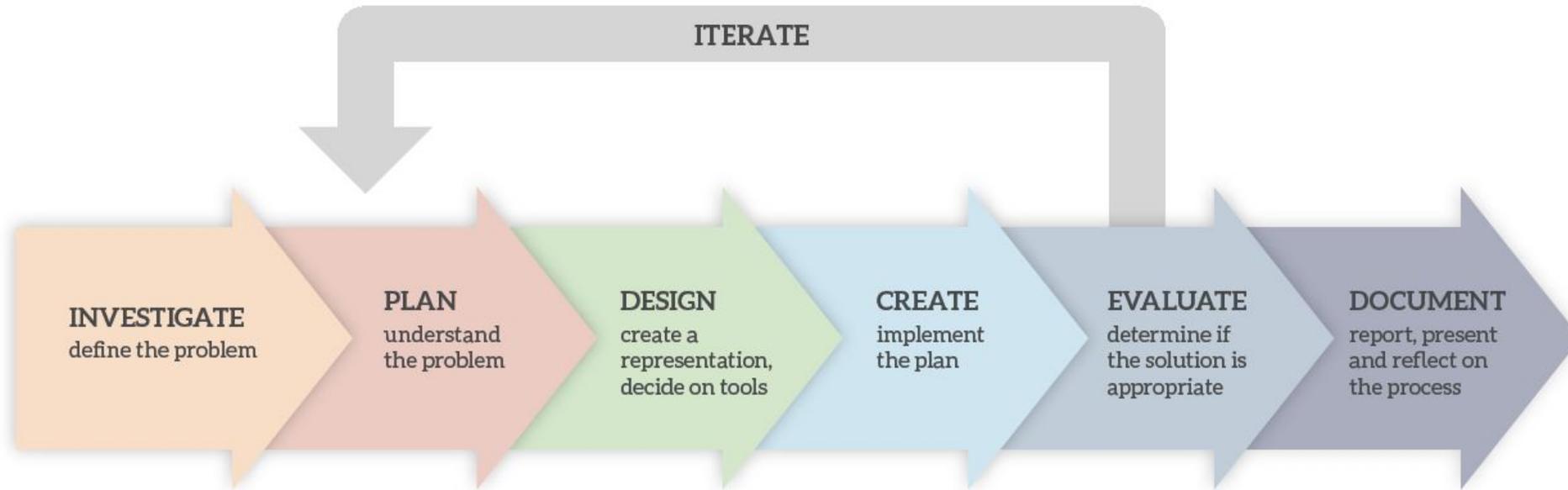
**given and received feedback** on potential ALT 3 designs



explore a variety of models from online resources and Python code provided

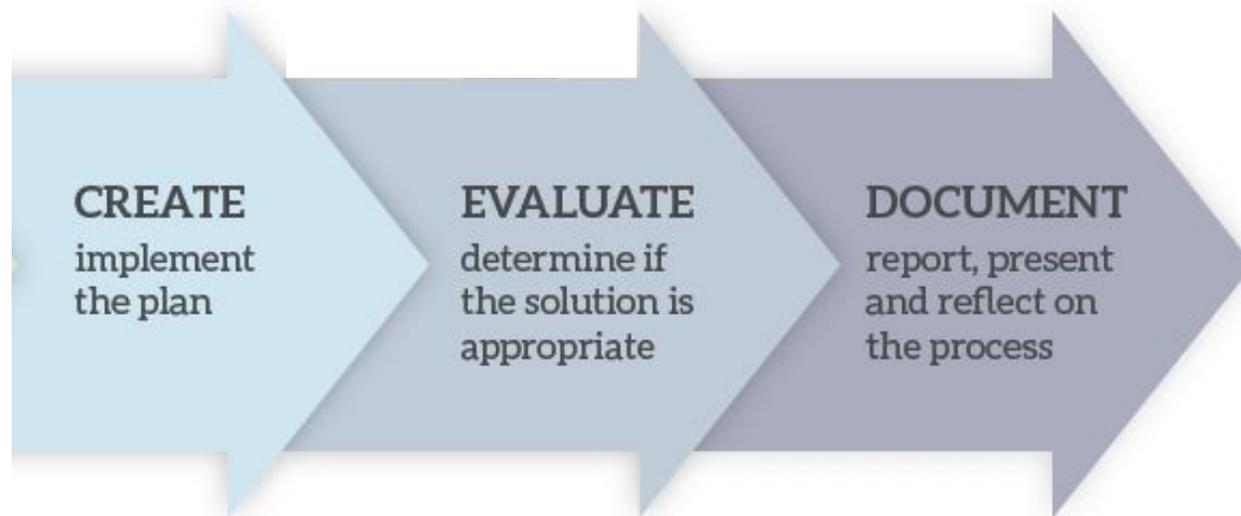
## Section I

ALT Design Process - Reporting



**The Design Process**

*LCCS Specification: p11*



# Reporting - ALTs



The output from each task is a computational artefact and a concise individual report outlining its development. In the report, students outline where and how the core concepts were employed. The structure of the reports should reflect the design process shown above in Figure 3. Initial reports could be in the form of structured presentations to the whole class. As students progress, reports should become detailed and individual. Reports are collected in a digital portfolio along with the computational artefact and must be verified as completed by both the teacher and the student. The (separate) externally-assessed coursework will be based on all learning outcomes, with those of strand 3 being particularly relevant.

*LCCS Specification: p11*

They (students) will develop skills in communication by collaborating to generate reports and present them to their peers. The strand 3 tasks will enable students to take an active role in their own learning by setting goals, developing action plans, and receiving and responding to assessment feedback.

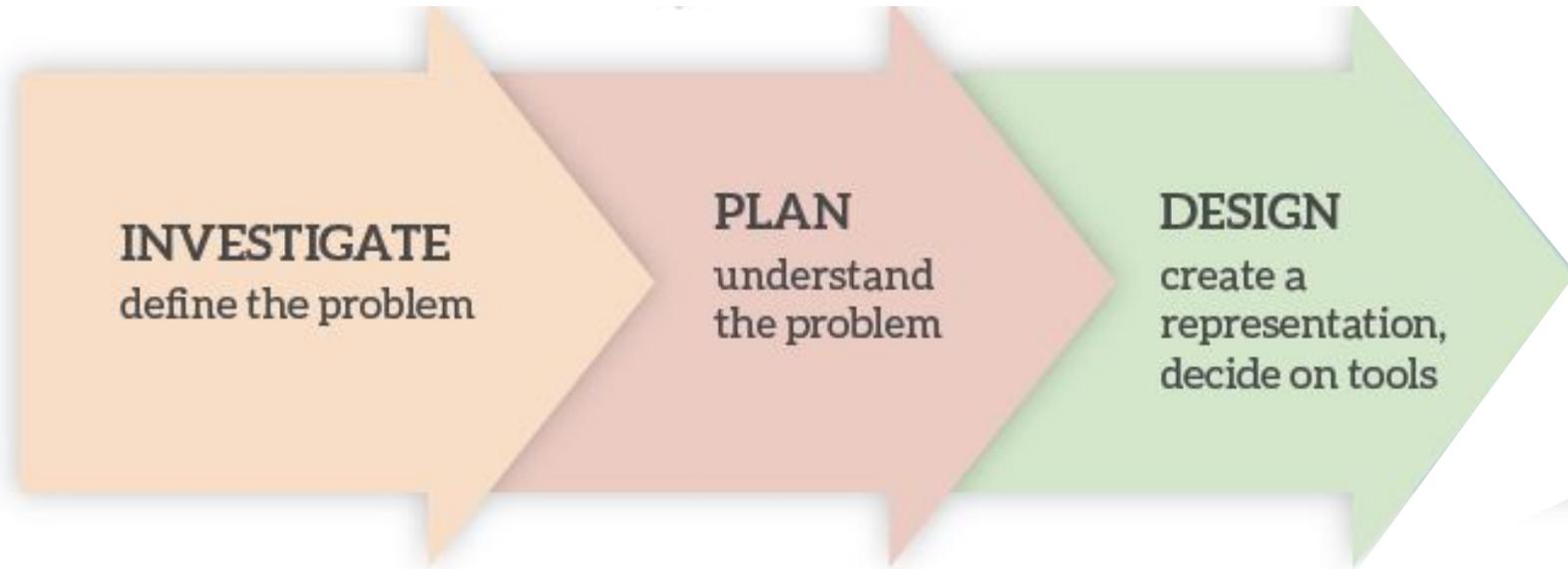
*LCCS Specification: p15*

<b>S1: Designing and developing</b>	
Design process	1.19 identify features of both staged and iterative design and development processes
Working in a team, assigning roles and responsibilities	1.20 collaborate and assign roles and responsibilities within a team to tackle a computing task
Communication and reporting	1.21 identify alternative perspectives, considering different disciplines, stakeholders and end users 1.22 read, write, test, and modify computer programs
Software development and management	1.23 reflect and communicate on the design and development process

*LCCS Specification: p19*

## Section II

ALT3: Design/Create and Feedback



3

## DESIGN

create a representation,  
decide on tools

ITERATE

**Input:** The requirements document (the plan)

How is the system realised?

What is the overall design?

What are the components of the system (system architecture)? Are there sub-systems (e.g. functions)?

What are they?

How is the data represented (variables, data types)?

How is the data captured? What about data validation?  
(Data flow diagrams)

What algorithms are needed? (Flow charts, pseudocode)

What about test cases?

What are the milestones and timelines?

**Output:** A representation of the system (system architecture diagrams, data flow diagrams, flow charts, pseudocode, etc).

# Online flowcharting

The screenshot shows a web browser window titled "Flowchart Studio" at the URL "101computing.net/flowchart/". The interface features a top navigation bar with buttons for "Start / End", "Input / Output", "Process", "Decision / Loop", "Subroutine", "Arrows", and "Annotations". The main workspace is a grid with a central callout bubble that says "Start here". At the bottom, there is a toolbar with a trash icon, "Grid Options", "Import/Export Options", and buttons for "+ Row", "- Row", "+ Column", "- Column", "Hide Grid", "Change Colour", and "?". A "101 Computing .net" logo is visible in the bottom right corner of the interface.

<https://www.101computing.net/flowchart/>

## Group activity



3

## DESIGN

create a  
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ITERATE

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What about test cases?

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**Output:** A representation of the system (system architecture diagrams, data flow diagrams, flow charts, pseudocode, etc).

20 minutes



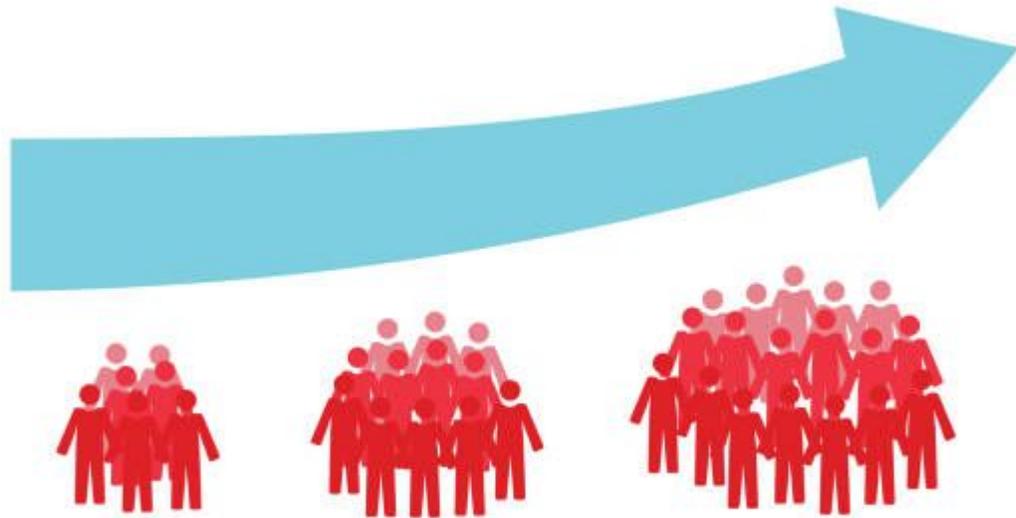
# Presentation & Debrief



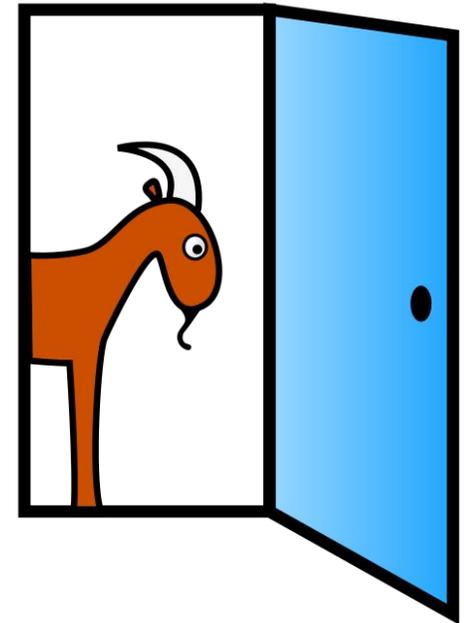
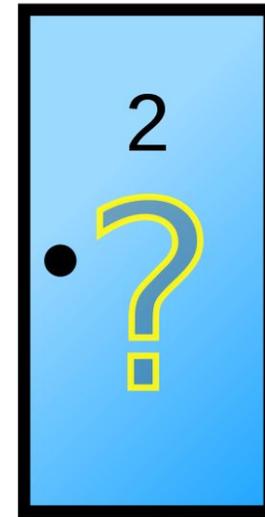
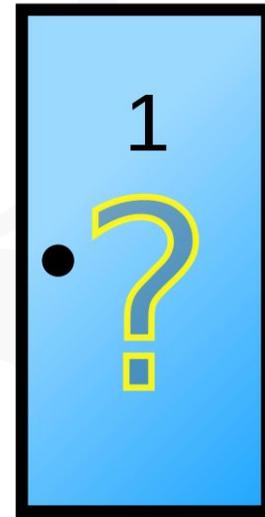
## Section III

Resources to support ALT 3 (modelling and simulation)

# Resources and Examples



**NCCA Population Example**



**Monty Hall Example**

# Models to explore post-workshop (next slide)

Some questions to consider when looking at these models are:

1. Is this an agent based model?
2. What is being modelled?
3. What are the agents?
4. Is there any emergent behaviour?
5. In what ways are models like this different to the fish population model?



# Online Resources



Netlogo



Project GUTS



PhET



Pixar

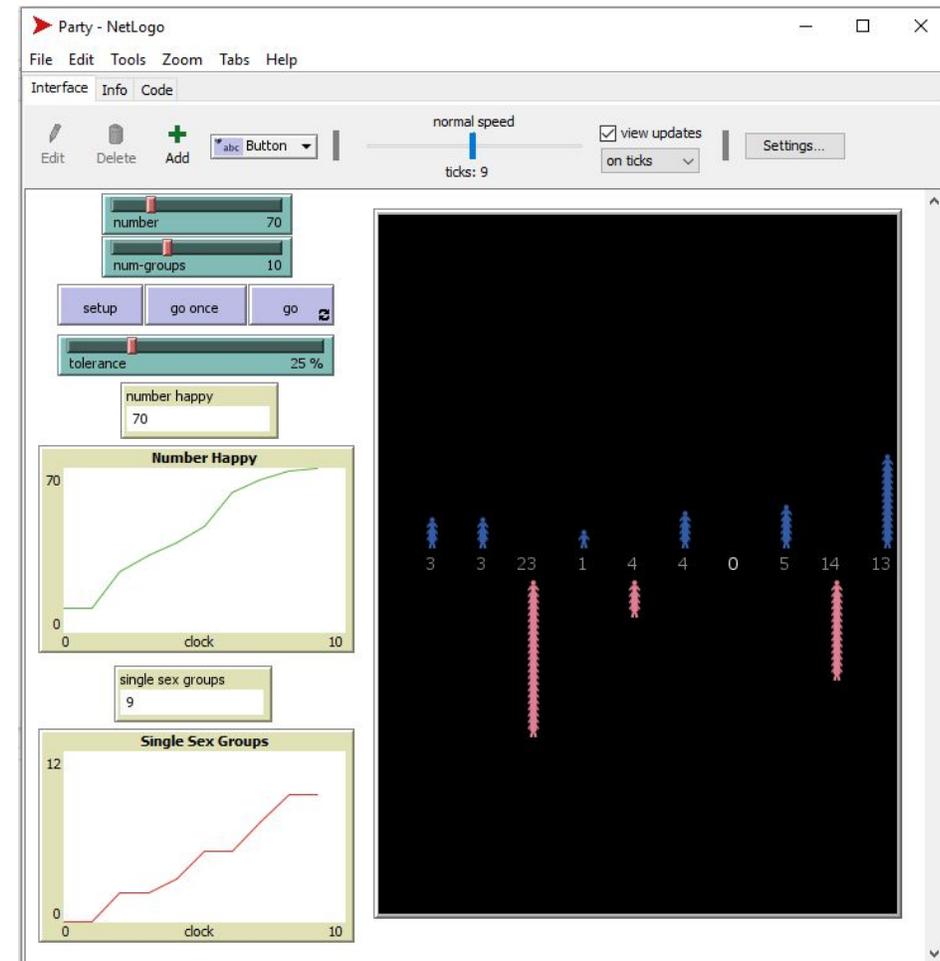
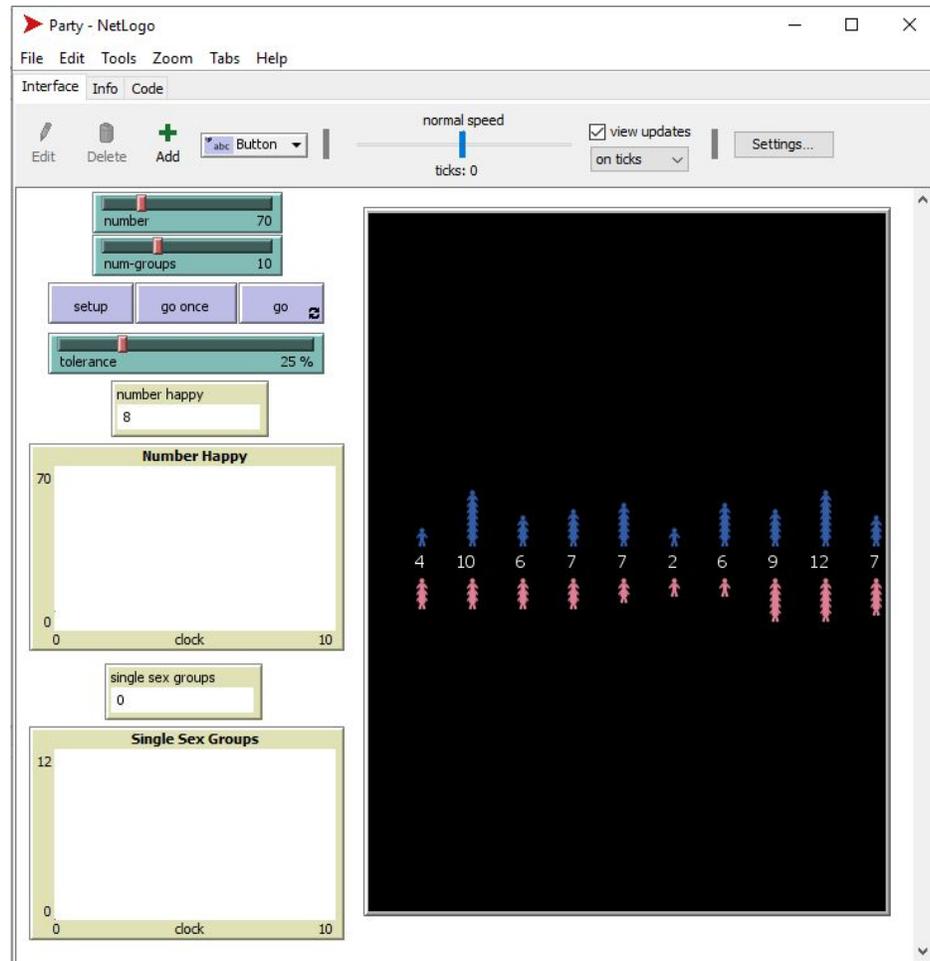


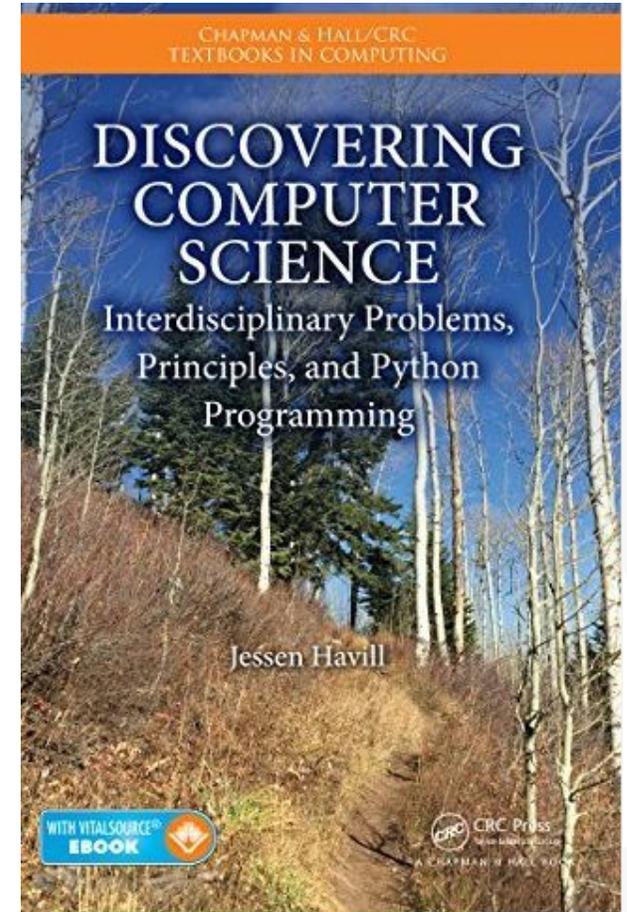
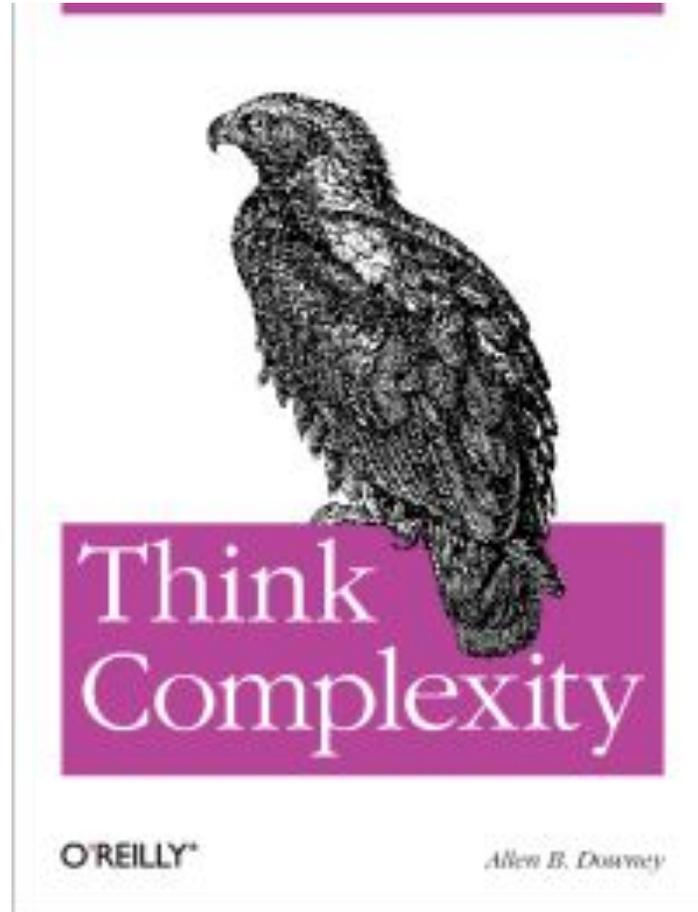
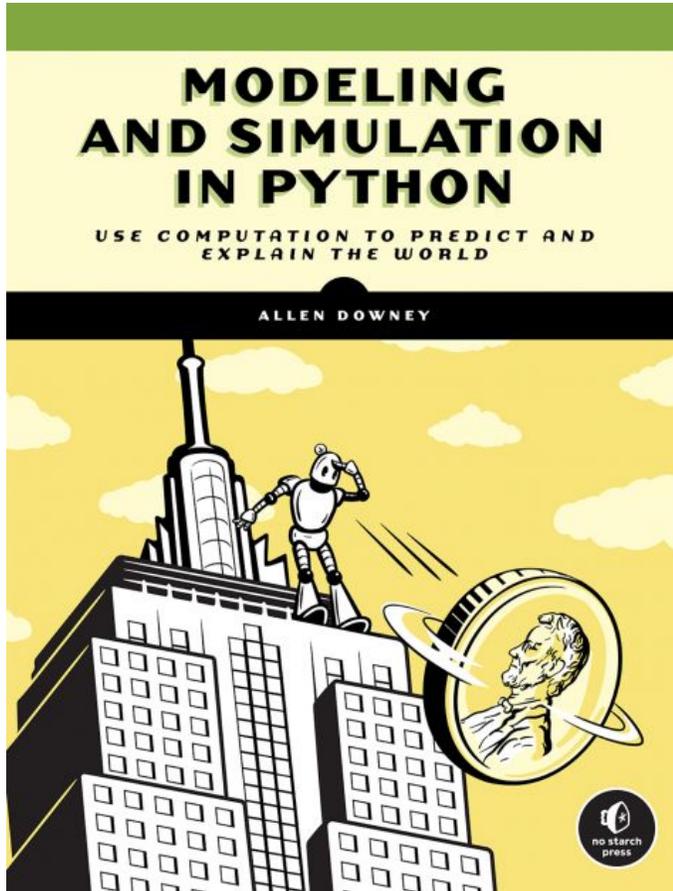
Natural Selection



Game of Life

# NetLogo example







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