Module 11

Wrap up

Module 01

Processing Recap

- Program structure
- Types
- Declarations
- Expressions
- Statements

Module 02

Input/Output

- The filesystem
- Reading and writing images
- Reading and writing illustrations
- Animated GIFs
- Reading and writing text

Module 03

Graphical User Interfaces

- Model-View-Controller
- Direct manipulation
- User interface toolkits
- ControlP5

Module 04

Physics and Animation

- Why look at physics?
- Newton’s first law; simulating constant speed
- Newton’s second law; gravity, sliding, springs, damping
- Newton’s third law; collisions
- Physics in 2D
- Physics engines, Fisica
- Animation principles and easing

Module 05

Geometric Context

- Why use geometric context?
- `translate()`, `rotate()`, `scale()`
- `pushMatrix()`, `popMatrix()`
- Combining transformations
- Hierarchical modelling

Module 06

Procedural Content

- Recursion
- `random()`, `randomSeed()`
- `noise()`
- **Combining recursion and randomness**

Module 07

Advanced Types and OO

- What is an object?
- Classes and instances
- Fields, methods, constructors
- Writing simple classes
- `this`
- Arrays, dictionaries, trees

Module 08

Image Processing

- Cropping
- Scaling and rotating
- Working with pixel arrays
- filtering and blurring
- Working with the camera

Module 09

Text Processing

- `loadStrings()`, `split()`, `splitTokens()`
- `equals()`, `charAt()`
- Other `String` and `Character` functions
- Regular expressions

Module 09

Data Processing

- Tabular data and `Table`
- Loading tables
- Hierarchical data
- JSON
- Web APIs

The Cutting Room Floor

- Sound
- 3D
- Testing & Debugging
- Exceptions
- Multithreading
- Collection types

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A nightmare

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Conceptually hard
Regrettable
Not worth the trouble
A nightmare
Too many details

The Cutting Room Floor

- Exporting to web
- Exporting to Android
- Modules
- Typography
- Cellular automata
- ASCII Art

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- Exporting to web — Actually not too bad
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- Exporting to Android — Impractical, annoying
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- Typography — Too specialized
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The Cutting Room Floor

• Exporting to web	Actually not too bad
• Exporting to Android	Impractical, annoying
• Modules	Not worth it
• Typography	Too specialized
• Cellular automata	Nerds only
• ASCII Art	Doable as a demo

“This course is too hard.”

- **Maybe**
- Maybe not?
- ~50 lines of code per question isn’t a lot
- But some questions assumed too much background preparation, my bad

“Processing isn’t a real tool.”

- **Wrong**
- Large user base in art, design, education
- openprocessing.org
- More real-world than CS 115 or CS 135
- Version 3 coming soon!
- Sadly, long term outlook for Java is mixed.

“We should be learning Python.”

- **Maybe**
- Graphics and interactivity are difficult in straight Python
- Processing’s Python mode works, but not well enough
- No textbooks, fewer online resources for Processing.py
- We could switch in the long run
- Go learn it!

What next?

- GBDA game course in 3A—use code!
- PureData, Max/MSP, SuperCollider, VVVV, Ai and Ps plugins
- Python, Scala, … for scripting
- Javascript for in-browser tools
- OpenFrameworks, libCinder for the full power of creative coding in C++
- Happy to offer advice

Code is an artistic medium