COMP1000 Lecture – Getting Started with Processing

Greg Baker

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Meet the Teaching Team

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- Your tutors ...

Unit Description

You'll learn how to program:

- Variables and assignment
- Control structures such as `if` statements
- Looping (`while` and `for`)
- Function calling
- Abstraction with classes

The Elephant in the Room

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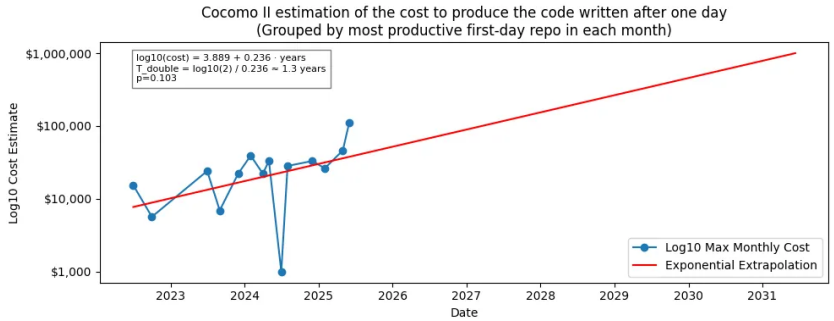
- If software development has elastic demand, we would expect more software developer jobs, not less
- Be a technical founder – you will get much more done
- Responsibility for writing programs will still be around

Reading Code Still Matters

ChatGPT can program very well:



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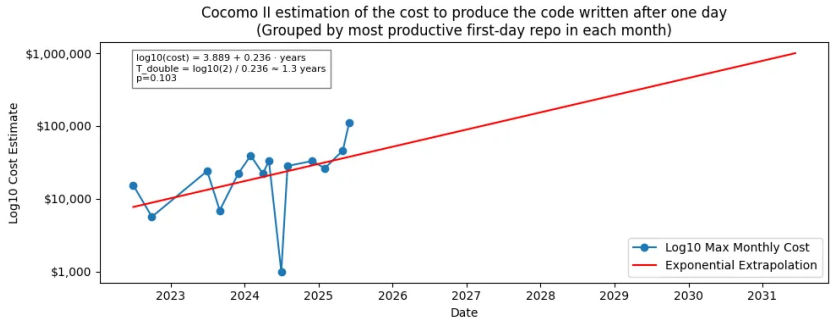

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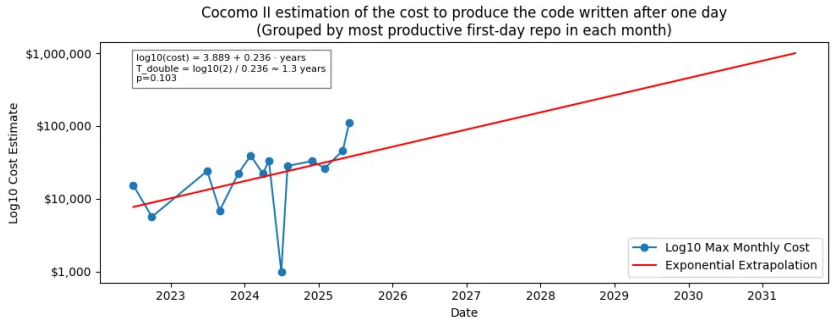

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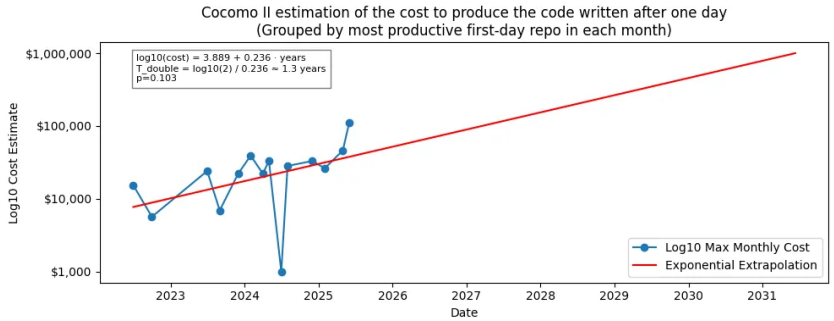

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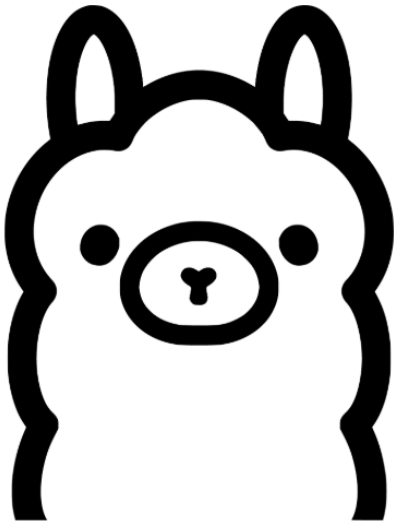
- I estimate that I have read more code this year than I wrote in the previous 30 years
- The best way to become good at reading code is by writing it yourself

Using GenAI in this unit and at university



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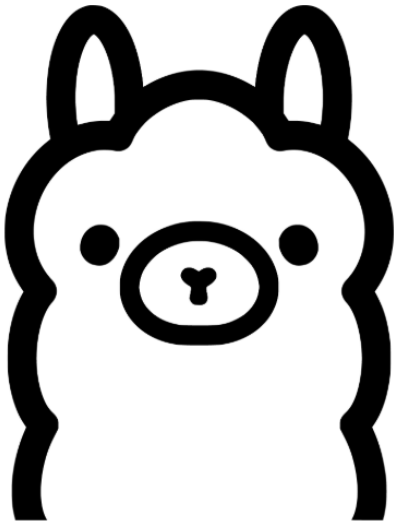

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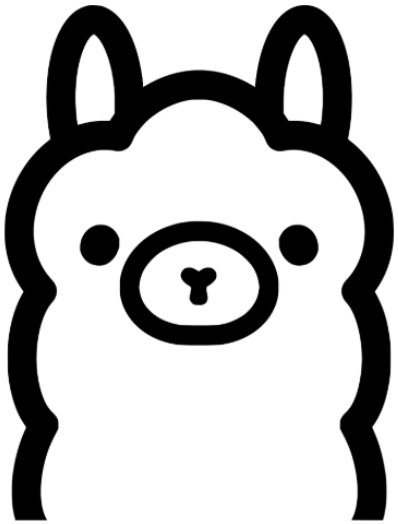

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- You'll graduate and then fail at every interview
- Even ones about prompt engineering: you'll be competing against history and linguistics students

Resources

- Lecture notes and SGTA exercises on iLearn
- Online tutorials at `https://processing.org/tutorials/`
- *Learning Processing* textbook via MQ Library
- Drop-in centre offers help with code questions from Week 2/3

Methods of Communication

- Use the iLearn forums for questions
- Contact super tutors or conveners for personal matters
- Service Connect portal for general enquiries

Unit Assessments

The Big Book of Assessments:
`https://ilearn.mq.edu.au/mod/book/view.php?id=8840569`

Programming Skills Demonstration (30%) Week 6: make some changes to a small program

Programming Exam (30%) Closed book, on a computer, invigilated, week 11 (not exam week)

Project Handover (40%) Animation, given a theme. Show that you have learned something from all the major topics: control loops, variables, etc.

Late Submission and Special Consideration

- Late submissions only with approved Special Consideration
- Some assessments offer a second round without a request
- `https://students.mq.edu.au/study/assessment-exams/special-consideration`

Install Processing 4.3

1. Visit `https://processing.org/download`
2. Choose the download for your OS and install
3. On Windows: unzip then run `processing.exe`

What is Processing?

It's Java syntax, with some wrappers to make it easy to create art and animations

Processing IDE Tour

- Play button runs your program, Stop ends it
- Check the console for error messages
- Use File $\rightarrow$ New to create sketches

Getting started

- Start sketches with `size(width,height)`
- And often with `background(255)` for white

RGB Colours

- `stroke(r,g, b)` sets line colour
- `fill(r, g, b)` uses RGB values
- A single number gives greyscale
- A 4th number means opacity
- If you are familiar with HTML: `#FF0000`
- (And there are ways of specifying colour using Hue–Saturation–Brightness, HSB)
- More at `https://colortutorial.design/tutor.html`

Our first program

Listing 1: White

```
size(100,100);
background(255);
```

Modify it!

Easy	Make it a black background
Harder	Make it a green background
Lateral thinking	Make it coquelicot

How we write about functions

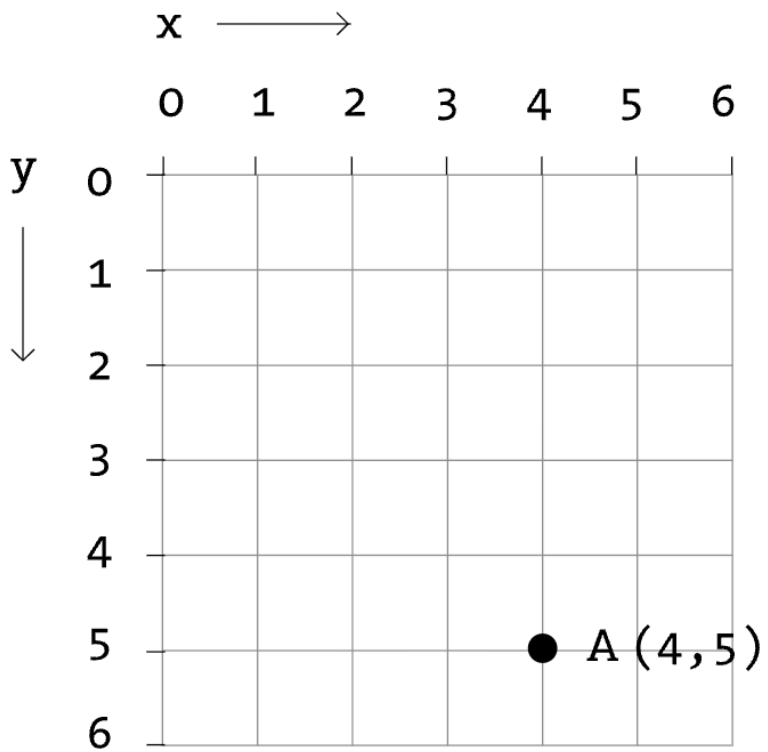
`foo()`

`()` means "that was a function name, not something else"

Doesn't mean you can use it with no arguments, e.g. `size()` doesn't work

Look them up `https://processing.org/reference`

Coordinates




```
point(x,y);
```

Example: `point(4,5);`

Line width

- `point()`
- `line()`
- `rect()` (short for "rectangle")
- `circle()`
- `strokeWeight()` sets the width of lines and points, or `noStroke()`

Hands-On Coding

Open Processing and try drawing a simple house with a rectangle and a triangle.

Common Errors

- Missing semicolons or mismatched braces
- Incorrect order of drawing commands
- Forgetting to set colours before shapes
- Forgetting to call `size()`

Reading Exercise

Listing 2: Flag example

```
size(300,200);
noStroke();
fill(0);
rect(0,0,width,100);
fill(255,0,0);
rect(0,100,300,100);
fill(255,255,0);
circle(150,100,80);
```

Cultural Context

The Aboriginal flag was designed by Harold Thomas. Please use it respectfully when practising code.

Flag Output

Misconception Alert

Common error: forgetting to call `size()` before drawing shapes.

Processing Model

- `void setup()` runs once to initialise
- `void draw()` repeats to animate

Example: Tic-Tac-Toe

```
void setup(){
  size(300,300);
  noFill();
  background(#A74EE3);
  strokeWeight(2);
}

void draw(){
  line(100,0,100,300); //vertical line1
  line(200,0,200,300); //vertical line2
  line(0,100,300,100); //hori line1
  line(0,200,300,200); //hori line2
  circle(150,250,50);
  line(25,25,75,75);
  line(25,75,75,25);
}
```

Practice ideas

You learn by doing. Try some simple sketches yourself:

- Traffic light
- Smiley face
- Olympic rings
- Pattern of overlapping circles
- Night sky
- Pac-Man
- Barchart

Schedule some time tonight or tomorrow to try one of these.

Summary

- Processing makes learning programming easy, visual, and interactive
- Key concepts:
  - Variables, conditionals, loops, functions, classes
  - RGB colours, coordinates, drawing shapes
  - `setup()` and `draw()` for animation
- AI enhances coding but doesn't replace understanding code
- Practice coding actively—read, write, and debug regularly
- Use available resources: tutorials, forums, and drop-in help
- Install Processing now:
  `https://processing.org/download`