**Variables Lesson Plan**

Load Lecture Notes

Show session objectives.

1. What is a variable

Show example sketch without variables: simple\_no\_vars

Using literals => not very useful.

What if I want to add them together and print the result?

Highlight formal definition on notes. Thing to remember is that they store things of interest to us.

Add variables to simple sketch: simple\_with\_vars.

Contrast with sketch with no vars.

Copy ‘mouseX’ sketch from lecture notes

* Suggest students to the same

Type in ‘mouse’ in println -> show error

Correct with ‘mouseY’ and show colour difference.

Add width, height to println

Explain -> related to size

Println useful for debugging

2. Variable Declaration and initialisation

Show ‘float cost = 1.99’ on lecture notes

Declaration ‘float cost’

Is different from

Initialisation ‘cost = 1.99’

Can do this in two steps or one. Always good to initalise!

We can do operations on variables e.g. add two together

Show: simple\_with\_vars. Sum **x** and **y** and put it in **z**

Copy and run Micky mouse Sketch in lecture notes

* Suggest students to the same

Problems with hard coding vars (again)

Change centreX = 200; Run: looks the same

Change size(800,400): Run: not in centre ☹

Revert centreX to width/2. Run: in centre ☺

Change earSize to earWidth=80 and earHeight=140

Run sketch and show changes.

3. Variable Types

Assert we have seen one type: There are many that you will come across.

String type (note: cap ‘S’ is required)

Copy and run ‘Hello from Bootcamp’ sketch

* Suggest students to the same

Explain use of String

We also have integers: you’ll be using these a lot!

Color type – note the US spelling

Copy and run ‘Tree’ sketch

* Suggest students to the same

Explain sketch and how it works

Show how useful variables are e.g. colors of trunk and leaves as well as co-ords of the tree.

Note reuse of code – we can do this a better way. More later!

4. Variable Scope

Declaration of variable determines scope

Scope: where the variable is recognised and can be used

Scope can be: global or local

Copy and paste moving text sketch from notes into processing

* Suggest students to the same

Run this and explain it.

Insert ‘float xPos = width/2;’ in draw method and run it

Why the error

Switch to slides and show why this happens.

Back from slides

Copy and Paste zooming mickey sketch from notes

* Suggest students to the same

Use + instead of \* to show effect.

Show summary, and explain each

Show Practical exercises