Intro to Coding

The aim of the lesson:

- We will look at different games, and change parts of those games by changing the value of a *variable*.
- We will learn what a variable is, and why they are so important in coding.

The importance of variables:

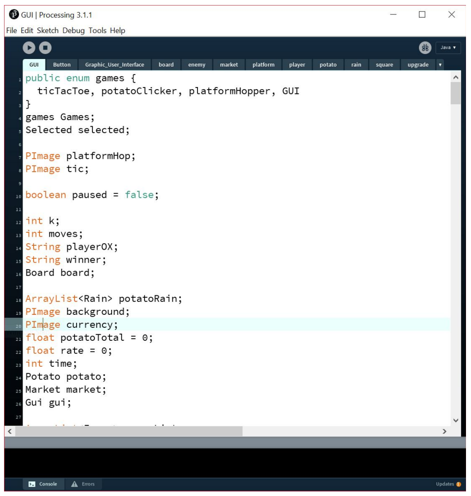
Variables are a core part of any computer program. Whether the program is a game, animation, photo editor or anything else, it will be full of *variables*. These *variables* allow us to store numbers and change their values.

Questions: where in a game might we want to store numbers? What might we use those stored numbers for?

Part one: tic-tac-toe

First step, get the game :

The game code should be open on everyone's computer (this is code that was written by students from our classes). Ask a tutor for help if the code isn't there. It should look like this:



```
public enum games {
  ticTacToe, potatoClicker, platformHopper, GUI
}
games Games;
Selected selected;

PImage platformHop;
PImage tic;

boolean paused = false;

int k;
int moves;
String playerOX;
String winner;
Board board;

ArrayList<Rain> potatoRain;
PImage background;
PImage currency;
float potatoTotal = 0;
float rate = 0;
int time;
Potato potato;
Market market;
Gui gui;
```

Running the code:

To run the code click on the triangular play/run button on the *top left* of the screen.

The tabs:

Across the top of the screen are 12 tabs. Each tab contains code which is important for the game. You can look through these if you like, but be careful - changing code without knowing with your doing will likely break the game!

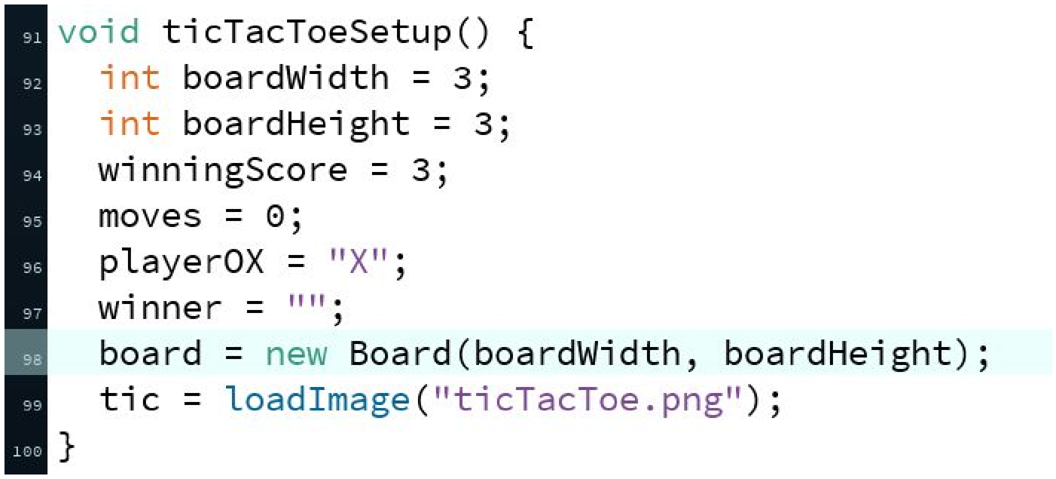
Where to start:

Play a quick game of tic-tac-toe (also called X's and O's) to see how it works (partner up with the person beside you for this part). Once you have done this scroll down to **line 92** of the code.

The variables:

There are three variables that we want to look at here. int boardWidth, int boardHeight and winningScore.

"int" means that the variable is an *integer*, or *whole number*. The name we give it tells us what the number is used for. Watch out for the line-ending character, the *semi-colon* (';'). If you delete this by mistake the code won't run until you put it back!



```
91  void ticTacToeSetup() {
92    int boardWidth = 3;
93    int boardHeight = 3;
94    winningScore = 3;
95    moves = 0;
96    playerOX = "X";
97    winner = "";
98    board = new Board(boardWidth, boardHeight);
99    tic = loadImage("ticTacToe.png");
100 }
```

The challenge:

Can you turn this into a 6x6 game of tic-tac-toe, where you need 5 in a row to win?

Part Two - Platform Hopper

The game:

Spend a few minutes getting the grips with the game.

The code:

The code we are interested in here is in the same GUI tab, on lines 31-33.

The variables:

There are three variables that we want to look at here. float platformAmount, float bounceVel and float enemyAmount. platformAmount controls **the amount of platforms** that can be on the screen at any one time. bounceVel determines **how high the character can jump**. enemyAmount represents the **likelihood that an enemy will appear on a platform** as a percentage.

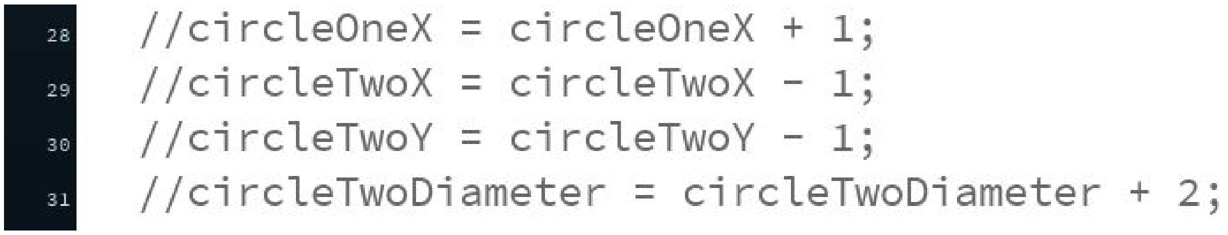
The challenge:

Change each variable, one at a time, and see the impact it has on the game. Which values make the most fun game??

Part Three - Back to Basics

There is some much simpler code on your computer too, called BackToBasics. This brings us right back to coding our first term students learn at the Academy of Code!

Code with two slashes at the start is *deactivated*. This is called *commenting* code, as we can also use this feature to leave notes to ourselves about our code and how it works!



```
//circleOneX = circleOneX + 1;
//circleTwoX = circleTwoX - 1;
//circleTwoY = circleTwoY - 1;
//circleTwoDiameter = circleTwoDiameter + 2;
```

Try *uncommenting* this code (get rid of the slashes) and see what happens!

The stretch task:

Can you make all five circles appear as a target, on top of each other? Watch out! There are some mistakes in the code which you'll have to fix!

Can you make that target move??