

Tackling the Technology Gender Gap Together: **Mary Queen of Bots – Lesson 2**

Level - Second Level

**Subject area/s – Computing Science and Social
Studies**



Mary Queen of Bots Lesson 2 (Getting to Know Kodu)

The theme of this lesson concerns Mary Queen of Scots, but can be easily adapted to any setting, historical or otherwise. For example, if the children are reading Kensuke's Kingdom, you could swap Mary for Michael and have him collect fish, with an angry Kensuke after him. Perhaps you are learning about WW2 and wish to have your Kodu collect coins/shrapnel!

LEVEL-

Second Level

SUBJECT AREAS-

Technologies – Computing Science

Social Studies

EXPERIENCES AND OUTCOMES-

I can explain core programming language concepts in appropriate technical language. **TCH 2-14a**

I can create, develop and evaluate computing solutions in response to a design challenge. **TCH 2-15a**

I can investigate a Scottish historical theme to discover how past events or the actions of individuals or groups have shaped Scottish society. **SOC 2-03a**

I can discuss why people and events from a particular time in the past were important, placing them within a historical sequence. **SOC 2-06a**

TECHNOLOGIES COMPUTER SCIENCE BENCHMARKS-

- Explains the meaning of individual instructions (including variables and conditional repetition) in a visual programming language.
- Predicts what a complete program in a visual programming language will do when it runs, including how the properties of objects for example, position, direction and appearance change as the program runs through each instruction.
- Creates programs in a visual programming language including variables and conditional repetition.
- Identifies patterns in problem solving and reuses aspects of previous solutions appropriately for example, reuse code for a timer, score counter or controlling arrow keys.
- Identifies any mismatches between the task description and the programmed solution, and indicates how to fix them.

DURATION OF LESSON-

1 hour

COMPUTING SCIENCE CONCEPTS AND APPROACHES-

Programming- this is what we do to create our game. Kodu keeps this simple enough in a WHEN (this) DO (that) format. The screen shots provided in this guide provide examples.

Algorithms- algorithms are the set of instructions that we give to the characters and objects within our game.

Tinkering- children should be given ample opportunity to play around with the Kodu software. This will allow them a degree of freedom and indeed, *inspiration* for their own game designs in lesson 3. The best way to do this would be to allow children to play through the Kodu tutorials found in the Load World section.

Debugging- children will find that (frequently to begin with) characters and objects are not doing what they want them to! This is not the computer revolting, rather an error in the lines of code the children have entered. A vital skill is for children to review their lines of algorithmic code and look for errors. This guide contains plenty of screenshots to show what the code should look like, but by lesson 3 the children will be experimenting and will have to debug by themselves!

PRIOR LEARNING-

Children will have created a basic game in lesson 1. They have become familiar with the programming environment of Kodu and how algorithms or lines of code are added. They may have been able to tinker with the look of their game to an extent, perhaps following some of Kodu's tutorials from the Load World section.

OVERVIEW OF LEARNING-

Pupils will expand their previous game to include a larger area. The game we created in lesson 1 utilised just a small area of 'land' floating in space. Within reason, coders can add as much land as they wish to give a larger area to play on. We will adapt our first game, rather than starting fresh. We will look at key features such as creating a rugged landscape, adding water and walls and adding another character for Mary Queen of Bots to interact with!

PUPIL OBJECTIVES-

We are learning to-

- Add extra land
- Change the height of the landscape
- Add water
- Add walls

INTRODUCTION-

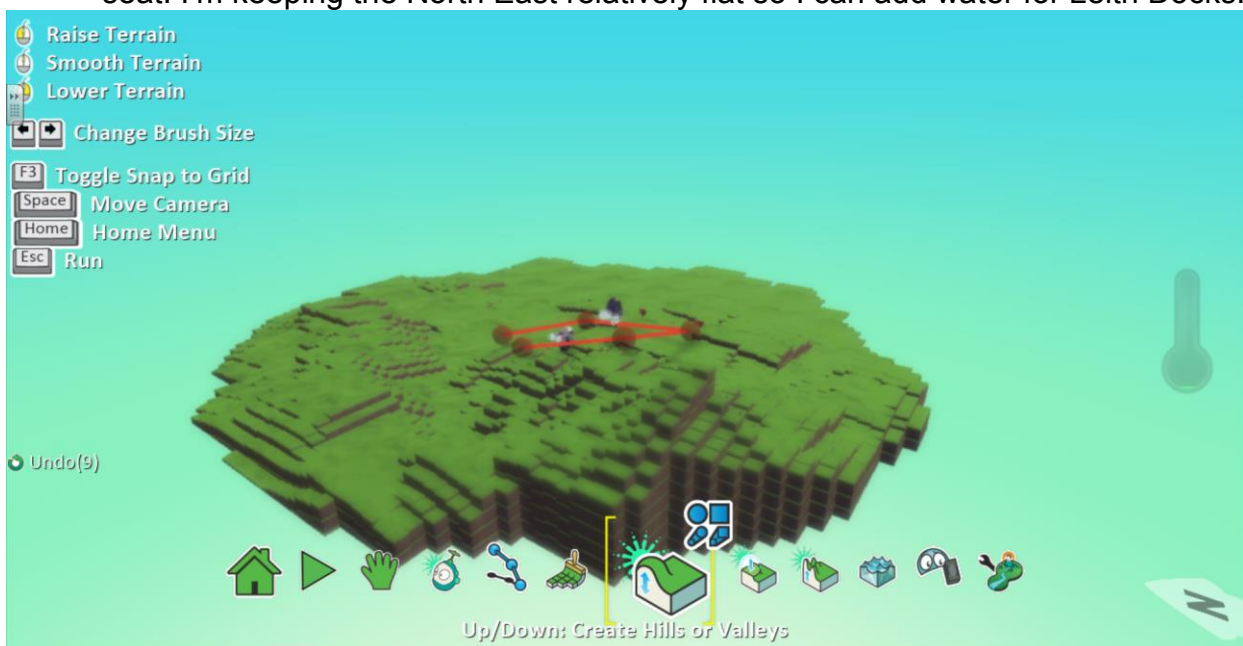
We programmed a simple Kodu game in lesson 1. However it was indeed really simple! We are going to change the way Mary Queen of Bot's world looks. Look at maps of Edinburgh. We will try to use features of old Edinburgh in our game.

MAIN ACTIVITY-

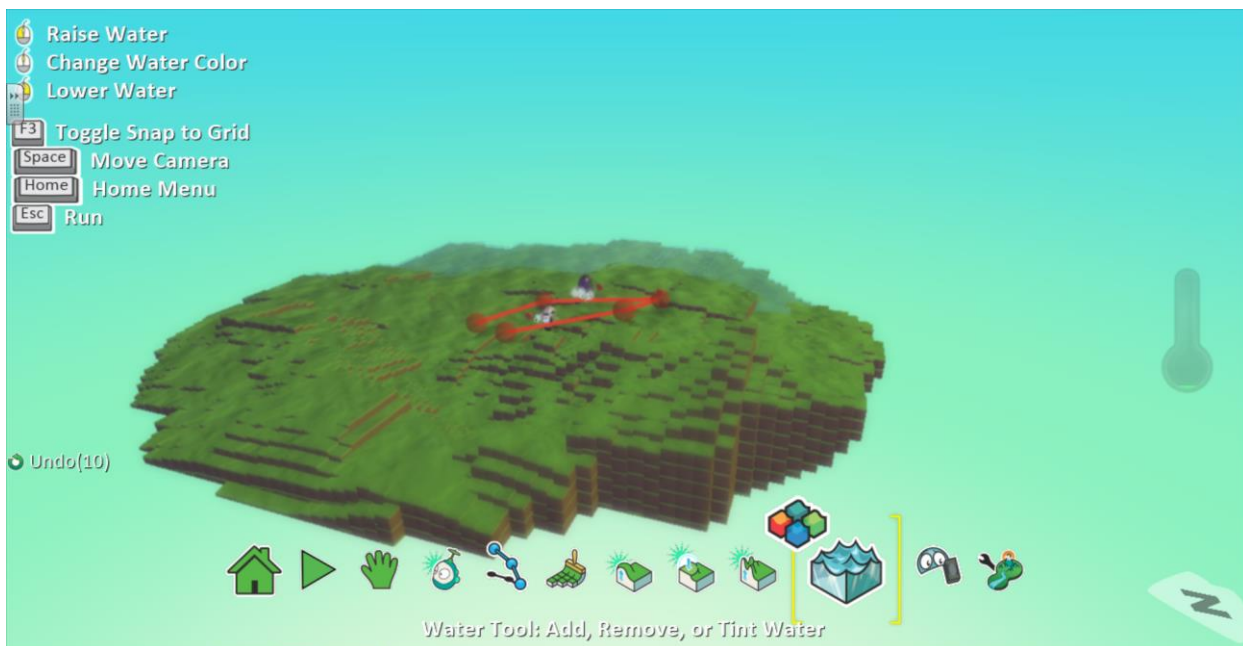
- When you open up Kodu, choose Load World and locate your game.
- First, we are going to increase the size of the land. Zoom out to give yourself plenty of space. I zoom in and out using 2 fingers on the track pad, but if you are using a mouse, use the wheel. Now select the Ground Brush tool. This will allow you to 'paint' more ground on! If you find the brush too big for what you want, using the left/right keyboard arrows alters its size.



- It's all very flat though isn't it? Let's add some terrain. Choose the next icon along- Up/Down. If you left click the ground will rise and right click it will lower. I added a raised part to the west for Edinburgh Castle and in the east for Arthur's seat. I'm keeping the North East relatively flat so I can add water for Leith Docks!



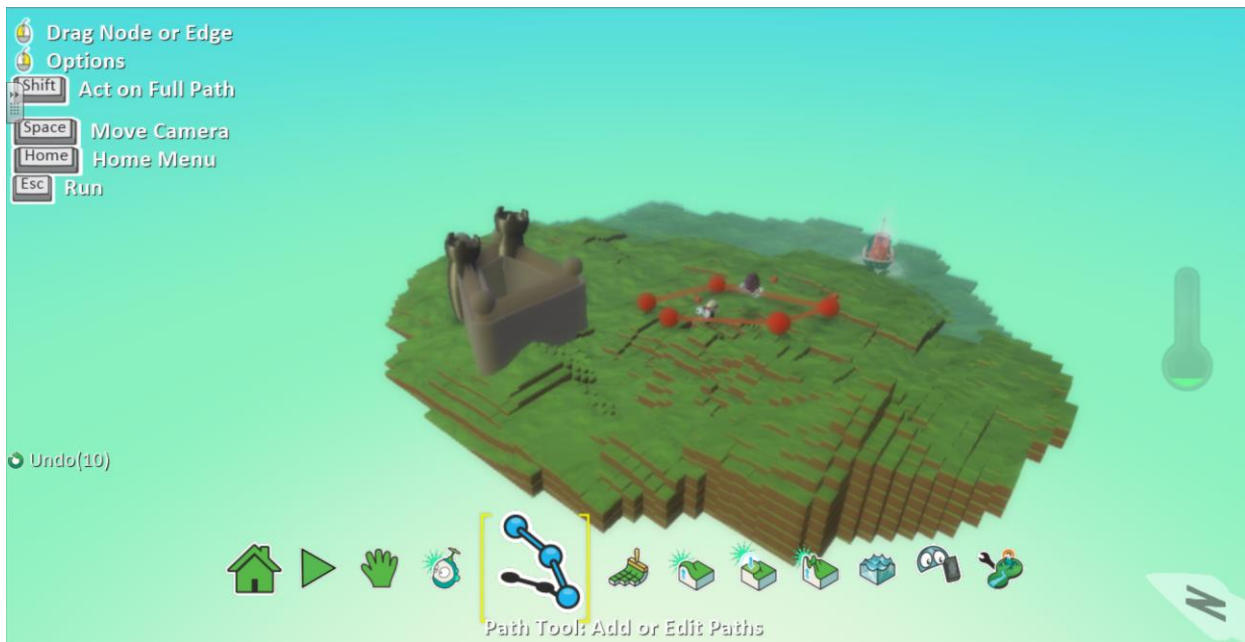
- Now let's add water. Choose the Water Tool and left click to raise the water level. At this point, you may wish to go back and edit the height of any land that you now find submerged!



- Now I am going to add some extra features using the Object Tool. A couple of castles to represent Edinburgh Castle and a ship docked in Leith. I would encourage the children to add objects as decoration, but to watch out for the thermometer on the right of the screen. If a game is too complex, the thermometer 'heats up' to represent the likelihood of it crashing.



- I will add a wall to the castles to make it all look a bit more castle-like. Choose the Path Tool, but right click this time to choose Add Wall. Now left click to add new nodes and right click to end the wall.



- You'll likely want to move the heart locations now which you can do while in the Object Tool. You will also want to increase Edward's range using the Path Tool—just click and drag the nodes you want to move.



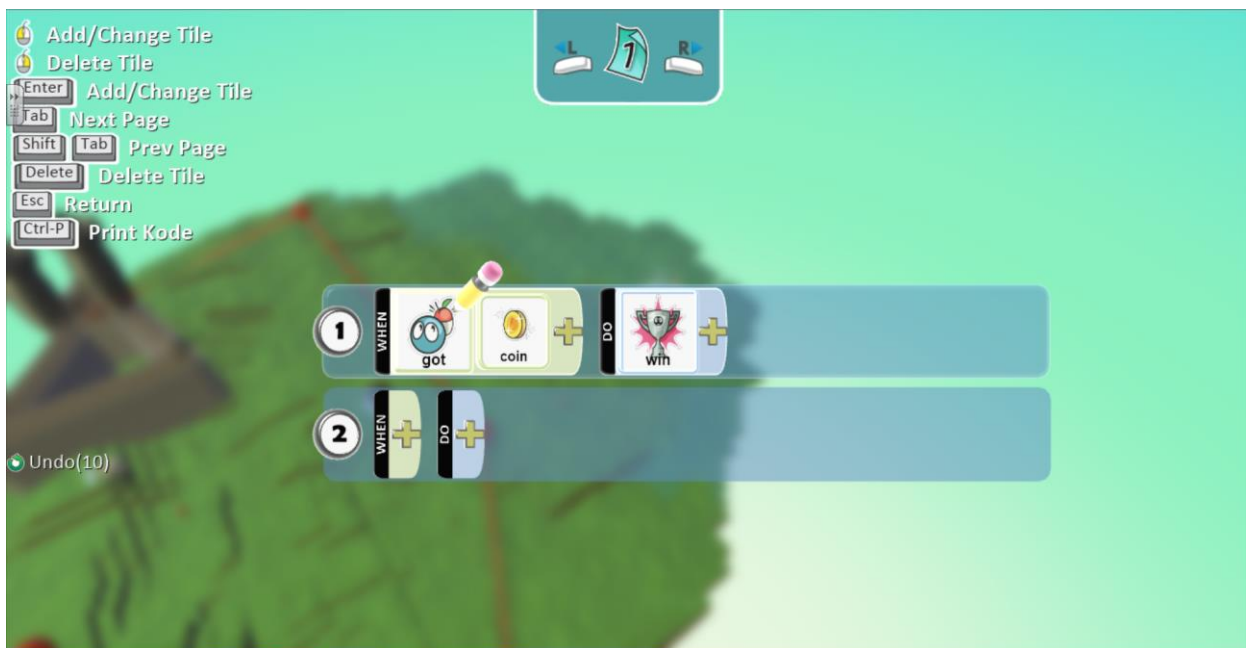
- At this point, let's think about our story and how we want Mary to 'win' this game. We want her to escape Edward and flee to France! Collecting those hearts just isn't enough! We want her to make it to the ship in Leith! How will she pay for her trip though... Let's program our game so when she collects enough points she doesn't win. Change that tile to the following.



- Now follow the following lines of code-



- Now let's program the winning move. Select the ship in the Object Tool to program. His code should read as follows-



- You now have a more complex game with links to Mary Queen of Scots' real life story. Mary was pursued by Henry VIII and his son Edward as part of the rough wooing and Mary had to flee to France.

PLENARY-

Begin to focus on what sections of the Mary Queen of Scots story would make a good game. Suggestions might be-

- The murder of Lord Darnley
- The Babington Plot
- Life in France
- Escape to England

EXTENSION/TINKERING-

Kodu has a variety of tutorials for extension tasks. Encourage children to start at the beginning though as later tutorials build on prior learning. It is VITAL that children be allowed some tinkering time here.