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Lesson 3:

Lesson summary: In this lesson pupils will extend their lighting simulation such that the system has two patterns. To achieve this they'll use a variable to indicate which pattern has been selected and use a selection command to run different lighting loops depending on this value.

Learning objective: Use variables as a condition for selection

Start the lesson by giving pupils time to review the last two weeks' work in creating the simulation of the disco. Pupils should explore using their simulations and remind themselves of the key functions and how these were simulated. *E.g: Play and stop buttons triggering the music file; the volume variable being set to the value of the slider; the lighting costumes looping when triggered by the broadcast message etc.*

Explain that in this lesson we are going to make our lighting simulation more complex as it will contain more than one pattern. Say that there will be two patterns to choose from and this is why in the first lesson we created the two sprites '1' and '2' as shown below:



Explain to pupils that we are going to need a device to store the number 1 or 2 depending on which pattern the users choose. **Can pupils think which programming device we can use to store a number?** *Answer: a variable.*

Create a variable called 'Pattern', this can be seen above. We now need to add code to the lighting button sprites '1' and '2' so that they change the value of pattern to either '1' or '2' when they are clicked. Can pupils determine which commands from **events** and **data** will achieve this?

For sprite '1':



For sprite '2':

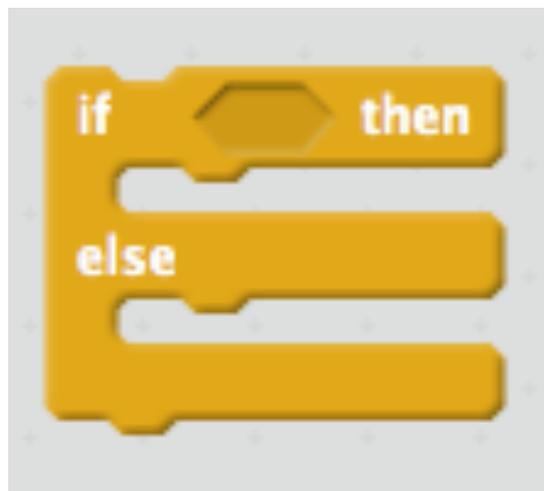


Creating two separate lighting patterns: Pupils should now be given the opportunity to create two separate lighting patterns within the lighting rig script area (as show below). Ask pupils to consider how they will create two differing patterns? *By changing the order of costumes, the duration each is shown for etc.*



Selecting which pattern is displayed: Ask pupils - how do we want our lighting controls to work? Encourage them to talk through what each of the four buttons (On; Off; Pattern 1; Pattern 2) should do.

Explain that we need to **select** which of our two patterns is displayed. Explain that to achieve this we'll use the 'If...else...'



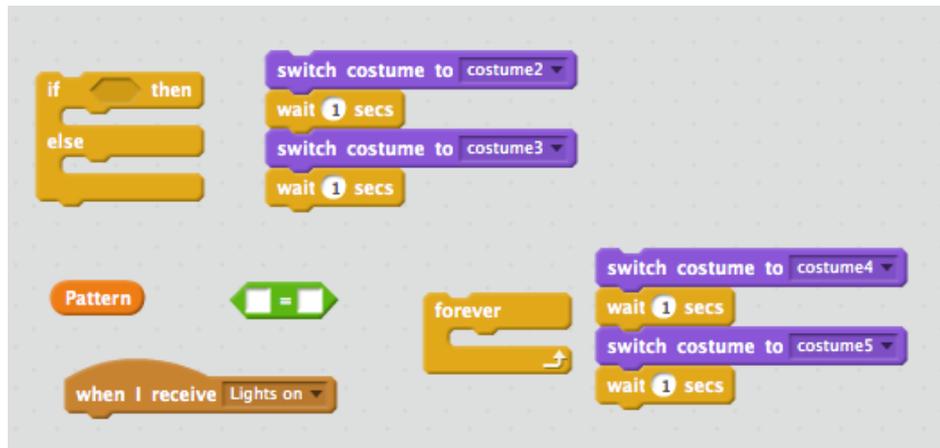
Talk through how this block works. I.e. **If** the condition is met then the commands in the first portion are executed **else** if the condition isn't met then the commands in the second portion are executed.

Give examples of 'If... else...' selection relevant to the pupils. E.g If I do my maths homework (condition) then I will improve in maths else I'll get into trouble. **Can pupils think of other examples of 'If else' selection?**

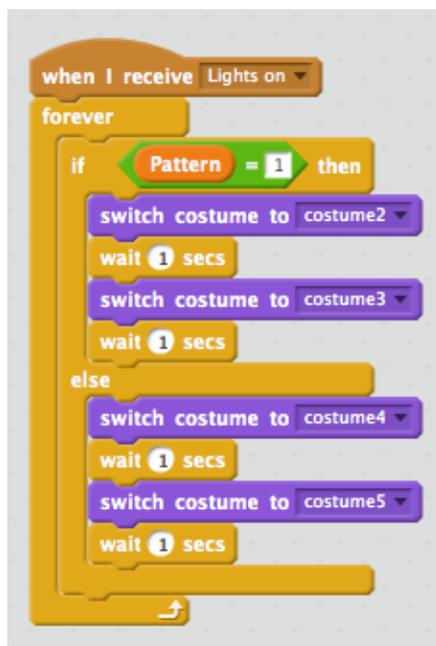
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Challenge pupils: Discuss with a partner the condition which we can use here to determine the lighting pattern which will be displayed? *Answer the value of the pattern variable.*

Can pupils use the following blocks to create a program that will display the different lighting patterns (pupils lighting patterns will differ to those shown below) depending on the pattern selected?



A solution (pupils might find others):



Discuss the above program with pupils. Encourage pupils to use logical reasoning to talk through each step to ensure they have a good understanding of how the program is functioning. I.e **If** the condition is met that 'Pattern = 1' **then** the first lightning pattern loops, **else** the second lightning pattern loops.

Questions to aid assessment:

What variable have you created in this lesson?

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How have you varied the value of the variable you have created?
Can you explain how the block below works?



How have you used selection in your program?
What condition have you used in the selection command?
What different outcomes are there in your selection command?