Lists

Introduction

You will aim to learn the following objectives and keywords during this lesson.

Learning Objective	• Identify a list in block-based code and python • Describe what a list is • Create and use a list in the MiRo simulator
Keywords	• List

Setting the Scene

> ### Do you follow a list or write a list to remember items?
> The main list a family may use is a shopping list before a weekly shop

Concept	How it is used
A _**list**_ is like a variable as it is a storage location within a program. But whereas a variable can only store one item, a list can store multiple items.	When you write code, it can save a lot of time if you have a list of items that can be called upon when required. A _**list**_ is a set of items that can be called upon, added to, and deleted from, within the program.

Can you think of a list you have written with items on?

A _**list**_ has to have a suitable name, the same as a variable, and named effectively.

First let us look at what a _**list**_ is.

Scenario 1	Scenario 2
You are making a cake and the recipe states what ingredients are required, you use this to make a list of shopping items that need to be purchased to be able to make the cake.	You are playing a game where you have a set of items that need to be collected throughout the game to be able to complete the level. This list is not written down but may be visible as a checklist of items to collect.

Small Group Activity

To create a list in Python you first need to define the name for the list.

- **camelCase** = no spaces, lowercase letters with the first letter of the 2nd and consecutive words, capitalised.
- **snake_case** = lowercase and spaces replaced with underscores.

Activity 1

1. Look at the variable names and identify if they are **camelCase** or **snakeCase**

shoppingList	**scoreCard**
shopping_list	**lives_left**
myVariable	**livesLeft**
my_variable	**score_card**

Can you write one of your own for snake_case and camelCase?

2. Given the naming convention, write the correct variable/list name.

Words	Naming convention	Your answer
balloon pop	snake case	
Items collected	camel case	
lives lost	camel case	
highest score	snake case	

With a list items are encased in square brackets '[ ]' and each item is separated with a comma.
shoppingList = ["bread", "sausages", "cheese", "chocolate"]

The list items can include:
- a string defined by quote marks around the item
- an integer defined by a whole number with no quote marks

Activity 2

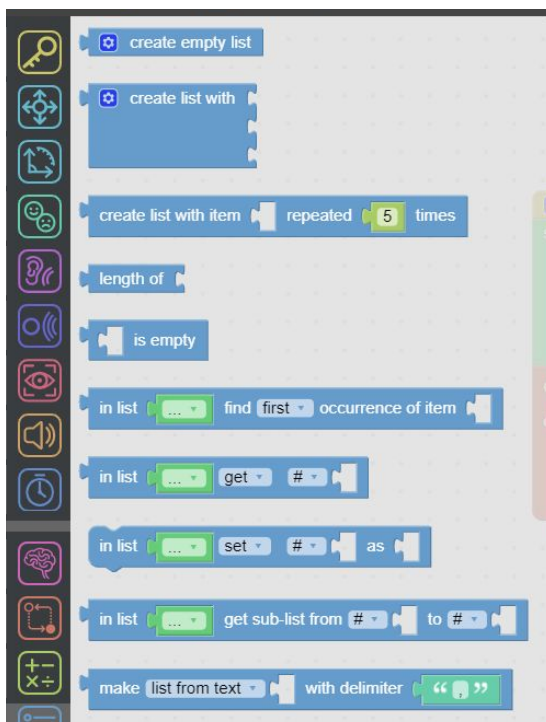Look at the scenarios and write the python code for the list:

Scenario 1

The mother is leaving to do a weekly food shop and has to get the following items:
cheese, chocolate, lettuce, tomatoes, potatoes, biscuits and ham.

[blank box]

Scenario 2

For Christmas this year I am going to ask Santa for socks, crayons, Xbox, shoes, clothes, teddies and jigsaws.
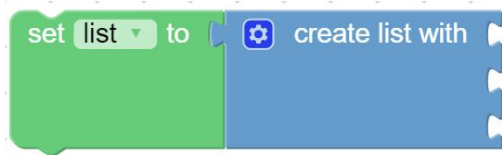
[blank box]

Scenario 3

The grades my class achieved after the last assessment were: 1, 1, 2, 3, 4, 4, 4, 4, 4, 4, 4, 5, 7, 9

[blank box]

create empty list

create list with

create list with item repeated 5 times

length of

is empty

in list ... find first occurrence of item

in list ... get #

in list ... set # as

in list ... get sub-list from # to #

make list from text with delimiter " "

What are the blocks available for **_lists_**? They are located within the 'lists' tab.

However, the naming of the list is created in the same way as a variable, under the Variables tab.

Once you create the name of the list as a variable, you use the blocks within the list tab to assign the list items.

set `list ▾` to | ⚙ create list with

The green block is the variable block. The blue block is attached to the variable name to define it now as a list, containing more than one item.

Activity 3

Choose one of the scenarios and draw out what the blocks would look like for the list.

Scenario chosen

How would the list look as block-based code?

> **How can we get MiRo to use a list to demonstrate a range of sounds it can make?**
> We are going to create a program to define a **_list_** of sounds.

Algorithm for program:

Using the algorithm as your plan, can you create the program in the MiRo simulator?

Remember there is no fail in computing only debugging, fixing and learning!

Summary Self-Assessment

Question	Got it	Got it with help	Unsure
Can you identify a list in block-based code and python?	☐	☐	☐
Can you describe what a list is?	☐	☐	☐
Can you create and use a list in the MiRo simulator?	☐	☐	☐