

Year 9 Computer Science Cyber Security Knowledge Organiser

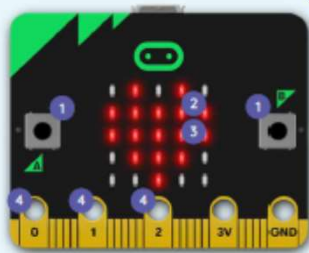
Key Word	Definition
Sensors	Input devices that record data about the physical environment around it.
Hardware Components	The physical parts of a computer.
Selection	A programming construct where a section of code is run only if a condition is met.
Iteration	A function that repeats a block of code in a specified order, often until a specific result occurs.
Input	Any information or data that is sent to a computer for processing. Output: Any information processed by and sent out from a computer.
Expression	A piece of code that can be evaluated to a value.
List	A sequence of several variables, grouped together under a single name.
Output	Any information processed by and sent out from a computer.
Pins	External connections on the edge connector of the Micro:Bit board.
Circuit	A complete circular path that electricity flows through.
Wireless	Using radio waves rather than wires to transmit signals.
Project	A series of tasks that need to be completed to reach a specific outcome.
Design	To plan and make decisions about something that is being built or created; to create the plans, drawings, etc., that show how it will be made.
Problem	A question proposed for solution.
Audience	The group of people for whom you are developing your work.
Prototype	A first or preliminary version of a device from which other forms are developed.
Decomposition	Breaking down complex problems into more manageable parts.
Processing	The manipulation of data by a computer program to produce a desired result or output.

① Buttons: Input
Capture user input to make things happen

② LED Display: Output
Show pictures, words, and numbers

③ Light Sensor: Input
Measure how much light is falling on the Micro:Bit

④ GPIO Pins: Input And Output
Connect headphones, sense touch, and add other electronics

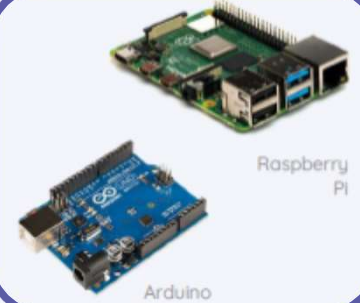
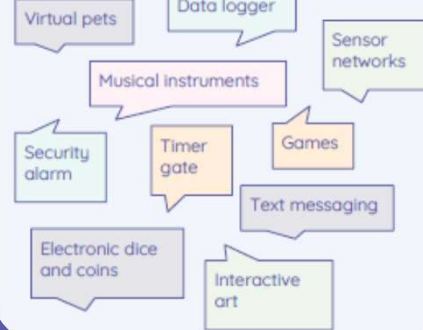
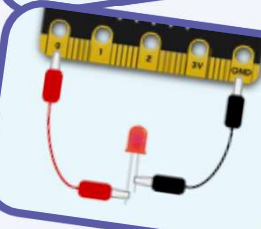
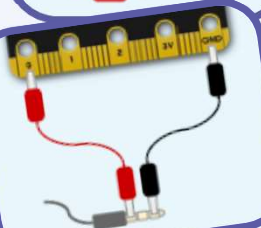
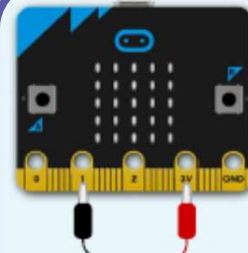


⑤ Temperature Sensor: Input
Measure how warm the environment is

⑥ Compass: Input
Find magnetic north or measure the strength of magnetic fields

⑦ Accelerometer: Input
Detect gestures and measure movement in 3 dimensions

⑧ Radio: Communication I/O
Communicate with Micro:Bits and other devices



Raspberry Pi

Arduino

My programs can use **sensor** data from the environment.

More ways for the user to **interact** with my program.

This computer is tiny. I can wear it, hide it, embed it, and **make** stuff with it.

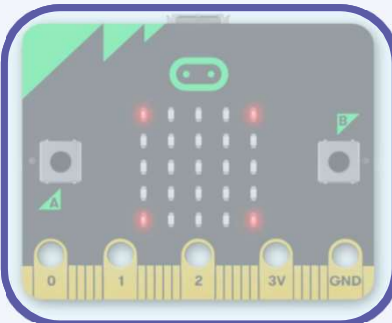
Not much difference in programming. Still Python.



```
print("Hello Python!")
```



```
display.show("Hello world!")
```



Decompose

Break down your project into smaller tasks. If possible, work on them in parallel.

Plan wisely

Locate which tasks need to be completed before others and work on them first. Don't spend time on trivial details, unless you have time to spare.

Test often

Whenever you make changes, test thoroughly. Only move on to the next step when you are sure what you have so far works.

Keep previous versions

Save a (numbered) copy of every tested program version, before moving on. That way, you can backtrack if things go wrong.

Assessment Rubric

	Emerging [1-3]	Expected [4-7]	Exceeding [8-10]	Score
Purpose Project Diary: Day 3 Task: The Prototype	<input type="checkbox"/> The problem or the audience are not clearly defined. <input type="checkbox"/> The proposed design is not particularly well suited to address the problem or match the audience.	<input type="checkbox"/> The problem and the audience are clearly defined. <input type="checkbox"/> The proposed design seems to address the problem and match the audience.	<input type="checkbox"/> The problem and the audience are clearly defined. <input type="checkbox"/> The proposed design is original and/or especially well-considered for the problem and audience.	
Design Project Diary: Day 3 Task: The Prototype	<input type="checkbox"/> The description of the functionality or how it is achieved is incomplete. <input type="checkbox"/> Input, processing, and output are not appropriately used in the description.	<input type="checkbox"/> There is a complete description of the functionality and how it is achieved in terms of inputs, processing, and outputs.	<input type="checkbox"/> There is a detailed, decomposed description of the functionality and how it is achieved in terms of inputs, processing, and outputs. <input type="checkbox"/> Sketches or diagrams are also employed.	
Implementation Evaluate Prototype	<input type="checkbox"/> The prototype is not fully functional. <input type="checkbox"/> Features are missing, or not working as expected.	<input type="checkbox"/> The prototype works as expected, providing the intended functionality.	<input type="checkbox"/> The prototype works as expected, possibly providing extended features. <input type="checkbox"/> It is evident that extra effort has been put into construction or usability. <input type="checkbox"/> Additional points for code that is well-documented and/or especially elegant.	
Ambition Evaluate Prototype	<input type="checkbox"/> The implemented functionality is too simple for the time provided. <input type="checkbox"/> The underlying program does not go beyond the elementary patterns supplied in the introductory lessons.	<input type="checkbox"/> The implemented functionality is realistic, given the time constraints. <input type="checkbox"/> The underlying program successfully combines different programming constructs to achieve the goal.	<input type="checkbox"/> The implemented functionality is beyond expectations, given the time constraints.	
Feedback Project Diary: Days 1 and 2 Task: Feedback	<input type="checkbox"/> Recording of peer feedback and response to it is incomplete or cursory.	<input type="checkbox"/> Peer feedback has been recorded, along with a response to the individual feedback points.	<input type="checkbox"/> Peer feedback has been recorded. <input type="checkbox"/> The response is appropriate for the feedback and, where valid feedback has been received, the response indicates how it will lead to improvements in the project.	
Evaluation Project Diary: Day 3 Task: Self-Reflection	<input type="checkbox"/> The self-reflection is incomplete or cursory.	<input type="checkbox"/> The self-reflection contains a complete description of at least one problem and one top tip.	<input type="checkbox"/> The self-reflection is thorough and insightful. <input type="checkbox"/> The problems, solutions, and suggestions indicate that useful knowledge and experience has been obtained through the project.	
Total Score:				

Learning Graph

