

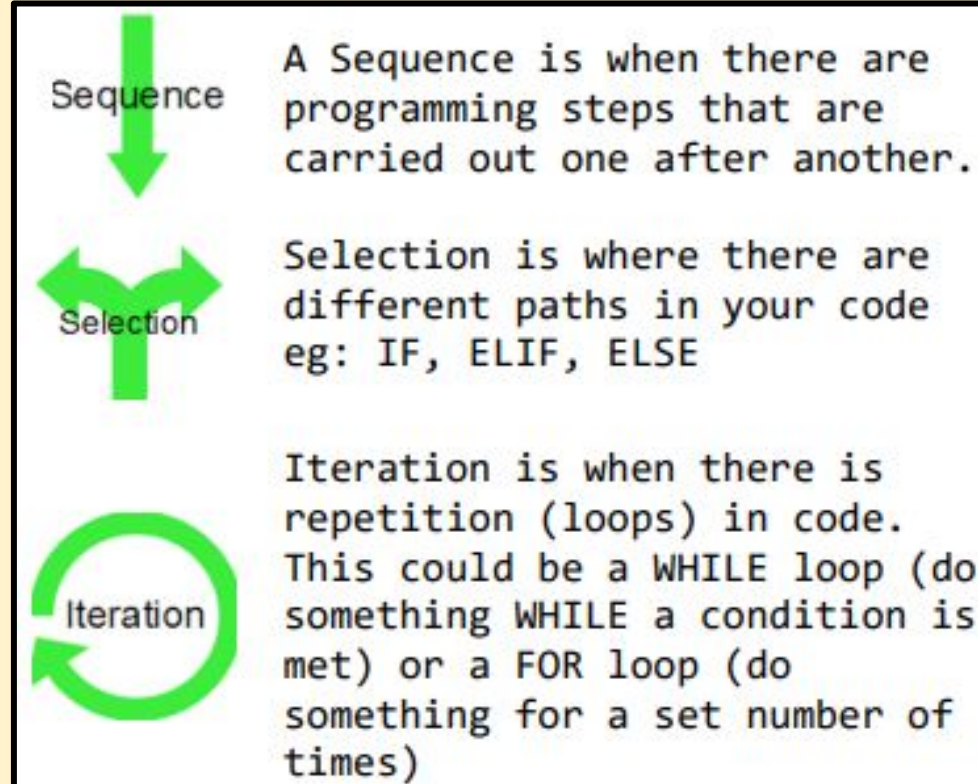
Programming

Key Words

Programming Constructs

Data Types

ASCII	American Standard Code for Information Interchange. A 7-bit character set used for representing English keyboard characters.
Boolean	A data type in computing which only has two possible values, true or false.
casting	Changing the data type of a piece of data from one type to another.
concatenation	The operation of connecting strings of characters next to each other.
constant	A value which cannot be altered as the program is running.
iteration	The repetition of a block of statements within a computer program.
operator	A character, or characters, that determine what action is to be performed or considered.
selection	A decision within a computer program when the program decides to move on based on the results of an event.
string	A sequence of characters often stored as a variable in a computer program. These characters can include numbers, letters and symbols.
variable	A named memory address that holds a value. The value held in a variable can change as the program is running.



- Each variable has a data type. The data type determines what type of value the variable will hold.

Data Type	Definition	Example
String	Text	"hello"
Integer	Whole Number	24
Float/Real	Decimal number	3.2
Boolean	Two values	True or False
Character	A single character	'b'

- Casting is the process of converting from one data type to another

Pseudocode Examples

outputting to the screen	<pre>print("Hello World!")</pre>	iteration - count controlled	<pre>for i = 0 to 7 print("Hello World!") next i</pre>
taking input from user	<pre>name = input("Please enter name")</pre>	iteration - condition controlled	<pre>while answer != "computer" answer=input("Enter password") endwhile</pre>
selection	<pre>if entry == "a" then print("You selected A") elseif entry == "b" then print("you selected B") else print("invalid entry") endif</pre>	casting	<pre>str(3) int("3") float("3.14")</pre>
		adding comments to code	<pre># This is a comment line in my code</pre>

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Extended Reading

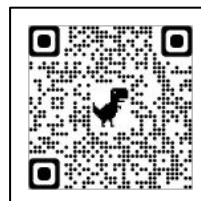
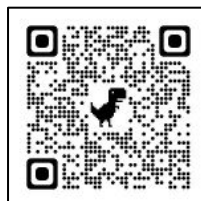
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Specification



Programming

Arrays

- An array is a data structure that contains groups of elements.
- These elements are all of the same data type.
- Each element is referenced by an index.
- Arrays start at index 0.
- One-dimensional (1D) array example:

index	0	1	2	3	4	5	6	7
value	a	h	k	b	f	j	x	q

- ✓ 8 elements
- ✓ The element at index [3] is 'b'

- Two-dimensional (2D) array example:

	0	1	2	3
0	Paul	Helen	Jin	Terry
1	Sarah	Pippa	Jake	Ted

- ✓ 8 elements
- ✓ The element at index [1][2] is 'Jake'

array colours[5]	Creates 1D array with 5 elements (index 0 to 4).
array board[8,8]	Creates 2D array with 8 elements (index 0 to 7).
colours[1] = "red" board[1][0] = "X"	Assigns "red" to location 2 Assigns "X" to row 1, column 0

String Manipulation

- A sequence of characters often stored as a variable in a computer program. These characters can include numbers, letters and symbols.
- The various operations that can be performed on strings is listed in the table below.

length of a string	.length	name = "Alice" name.length gives 5
substrings	.substring(x, i) .left(i) .right(i)	name.substring(1,3) gives "lic" name.left(4) gives "Alic" name.right(2) gives "ce"
Concatenation	+	print(name + " Smith") prints Alice Smith
Uppercase	.upper	name.upper gives ALICE
Lowercase	.lower	name.lower gives alice
ASCII conversion	ASC(..) CHR(..)	ASC(A) returns 65 CHR(97) returns 'a'

Comparison Operators

==	equal to
!=	not equal to
<	less than
<=	less than or equal to
>	greater than
>=	Greater than or equal to

File Handling

- Text files are used to store data in secondary storage.
- To read and write data to a text file, the operations listed in the table below can be used.

open(...)	myFile = open("sample.txt")
.close()	myFile.close()
.readLine()	myFile.readLine() returns the next line in the file
.writeLine(..)	myFile.writeLine("Add new line") Note that the line will be written to the END of the file.
.endOfFile()	while NOT myFile.endOfFile() print(myFile.readLine()) endwhile
newFile()	newFile("myText.txt")

Arithmetic Operators

+	addition
-	subtraction
*	multiplication
/	division
MOD	Modulus (the remainder after a division)
DIV	Quotient
^	Exponentiation (to the power)

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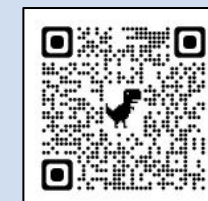
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