IB Pseudocode Syntax

Basic instructions

Name	Syntax	Description	Examples
Assign	*variable* = *value*	Assigns a value to the variable	a = 1
Input	input *variable*	Inputs the variable	input a
Output	output *variable/expression*	Outputs a value of the variable or expression	output a output “hello” output 2 + 2
Create	create *type variable*	Creates the variable with standard value of given type	create Boolean a create Number b create String c
Delete	delete *variable*	Deletes the variable	delete a

Conditions

Name	Syntax	Description	Examples
If	if *condition* then	Indicates the start of a condition block and states the first condition	if a = 1 then
Else if	else if *condition* then	States an additional condition	else if a = 2 then
Else	else	Indicates the start of the part of a condition block which will be executed if all conditions above are false	else
End if	end if	Indicates the end of a condition block	end if

Loops

Name	Syntax	Description	Examples
While loop	loop while *condition*	Executes a loop block while the condition is true	loop while a < 5
Until loop	loop until *condition*	Executes a loop block until the condition is true	loop until a = 5
For loop	loop *variable* from *start value* to *end value*	Executes a loop block for every value of the variable between start value and end value	loop a from 1 to 5
	loop for *variable* from *start value* to *end value*		loop for a from 1 to 5
End loop	end loop	Indicates the end of a loop block	end loop

Operators

Name	Syntax	Description	Examples
Equal	*value1* = *value2*	Checks is the first value equal to the second	a = 1
Not equal	*value1* != *value2* *value1* <> *value2*	Checks is the first value not equal to the second	a != 1 a <> 1
Greater	*value1* > *value2*	Checks is the first value greater than the second	a > 1
Greater or equal	*value1* >= *value2*	Checks is the first value greater or equal to the second	a >= 1
Less	*value1* < *value2*	Checks is the first value less than the second	a > 1
Less or equal	*value1* <= *value2*	Checks is the first value less or equal to the second	a >= 1
Not	NOT *value1*	Executes logical or bitwise NOT for the value	NOT a
And	*value1* AND *value2*	Executes logical or bitwise AND for the first and the second values	a AND 1
Or	*value1* OR *value2*	Executes logical or bitwise OR for the first and the second values	a OR 1
Xor	*value1* XOR *value2*	Executes bitwise XOR for the first and the second values	a XOR 1
Addition	*value1* + *value2*	Adds the first and the second values	a + 1
Subtraction	*value1* - *value2*	Subtracts the first and the second values	a - 1
Multiplication	*value1* * *value2*	Multiplies the first and the second values	a * 1
Division	*value1* / *value2*	Divides the first and the second values	a / 1
Modulo	*value1* mod *value2*	Gets modulo of the first and the second values	a mod 1
Integer division	*value1* div *value*	Gets integer part of the division of the first and the second values	a div 1

Functions

Name	Syntax	Description	Examples
Function	function *name*(*arg1*, …)	Indicates the start of a function block with name and arguments	function f(a, b)
Return	return *variable/expression*	Returns value or expression from function	return a return “hello” return 2 + 2
End function	end function	Indicates the end of a function block	end function
Run function	*name*(*arg1*, …)	Runs a function block with given name and arguments	f(1, 2)

Procedures

Name	Syntax	Description	Examples
Procedure	procedure *name*(*arg1*, …)	Indicates the start of a procedure block with name and arguments	procedure p(a, b)
End procedure	end procedure	Indicates the end of a procedure block	end procedure
Run procedure	*name*(*arg1*, …)	Runs a procedure block with given name and arguments	p(1, 2)

Basic data types

Name	Syntax	Description	Examples
Boolean	*variable* = true *variable* = false	Boolean type that can contain only true or false values	a = true b = false
	create Boolean *variable*		create Boolean a
	Boolean *variable*		Boolean a
Number	*variable* = *0*	Number type that can contain any number value	a = 0
	create Number *variable*		create Number a
	Number *variable*		Number a
String	*variable* = “text”	String type that can contain any text	a = “hello”
	create String *variable*		create String a
	String *variable*		String a

Arrays

Name	Syntax	Description	Examples
Create array	create Array *name*	Creates an empty array with given name	create Array a
	Array *name*		Array a
Get item	*name*[*index*]	Returns an item with given index from the array	a[0]
Set item	*name*[*index*] = *value*	Assigns a value to given index from the array	a[0] = 1
Array size	*name*.size()	Returns a size of the array	a.size()
Assign array	*name* = [*val1*, *val2*, …]	Assigns an array with given values to a variable	a = [1, 2, 3]

Dictionaries

Name	Syntax	Description	Examples
Create dictionary	create Dictionary *name*	Creates an empty dictionary with given name	create Dictionary a
	Dictionary *name*		Dictionary a
Get item	*name*[“key”]	Returns an item with given key from the dictionary	a[“a”]
Set item	*name*[“key”] = *value*	Assigns a value to given key from a dictionary with given name	a[“a”] = 1
Assign dictionary	*name* = {“key1”: *val1*, “key2”: *val2*, …}	Assigns a dictionary with given values to a variable	a = {“a”: 1, “b”: 2}

Collections

Name	Syntax	Description	Examples
Create collection	create Collection *name* Collection *name*	Creates an empty collection with given name	create Collection a Collection a
Add item	*name*.addItem(*value*)	Adds a value to the end of the collection	a.addItem(1)
Get next	*name*.getNext()	Returns next value from the collection	a.getNext()
Reset next	*name*.resetNext()	Resets next element of the collection	a.resetNext()
Has next	*name*.hasNext()	Checks does the collection have next element	a.hasNext()
Is empty	*name*.isEmpty()	Check does the collection contains elements	a.isEmpty()
Collection size	*name*.size()	Returns a size of the collection	a.size()

Stacks

Name	Syntax	Description	Examples
Create stack	create Stack *name* Stack *name*	Creates an empty stack with given name	create Stack a Stack a
Push	*name*.push(*value*)	Adds a value to the stack	a.push(1)
Pop	*name*.pop()	Gets a value from the stack	a.pop()
Is empty	*name*.isEmpty()	Check does the stack contains elements	a.isEmpty()
Stack size	*name*.size()	Returns a size of the stack	a.size()

Queues

Name	Syntax	Description	Examples
Create queue	create Queue *name* Queue *name*	Creates an empty queue with given name	create Queue a Queue a
Enqueue	*name*.enqueue(*value*)	Adds a value to the queue	a.enqueue(1)
Dequeue	*name*.dequeue()	Gets a value from the queue	a.dequeue()
Is empty	*name*.isEmpty()	Check does the queue contains elements	a.isEmpty()
Queue size	*name*.size()	Returns a size of the queue	a.size()