

Pseudocode

Constants and variables

	Example	Python equivalent
Variable assignment	<code>x ← 2</code>	<code>x = 2</code>
Constant assignment	<code>constant PI ← 3.142</code>	<code>PI = 3.142</code>

Input / Output

	Example	Python equivalent
Input	<code>a ← USERINPUT</code>	<code>a = input()</code>
Output	<code>OUTPUT "Goodbye"</code>	<code>print("Goodbye")</code>

Arithmetic Operators

	Example	Python equivalent
Plus	<code>+</code>	<code>+</code>
Multiply	<code>*</code>	<code>*</code>
Divide	<code>/</code>	<code>/</code>
Subtract	<code>-</code>	<code>-</code>
Integer division	<code>a ← 7 DIV 2</code> Evaluates to 3	<code>a = 7 // 2</code>
Modulus	<code>a ← 7 MOD 2</code> Evaluates to 1	<code>a = 7 % 2</code>

Relational and Boolean Operators

Relational operators	Example	Python equivalent
Less than	<	<
Greater than	>	>
Equal to	=	==
Not equal to	≠ <>	!=
Less than or equal to	≤	<=
Greater than or equal to	≥	>=

Boolean operators	Example	Python equivalent
AND	AND	and
OR	OR	or
NOT	NOT	not

Selection

	Example	Python equivalent
if ..	IF i > 2 THEN j ← 10 ENDIF	if i > 2: j=10
if .. else ...	IF i > 2 THEN j ← 10 ELSE j ← 3 ENDIF	if i > 2: j=10 else: j=3
if ... else if ...	IF i=2 THEN j ← 10 ELSE IF i=3 THEN j ← 3 ELSE j ← 1 ENDIF	if i ==2: j=10 elif i==3: j=3 else: j=1

Iteration: while loop

	Example	Python equivalent
while	<pre> x ← 1 WHILE x < 5 OUTPUT x x ← x + 1 ENDWHILE </pre>	<pre> x=1 while x<5: print(x) x=x+1 </pre>
Repeat until	<pre> x ← 1 REPEAT OUTPUT x x ← x + 1 UNTIL x = 5 </pre>	

Iteration: for loop

	Example	Python equivalent
for	<pre> FOR i ← 0 TO 2 OUTPUT a ENDFOR </pre>	<pre> for i in range(3): print(a) </pre>
For character in string	<pre> FOR i IN "Hello" OUTPUT I ENDFOR </pre>	<pre> for i in "Hello": print(i) </pre>
For element in list	<pre> FOR i IN [3,5,7,11,13] OUTPUT i ENDFOR </pre>	<pre> for i in [3,5,7,11,13]: print(i) </pre>

Arrays

	Example	Python equivalent
Set up array	$a \leftarrow [1, 2, 3, 4, 5]$	<code>a=[1, 2, 3, 4, 5]</code>
Access element	<code>a[0]</code>	<code>a[0]</code>
Update element	$a[0] \leftarrow 4$	<code>a[0] = 4</code>
Set up 2D array	$a \leftarrow [[1, 2], [3, 4]]$	<code>a = [[1, 2], [3, 4]]</code>
Access 2D element	<code>a[0][1]</code>	<code>a[0][1]</code>
Update 2D element	$a[0][1] \leftarrow 4$	<code>a[0][1] = 4</code>

Subroutine

	Example	Python equivalent
Defining a procedure	<pre>SUBROUTINE hello() OUTPUT "hello" ENDSUBROUTINE</pre>	<pre>def hello(): print("hello")</pre>
Function (with paramerters and reurn)	<pre>SUBROUTINE add(num) a ← 0 FOR a ← 0 TO num a ← a + num ENDFOR RETURN a ENDSUBROUTINE</pre>	<pre>def add(num): a=0 for a in range(num+1): a=a+num return a</pre>
Calling a subroutine	<pre>hello() add(num)</pre>	<pre>hello() add(num)</pre>

Records

	Pseudocode	Python Equivalent
Defining the record	RECORD cloud name: String height: Real ENDRECORD	<pre>class Cloud(object): def __init__(self, name=None, height=None): self.name = name self.height = height</pre>
Instantiating the record	Cloud ← Cloud("Cirrus", "High")	cloud=Cloud("Cirrus", "High")
Assign a value to a field	cloud.name ← "Nimbostratus"	cloud.name="Nimbostratus"
Accessing a field value	OUTPUT cloud.name	print(cloud.name)

String conversions

	Pseudocode	Python
String to integer	STRING_TO_INT("17")	int("17")
String to real	STRING_TO_REAL("17.2")	float(17.2)
Integer to string	INT_TO_STRING(17)	str(17)
Real to string	REAL_TO_STRING(17.2)	str(17.2)
Character to code	CHAR_TO_CODE("A")	ord("A")
Code to character	CODE_TO_CHAR(65)	chr(65)

Built-in functions

	Example	Python equivalent
Length of array	LEN (a)	len (a)
Get index position of character in string	POSITION ("Hello", "e")	"hello".index("o")
Get substring from a string	SUBSTRING (1,3,"Hello") Evaluates to: ell	string = "Hello World" print(string[1:3])
Random integer	RANDOM_INT (0, 9)	import random random.randint (0,9)

Comment

	Example	Python equivalent
Length of array	# This is a # comment	# This is a # comment