CAIE Computer Science IGCSE
8.1 Programming concepts

Flashcards

What is a data type?

What is a data type?

A category defining what kind of data a variable holds and how it should be stored and processed.

Name the 5 data types.

Name the 5 data types.

Integer, Real, Boolean, Character, String.

What is an Integer (int)?

What is an Integer (int)?

A whole number with no decimal part.

Example: -10, 0, 25

What is a Real (float)?

What is a Real (float)?

A number that includes a decimal or fractional part.

Example: 3.14, -0.5

What is a Boolean (bool)?

What is a Boolean (bool)?

A data type with only two possible values: True or False.

What is a Character (char)?

What is a Character (char)?

A single letter, digit, or symbol enclosed in quotation marks.

Example: "A", "5", "#"

What is a String (str)?

What is a String (str)?

A sequence of characters enclosed in quotation marks.

Example: "Hello", "123", "£$%"

Why are data types important?

Why are data types important?

They ensure the correct storage, processing, and use of data in a program.

What could go wrong if the wrong data type is used?

What could go wrong if the wrong data type is used?

The program may produce errors or incorrect outputs (e.g. trying to divide strings).

What is the name for real numbers in many programming languages?

What is the name for real numbers in many programming languages?

Float.

What is the difference between 123 and “123”?

What is the difference between 123 and “123”?

123 is an integer and can be used for arithmetic calculations, whilst “123” is a string.

What does "input" mean in programming?

What does "input" mean in programming?

Getting data from the user via keyboard or another input device.

What does "output" mean in programming?

What does "output" mean in programming?

Displaying data or messages to the user via the screen or other (often human–friendly) medium.

What is a common use of input in a program?

What is a common use of input in a program?

To collect data that the program needs to process.

Example: User enters their name or a number.

What Python function is used for input?

What Python function is used for input?

input()

Example: name = input("Enter your name: ")

What Python function is used for output?

What Python function is used for output?

print()

Example: print("Hello", name)

What is a variable declaration?

What is a variable declaration?

A statement that creates a variable to store data.

Example: score = 0

What is a constant declaration?

What is a constant declaration?

The creation of a named value that does not change while the program runs.

Example: PI = 3.14

What is assignment in programming?

What is assignment in programming?

Giving a value to a variable, or updating it.

Example: total = total + 1

What is count-controlled iteration?

What is count-controlled iteration?

A loop that repeats a fixed or known number of times.

Example: FOR i ← 1 TO 5

What is pre-condition iteration?

What is pre-condition iteration?

A loop that repeats until or while a condition is met, checking the condition prior to the loop's execution.

What is post-condition iteration?

What is post-condition iteration?

A loop that repeats until or while a condition is met, checking the condition at the end/after the loop.

What is nested iteration?

What is nested iteration?

A loop inside another loop.

What is selection in programming?

What is selection in programming?

Making decisions using IF, ELSE IF, and ELSE statements.

What is nested selection?

What is nested selection?

An IF statement inside another IF statement.

What is a subroutine?

What is a subroutine?

A named block of reusable code, also called a procedure or function.

What is a parameter in a subroutine?

What is a parameter in a subroutine?

A variable that allows a value to be passed into a subroutine to use in its execution.

What is totalling?

What is totalling?

Totalling means to keep a running total (sum) of numbers throughout a program.

What is counting?

What is counting?

Counting means to keep track of the number of occurrences of an event.

What is a string in programming?

What is a string in programming?

A sequence of characters enclosed in quotes, e.g. "hello".

What does the length function do?

What does the length function do?

Returns the number of characters in a string.

Example: length("hi") → 2

What does the upper function do?

What does the upper function do?

Returns a string in full uppercase.

Example: upper(“cat”) → “CAT”

What are arithmetic operations in programming?

What are arithmetic operations in programming?

Basic mathematical calculations used to manipulate and process numerical data.

What symbol is used for addition?

What symbol is used for addition?

+

Example: 5 + 3 = 8

What symbol is used for subtraction?

What symbol is used for subtraction?

-

Example: 10 - 4 = 6

What symbol is used for multiplication?

What symbol is used for multiplication?

*

Example: 4 * 3 = 12

What symbol is used for real division?

What symbol is used for real division?

/

Example: 9 / 2 = 4.5

What is integer division?

What is integer division?

Division that returns only the whole number part of the result.

Symbol: DIV or //

Example: 11 DIV 2 = 5

What is modulus in programming?

What is modulus in programming?

An operation that returns the remainder of a division.

Symbol: MOD or %

Example: 11 MOD 2 = 1

What is a relational operation?

What is a relational operation?

A comparison between two values that returns True or False.

What does the == operator do?

What does the == operator do?

Checks if two values are equal.

Example: 5 == 5 → True

What does the != or <> operator mean?

What does the != or <> operator mean?

Checks if two values are not equal.

Example: 3 != 4 → True

What does the < operator do?

What does the < operator do?

Checks if the value on the left is less than the value on the right.

Example: $2 < 5 \rightarrow$ True

What does the > operator do?

What does the > operator do?

Checks if the value on the left is greater than the value on the right.

Example: 6 > 7 → False

What does the <= operator mean?

What does the <= operator mean?

Checks if the value on the left is less than or equal to the right.

Example: 5 <= 5 → True

What does the >= operator mean?

What does the >= operator mean?

Checks if the value on the left is greater than or equal to the right.

Example: 7 >= 10 → False

What kind of value do relational operators return?

What kind of value do relational operators return?

A Boolean value: True or False.

Where are relational operators commonly used?

Where are relational operators commonly used?

In IF, ELSE, and loop conditions to make decisions and control the flow of the program.

What are logical operations used for?

What are logical operations used for?

To compare Boolean values (True or False) and control the flow of programs.

What does the NOT operator do?

What does the NOT operator do?

It reverses the Boolean value.

Example: NOT True → False

What does the AND operator do?

What does the AND operator do?

Returns True only if both conditions are True.

Example: True AND True → True

What does the OR operator do?

What does the OR operator do?

Returns True if at least one condition is True.

Example: True OR False → True

What is the result of True AND False?

What is the result of True AND False?

False

What is the result of False OR False?

What is the result of False OR False?

False

What is the result of NOT False?

What is the result of NOT False?

True

Where are logical operators commonly used?

Where are logical operators commonly used?

In IF statements, WHILE loops, and other conditional expressions to control the flow of the program.

Why are library functions useful?

Why are library functions useful?

They provide additional functionality within programs.

What is the RANDOM library used for?

What is the random library used for?

Used to generate random numbers in a program.

Example: RANDOM(1, 6) → returns a number between 1 and 6.

Why is it important to create maintainable programs?

Why is it important to create maintainable programs?

Programs should be written in a clear and structured manner so that they can be easily understood and improved upon by the same/other developers.

How can you create maintainable programs?

How can you create maintainable programs?

Using meaningful identifier names, comments, and subroutines.