Python Introduction - 4

Errors in Python

Errors in Python

- Bug or (Error) : Unexpected output is called Error
- For the successful execution of the program, it is necessary to remove all types of errors.
- Debugging : process of finding and removing errors from the program is called debugging.
- Types of errors
  - Syntax errors
  - Runtime errors
  - Logical errors

Syntax Errors

- Mistakes in the use of the Python language
- A **syntax error** happens when Python can't understand what you are saying
- Like English: for example, the sentence ***Would you some tea?***
- Exit with an error message without running anything
- It include
  - leaving out a keyword
  - putting a keyword in the wrong place
  - leaving out a symbol, such as a colon, comma or brackets
  - misspelling a keyword
  - incorrect indentation

Syntax Errors Examples

- Forgetting the second quote
  - name = "Jim
- Misspelling a Python keyword
  - Eg. using **whille** instead of **while,** using **Print** instead of **print**
  - Print ("Hello RGUKT")
- Incorrect Indentation
  - a=234
  - b=23
  - c=a+b
  - print c

Run-time Errors

- Happen when execution of the program
- A **run-time error** happens when Python understands what you are saying, but runs into trouble when following your instructions
- English instruction ***flap your arms and fly to Australia***
- Exit during execution if it encounters a *runtime error*
- Examples
  - Division by zero
  - performing an operation on incompatible types
  - using an identifier which has not been defined
  - trying to access a file which doesn't exist

Run-time Errors Examples

- using an undefined variable or function.
  - callMe = "Maybe"
  - print(callme)
- dividing by zero
  - print(1/0)
- using operators on the wrong type of data
  - “a”%2

Semantic Errors

- Occur when the program runs without crashing, but produces an incorrect result.
- When talk about **logic errors,** which means that your program runs without crashing, but still produces the wrong result. An example would be
- English instruction ***Please close the back door so that the bugs don't come in***
- Mistake in the program's logic, Won't get an error message
- Examples
  - Using the wrong variable name
  - Indenting a block to the wrong level
  - Using integer division instead of floating-point division
  - getting operator precedence wrong
  - making a mistake in a boolean expression

Semantic Errors Examples

- This does *not* calculate the average correctly
  - x = 3
  - y = 4
  - average = x + y / 2
  - print(average)
- Using wrong variable name
  - A = 4
  - B = 3
  - C = 2
  - Sum = A+B # adding of a, c