Day 9 Notes

File Input and Output methods

1. **File Input & Output (File Handling)**

File handling is used to read from and write to files.

Opening a File

Syntax:
open(filename, mode)

File Modes:

- `"r"` → Read (default)
- `"w"` → Write (overwrites existing content)
- `"a"` → Append
- `"x"` → Create new file
- `"b"` → Binary mode
- `"t"` → Text mode

Example:
file = open("example.txt", "r")

Reading from a File

read()

Reads the entire file content.

readline()

Reads one line at a time.

readlines()

Reads all lines and returns them as a list.

Writing to a File

write()

Writes content to the file.

writelines()

Writes multiple lines (usually from a list).

Closing a File

```
file.close()
```

```
with open("example.txt", "r") as file:
content = file.read()
```

(This automatically closes the file.)

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2. General Purpose Built-in Functions

len()

Returns the length of an object.
Example: len("Python") → 6

range()

Generates a sequence of numbers.

- range(5) → 0 to 4
- range(1, 6) → 1 to 5
- range(1, 10, 2) → Step of 2

print()

Displays output.

type()

Returns the data type of a variable.
Example: type(5) → int

id()

Returns the unique memory address of an object.

uuid

Generates unique identifiers.
Requires: import uuid

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3. Sorting & Iteration Functions

sorted()

Returns a sorted version of a list.

enumerate()

Returns index along with value while looping.

zip()

Combines elements from two lists into pairs.
Example:
names = ["I", "like"]
numbers = [72, 3423]
Output: [("I", 72), ("like", 3423)]

join()

Joins list elements into a string.
Example:
words = ["I", "like", "python"]

" ".join(words)
Output: "I like python"

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4. Conversion Functions

Used to convert one data type to another.

- int()
- float()
- str()
- list()
- dict()
- set()
- tuple()

Example:
int("3") → 3
float("3.5") → 3.5

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5. Mathematical Functions

abs()

Returns absolute value.
abs(-12) → 12

sum()

Adds all elements in a list.

min()

Returns smallest value.

max()

Returns largest value.

pow()

Power function.
pow(2, 3) → 8

round()

Rounds a number.
round(3.456, 2) → 3.46

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6. Functional Programming Functions

lambda

Anonymous (one-line) function.
Example: lambda x: x * 2

map()

Applies a function to each element in an iterable.

filter()

Filters elements based on a condition.

reduce()

Reduces a list to a single value.
Requires: from functools import reduce