IDX G9 Programming Essentials H

Study Guide Semester 1 Monthly 2

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Contents:

Nested Loops

- DEF: a loop inside another loop
- The outer loop runs first, and for every iteration of the outer loop, the inner loop runs completely.
- New line character: \n
  - print() function ends with this by default
  - Can be avoided using print('text', end= '')
- Examples of usage: print shaped patterns (triangles with *, left/right aligned…)

Functions

- Two Types of Functions:
  - Built-in functions: Already in Python (e.g., len(), range()).

    - User-defined functions: Created using def.
- A function can be taken to be something similar to a variable:
    - Both command the computer to store their values/lines of code within the computer's memory until they are called upon again.
- Functions are primarily used to simplify code for **readability**.

Constructing a function:

- To define a new function:
    - def functionName(parameters):

      statements
- The name must follow variable naming rules (no spaces, no leading numbers).
- Parentheses may contain parameters.
- End with a colon.

Return statement:

- Ends the function immediately
- A function can only execute one return at a time
- If no return is written, the function returns None
- To use your defined function, just call it whenever you want in your code!

Break & Continue

- The **break** statement stops the loop once a condition has been met or the previous statements were already carried out.
- The **continue** statement directly moves onto the next iteration of the loop.

Using Files

- This opens a different file on your computer and to let your computer read it.
- To use it, you have to open and close the file:
    - F = open("**fileNameHere**.txt", "**mode**")

- There are three different “modes”:

“r” or Read:

- It reads the content of the existing file.
- There are a few functions used in the mode “r”:
    - read() → Reads the entire file and returns it as a single string.
    - readline() → Reads a single line within the file and returns it as a string (starting from the top). There can be a parameter(has to be an **integer**), and it will only read as many characters as specified by the parameter.
    - readlines() → Reads all the lines as a list of strings, where one string is one line.
    - repr() → Not necessarily associated with the mode “r”, but it prints out the **raw** data of the string.
    - splitlines() → Also not necessarily associated with file reading, but it splits a string into a list when it sees the ‘\r’, ‘\r\n’, or ‘\n’ in a string.

“w” or Write:

- Used to overwrite the text on an existing file, or to create a new file and write from scratch.
    - The sole function used:
        - write(string) → writes the contents of the string in the parentheses to the file
        - Use close() to save the change!

“a” or Append:

- Instead of overwriting the text in the existing file, it just directly adds the string to the end of the written lines in the file.
- It also uses the sole function of “write(string)”.