CIS 6 :: Lab 4 - Strings and Lists

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Task 1: Definitions & Concepts - Homework

Instructions: Answer the questions below.

1. What is a string data type?
   => A sequence of characters enclosed in quotations or apostrophes
2. What type of data type the string is, primitive or class?:
   =>Primitive
3. What is ASCII character code?:
   =>American Standard Code, an official encoding for most numbers and characters
4. What is the difference between ASCII and Unicode?
   =>Unicode is much bigger, supporting almost every character in every language. ASCII is a subset of Unicode.
5. List two string methods and explain their use:
   => s.split() will split s into a list of strings. s.join(list) will combine a list of strings into one with s as the spacer
6. What are some of the difference between strings and lists?:
   =>Lists can be composed of multiple data types, and unlike strings lists are mutable.
7. What are some of the similarities between strings and lists?:
   =>They are both sequences of characters, and function with similar operators such as + and []

Task 2: Internet Research - Homework

Explain why public key encryption is more useful for securing communications on the Internet than private (shared) key encryption.

=Public key systems allow users to encrypt and upload communications while keeping the key for decryption separate.

Task 3: Understanding Strings

1. Given the initial statements:

   s1 = "spam"

   s2 = "ni!"

   Show the result of evaluating each of the following string expressions.

   (a) "The Knights who say, " + s2 **=> The Knights who say, ni!**

(b) 3 * s1 + 2 * s2 **=> spamspamspamni!ni!**

(c) s1[1] **=> p**

(d) s1[1:3] **=> pa**

(e) s1[2] + s2[:2] **=> ani**

(f) s1 + s2[-1] **=> spam!**

(g) s1.upper() **=> SPAM**

(h) s2.upper().ljust(4) * 3 **=> NI! NI! NI!**

2. Given the same initial statements as in the previous problem, show a Python expression that could construct each of the following results by performing string operations on s1 and s2.

(a) "NI" **=> s2[:2].upper()**

(b) "ni!spamni!" **=> s2 + s1 + s2**

(c) "Spam Ni! Spam Ni! Spam Ni!" **=> (s1.capitalize() + " " + s2.capitalize()) * 3**

(d) "spam" **=> s1.lower()**

(e) ["sp","m"] **=> s1.split("a")**

(f) "spm" **=> s1.replace('a','')**

3. Show the string that would result from each of the following string formatting operations. If the operation is not legal, explain why.

(a) "Looks like {1} and {0} for breakfast".format("eggs", "spam") **=> Looks like spam and eggs for breakfast**

(b) "There is {0} {1} {2} {3}".format(1,"spam", 4, "you") **=> There is 1 spam 4 you**

(c) "Hello {0}".format("Susan", "Computewell") **=> Hello Susan**

(d) "{0:0.2f} {0:0.2f}".format(2.3, 2.3468) **=> 2.30 2.30**

(e) "{7.5f} {7.5f}".format(2.3, 2.3468) **=> Error, 7 is more spaces than is available for width**

(f) "Time left {0:02}:{1:05.2f}".format(1, 37.374) **=> Time left 01:37.37**

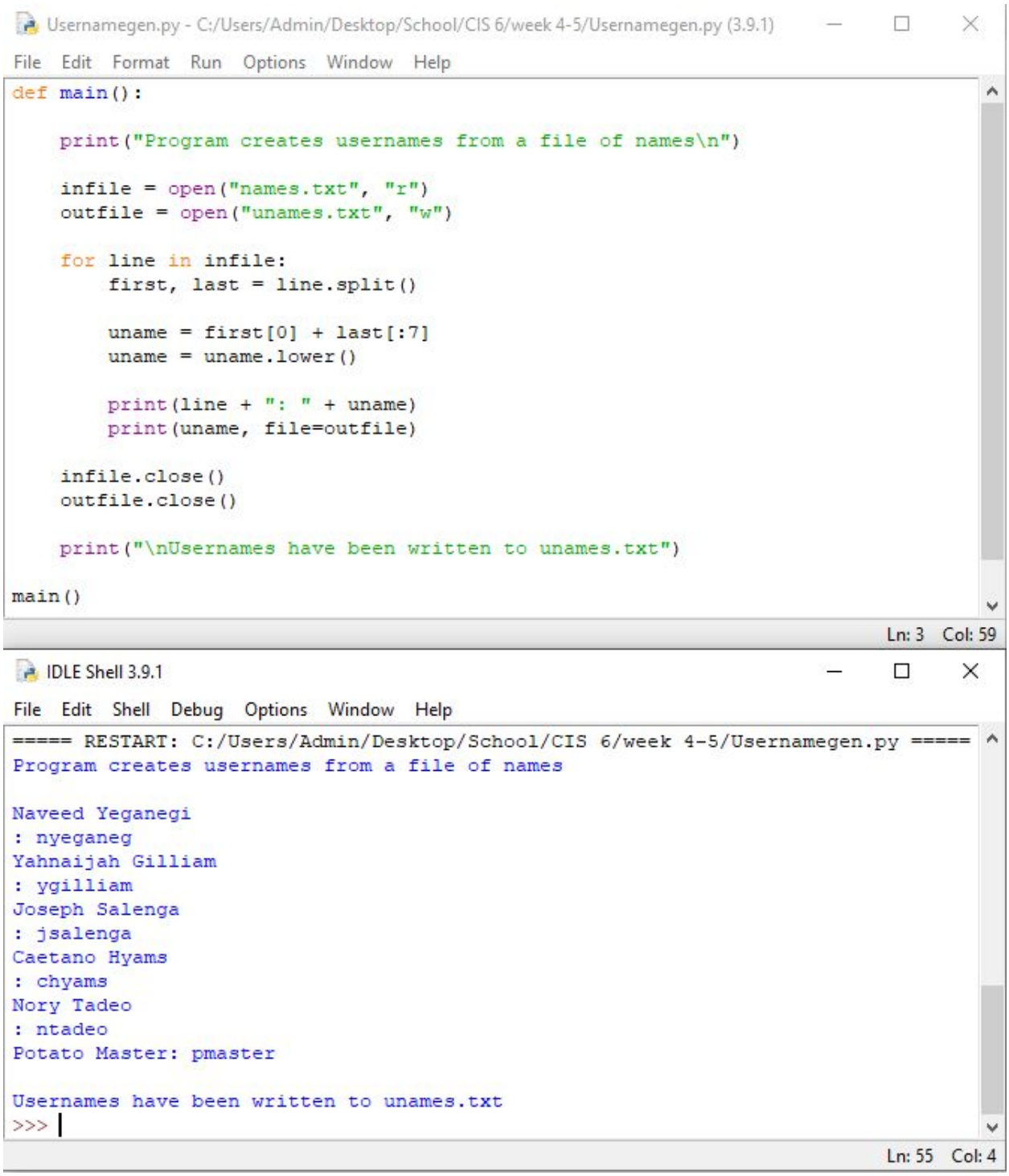
(g) "{1:3}".format("14") **=> Error, 1 is out of range for index arguments**

Task 4: Programming Exercises

Instructions: Use Python IDLE to write and execute below exercises from the book chapter 3. Attach Snipping photos of your source code and executions of the code in Python shell. Make sure to create separate files for each exercise

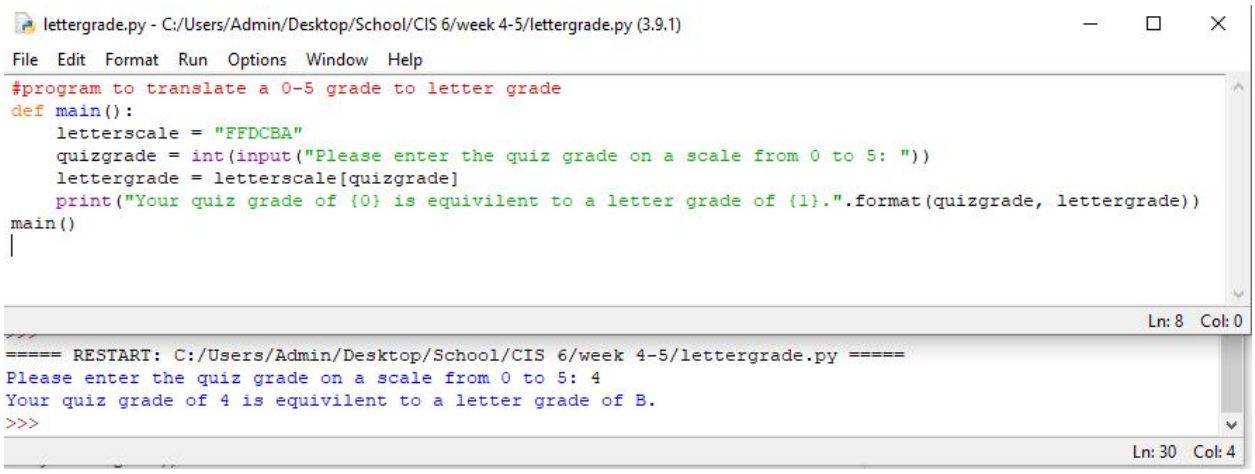
Book Chapter 5: Write and execute below program from the book

1. userame.py (from the lecture videos)



Chapter 5 - Programming Exercises (Page 171-174).

Exercise 2: 5-point grades



Exercise 3: 100-points grades

Exercise 4: Acronyms

Exercise 9: Word count

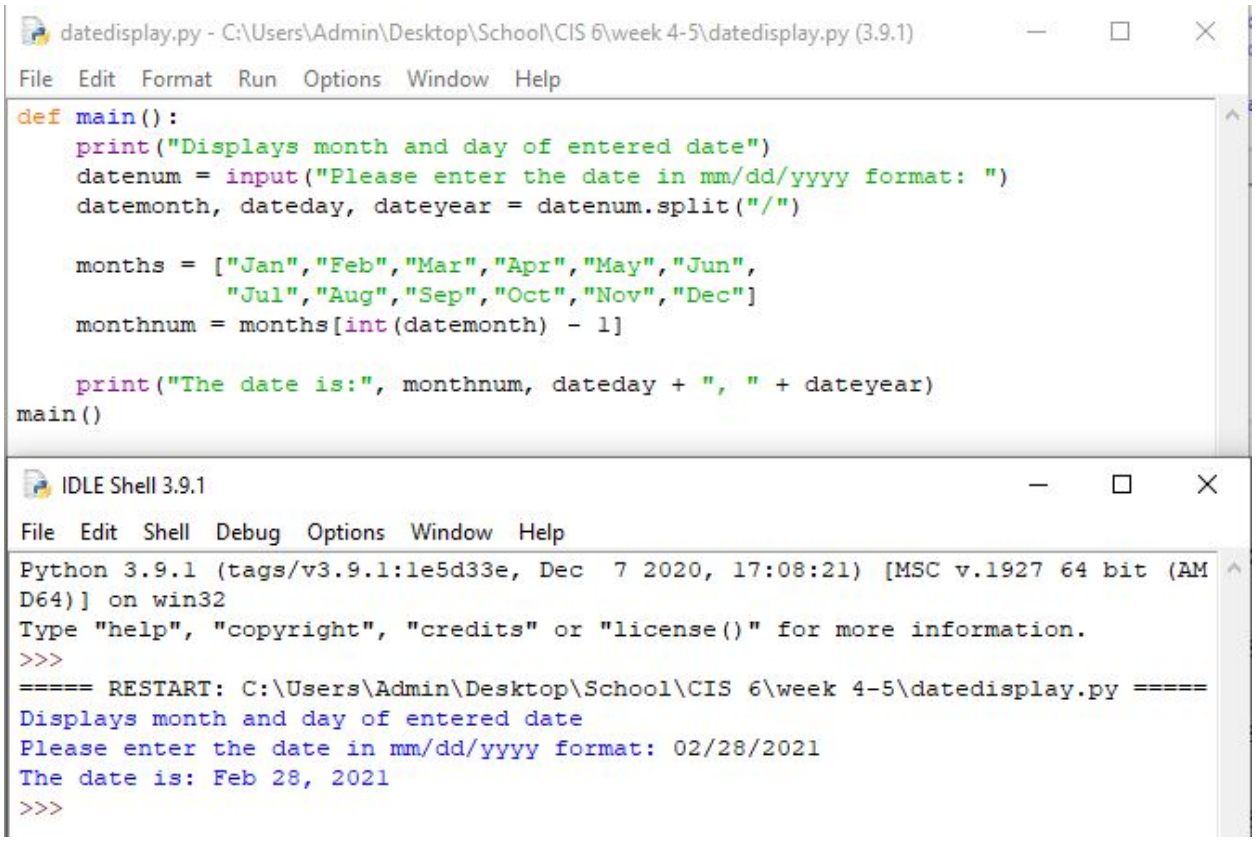
Exercise 10: Average word length

Exercise 11: Formatted caos.py

Exercise 12: Formatted futval.py

Week 2:

Exercise 1: Date conversion with format method



Exercise 7: Caesar Cypher

Exercise 13: File Input/Output