COME103 / CENG111 Computer Programming I

Lab - 7 Before LAB Examples

17 November 2021

1. TRUE / FALSE QUESTIONS

__F__ When working with a sequential access file, you can jump directly to any piece of data in the file without reading the data that comes before it.

__F__ In Python there is no restriction on the name of a module file.

__T__ When you open a file that file already exists on the disk using the `'w'` mode, the contents of the existing file will be erased.

__F__ The process of opening a file is only necessary with input files. Output files are automatically opened when data is written to them.

__T__ When an input file is opened, its read position is initially set to the first item in the file.

__T__ It is possible to create a while loop that determines when the end of a file has been reached.

2. COMPLETION QUESTIONS: Fill in the blanks.

a) When a program needs to save data for later use, it writes the data in a(n) __file__.

b) When data is written to a file, it is described as a(n) __output__ file.

c) If data is retrieved from a file by a program, this is known by the term __input__ file.

d) A(n) __binary file__ file contains data that has not been converted to text.

e) A(n) __sequential__ access file retrieves data from the beginning of the file to the end of the file.

f) A file __extension__ is a short sequence of characters that appear at the end of a filename, preceded by a period.

3. ALGORITHM WORKBENCH QUESTIONS

a) Write a statement that opens a file with filename `things.txt` creating it for the first time and assigns it to a file object named `output_file`.

b) Write a statement that opens a file with filename `cities.txt` to read some information from it. A file object named `input_file` should be directed to the file.

c) Write a statement that opens an already exist file with filename `students.txt` to read and write (append) some information from/to it. A file object named `student_file` should be directed to the file.

MULTIPLE CHOICE QUESTIONS

4. Which step creates a connection between a file and a program?

a) open the file
b) read the file
c) process the file
d) close the file

5. The contents of this type of file can be viewed in an editor such as Notepad.

a) text file
b) binary file
c) English file
d) human-readable file

6. When working with this type of file, you can jump directly to any piece of data in the file without reading the data that comes before it.

a) ordered access
b) binary access
c) direct access
d) sequential access

7. Which type of file access jumps directly to a piece of data in the file without having to read all the data that comes before it?

a) sequential
b) random
c) numbered
d) text

8. Which mode specifier will erase the contents of a file if it already exists and create the file if it does not already exist?

a) `'w'`
b) `'r'`
c) `'a'`
d) `'e'`

9. A file that data is read from is known as a(n)_____.

a) input file
b) output file
c) sequential access file
d) binary file

10. When a program is finished using a file, it should do this.

a) erase the file
b) open the file
c) close the file
d) encrypt the file

11. This marks the location of the next item that will be read from a file.

a) input position
b) delimiter
c) pointer
d) read position

12. When a file is opened in this mode, data will be written at the end of the file's existing contents.

a) output mode
b) append mode
c) backup mode
d) read-only mode

13. A single piece of data within a record is called a _____.

a) variable
b) delimiter
c) field
d) data bit

14. Which method will return an empty string when it has attempted to read beyond the end of a file?

a) `read`
b) `getline`
c) `input`
d) `readline`

15. Given that `customer` file references a file object, and the file was opened using the `'w'` mode specifier, how would you write the string `'Mary Smith'` to the file?

a) `customer file.write('Mary Smith')`
b) `customer.write('w', 'Mary Smith')`
c) `customer.input('Mary Smith')`
d) `customer.write('Mary Smith')`

16. Which of the following is the correct way to open a file named users.txt in `'r'` mode?

a) `infile = open('r', users.txt)`
b) `infile = read('users.txt', 'r')`
c) `infile = open('users.txt', 'r')`
d) `infile = readlines('users.txt', r)`

PROGRAMS

17. Write a program that asks the user for the name of a file. The program should display the contents of the file with each line preceded with a line number followed by a colon. The line numbering should start at 1.

18. Assume a file containing a series of integers is named `numbers.txt` and exists on the computer's disk. Write a program that calculates the average of all the numbers stored in the file.

19. *(Remove text)* Write a program that removes all the occurrences of a specified string from a text file. Your program should prompt the user to enter a filename and a string to be removed. Here is a sample run:

```
Enter a filename: test.txt ↵ Enter
Enter the string to be removed: morning ↵ Enter
Done
```

20. *(Count characters, words, and lines in a file)* Write a program that will count the number of characters, words, and lines in a file. Words are separated by a whitespace character. Your program should prompt the user to enter a filename. Here is a sample run:

```
Enter a filename: test.txt ↵ Enter
1777 characters
210 words
71 lines
```

21. *(Process scores in a text file)* Suppose that a text file contains an unspecified number of scores. Write a program that reads the scores from the file and displays their total and average. Scores are separated by blanks. Your program should prompt the user to enter a filename. Here is a sample run:

```
Enter a filename: scores.txt ↵ Enter
There are 70 scores
The total is 800
The average is 33.33
```

22. Write a program that creates a file named `numbers.txt` then it write randomly generated 100 integers from -50 to 50, inclusively. You may write an extra program after creating `numbers.txt` to find the total, average, maximum and minimum values in the file.

23. This is the last question. It is very comprehensive question and you can try in your free times. Such question is more like a project which cannot be asked in an exam or in the lab.

You will write a phone directory which holds the name, last name, and phone number of your friends in a data file named `directory.txt` . Your program should give you the following options as menu so you can add new record, search a record, delete a record, modify a phone number, and display all directory in tabular form.

```
**********************************
**** Please Select from the menu ***
**********************************
1) Add a new record
2) Search by name
3) Search by last name
4) Search by phone number
5) Modify phone number
6) Delete a record by phone number
7) Display all records in tabular form
**********************************
Enter your Choice:
```

Please note that we will learn Dictionaries in Chapter 9, by using dictionaries, such programs can be easily written by using Dictionaries in Python.