File Handling in Python

Standard difficulty · 20 questions · 40 marks · Time: 43 minutes

Name: _____ Date: _____ Score: ____ / 40

Show your working for Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. Which file mode opens a file for writing and erases what it held?

(a) 'r' **(b)** 'r+' **(c)** 'a' **(d)** 'w'

2. The file notes.txt holds these lines (each ends with a newline):
Old books smell nice
Kites fly high in the sky
The test starts at nine
What does this print?

```
f = open('notes.txt', 'r')
c = 0
for line in f:
    if line[0] == 'T':
        c = c + 1
f.close()
print(c)
```

(a) 1 **(b)** 2 **(c)** 3 **(d)** 0

3. The file notes.txt holds these lines (each ends with a newline):
The river flows past our town
Trees stand tall near the school
Children play in the park
What does this print?

```
f = open('notes.txt', 'r')
words = f.read().split()
f.close()
print(len(words))
```

(a) 16 **(b)** 3 **(c)** 19 **(d)** 17

4. Before this runs, out.txt holds one line, Line one (with its newline). What does the program print?

```
f = open('out.txt', 'w')
f.write('Code\n')
for i in range(2):
    f.write('Data\n')
f.close()
f = open('out.txt')
print(len(f.read()))
f.close()
```

(a) 15 **(b)** 12 **(c)** 24 **(d)** 16

5. What does the file mode 'a+' in open() mean?

(a) write and read; creates the file or empties it

(b) write a binary file, emptying it first

(c) read a binary file

(d) append and read; creates the file if needed

6. The binary file marks.dat holds these records, each written with one pickle.dump(): [1, 'Ananya', 69], [2, 'Rahul', 49], [3, 'Priya', 96], [4, 'Dev', 81].
What is the last line this program prints?

```
import pickle
f = open('marks.dat', 'rb')
count = 0
try:
    while True:
        rec = pickle.load(f)
        if rec[2] > 77:
            print(rec[1])
            count = count + 1
except EOFError:
    f.close()
print(count)
```

(a) 1 **(b)** 4 **(c)** 2 **(d)** 3

7. The file users.csv holds these lines:

```
id,name,score
U10,Vikram,44
U11,Zoya,84
U12,Rohan,94
U13,Isha,92
U14,Rahul,80
```

What does this print? (Output lines are separated by commas.)

```
import csv
f = open('users.csv', newline='')
r = csv.reader(f)
next(r)
for row in r:
    if int(row[2]) >= 94:
        print(row[1])
f.close()
```

(a) Vikram **(b)** Vikram, Zoya, Isha, Rahul

(c) name **(d)** Rohan

8. The file notes.txt holds these lines (each ends with a newline):
Birds sing every morning
Tea is ready now
Children play in the park
What is the second line this prints?

```
f = open('notes.txt')
print(f.read(5))
print(f.tell())
f.seek(14)
print(f.read(4))
f.close()
```

(a) 6 **(b)** 0 **(c)** 5 **(d)** 4

Section B — Short answer — 8 × 2 = 16 marks

9. What is the difference between a text file and a binary file?

10. The file notes.txt holds these lines (each ends with a newline):
Bees make honey
Kites fly high in the sky
The bus was late today
Our garden has roses
Stars shine at night
What does this print?

```
f = open('notes.txt', 'r')
c = 0
for line in f:
    if line[0] == 'S':
        c = c + 1
f.close()
print(c)
```

11. The file notes.txt holds these lines (each ends with a newline):
Bees make honey
Our garden has roses
The test starts at nine
A cat sleeps on the wall
Stars shine at night
What does this print? Give (a) the first line (b) the second (c) the third.

```
f = open('notes.txt')
print(f.read(4))
print(f.tell())
f.seek(1)
print(f.read(2))
f.close()
```

12. The file notes.txt holds these lines (each ends with a newline):
Boats carry fish to the market
Mangoes ripen in summer
Tea is ready now
What does this print?

```
with open('notes.txt') as f:
    for line in f:
        print('#'.join(line.split()))
```

13. Before this runs, out.txt holds one line, Line one (with its newline). What does the program print?

```
f = open('out.txt', 'a')
f.write('Stack\n')
for i in range(3):
    f.write('Files\n')
f.close()
f = open('out.txt')
print(len(f.read()))
f.close()
```

14. The binary file marks.dat holds these records, each written with one pickle.dump(): [1, 'Ananya', 93], [2, 'Vikram', 58], [3, 'Zoya', 60], [4, 'Rahul', 69], [5, 'Asha', 98].
What does this program print? Write the lines separated by commas.

```
import pickle
f = open('marks.dat', 'rb')
count = 0
try:
    while True:
        rec = pickle.load(f)
        if rec[2] > 80:
            print(rec[1])
            count = count + 1
except EOFError:
    f.close()
print(count)
```

15. The file users.csv holds these lines:

```
id,name,score
U10,Vikram,53
U11,Ananya,84
U12,Priya,91
U13,Rahul,38
```

What does this print? Write the lines separated by commas.

```
import csv
f = open('users.csv', newline='')
r = csv.reader(f)
next(r)
for row in r:
    if int(row[2]) >= 91:
        print(row[1])
f.close()
```

16. What lines does class.csv hold after this runs? (a) How many lines? (b) Write the last line.

```
import csv
f = open('class.csv', 'w', newline='')
w = csv.writer(f)
w.writerow(['name', 'class', 'marks'])
w.writerows([['Arjun', 12, 49], ['Rohan', 12, 98], ['Kabir', 11, 45]])
f.close()
```

Section C — Word problems — 4 × 4 = 16 marks

17. Write a program that reads a text file and prints the number of vowels, consonants, upper-case and lower-case letters in it.

18. The file notes.txt holds these lines (each ends with a newline):
Kites fly high in the sky
Trees stand tall near the school
A cat sleeps on the wall
We planted ten trees
Children play in the park
A program opens notes.txt and reads it with read(). Find (a) the number of characters read, (b) the number of words, (c) the number of vowels, (d) the number of upper-case letters.

19. The binary file marks.dat holds these records, each written with one pickle.dump(): [1, 'Ananya', 40], [2, 'Priya', 60], [3, 'Arjun', 82], [4, 'Meera', 77].
(a) What does this program print? (b) Why is the file opened twice, in two different modes?

```
import pickle
f = open('marks.dat', 'rb')
recs = []
try:
    while True:
        recs.append(pickle.load(f))
except EOFError:
    f.close()
for r in recs:
    if r[0] == 4:
        r[2] = r[2] + 4
f = open('marks.dat', 'wb')
for r in recs:
    pickle.dump(r, f)
f.close()
print(len(recs), recs[3])
```

20. The file users.csv holds these lines:

```
id,name,score
U10,Vikram,67
U11,Dev,40
U12,Meera,83
U13,Ananya,50
```

(a) What does this program print? (b) What would happen without next(r)?

```
import csv
f = open('users.csv', newline='')
r = csv.reader(f)
next(r)
top = ['', '', '0']
n = 0
for row in r:
    n = n + 1
    if int(row[2]) > int(top[2]):
        top = row
f.close()
print(n)
print(top[1], top[2])
```

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Answer key

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Q	Answer	Working
1	**(d) 'w'**	—
2	**(a) 1**	count the lines starting with T
3	**(d) 17**	split() breaks at spaces and newlines
4	**(a) 15**	'w' empties the file first, then writes 5 + 2 × 5 characters (each \n is one)
5	**(d) append and read; creates the file if needed**	'a+': append and read; creates the file if needed
6	**(c) 2**	records with marks above the limit: Priya, Dev
7	**(d) Rohan**	int() turns the score text into a number for the comparison
8	**(c) 5**	tell() gives the position after the characters already read
9	**A text file holds characters that people can read, in lines ending with newline characters; a binary file holds raw bytes (such as pickled objects or images) that only programs read.**	—
10	**1**	count the lines starting with S
11	**(a) Bees; (b) 4; (c) ee**	read(n) reads n characters; seek(k) moves to position k (counting from 0)
12	**Boats#carry#fish#to#the#market Mangoes#ripen#in#summer Tea#is#ready#now**	split() drops the spaces and the newline; join() puts # between the words
13	**33**	'a' keeps the old 9 characters and adds 6 + 3 × 6 characters (each \n is one)
14	**Ananya, Asha, 2**	load() reads one record each time; EOFError ends the loop
15	**Priya**	next(r) skips the header; int() turns the score text into a number
16	**(a) 4; (b) Kabir,11,45**	writerows() writes one line per inner list, fields separated by commas: name,class,marks / Arjun,12,49 / Rohan,12,98 / Kabir,11,45
17	**Open with open('a.txt') as f: data = f.read(); for ch in data: if ch.isalpha(): count upper or lower with isupper(); if ch.lower() in 'aeiou' add to vowels, else to consonants. Print the four counts.**	—
18	**(a) 131; (b) 27; (c) 33; (d) 5**	26 + 33 + 25 + 21 + 26 characters, each line counted with its newline
19	**(a) 4 [4, 'Meera', 81]; (b) 'rb' reads every record into a list; after the update, 'wb' empties the file and writes all the records back.**	roll 4: 77 + 4

Q	Answer	Working
20	**(a) 4, Meera 83; (b) the header row would be read as data, and int('score') would raise a ValueError.**	highest score 83