Tuples and Dictionaries

Standard difficulty · 20 questions · 40 marks · Time: 38 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. A tuple is:

(a) a set of key–value pairs

(b) an unordered collection

(c) a sequence that can be changed in place

(d) an ordered sequence that cannot be changed after it is made

2. What does this program print?

```
t = (57, 15, 39, 40, 36, 27)
print(t[4:6])
```

(a) [36, 27] **(b)** 36 **(c)** (27, 36) **(d)** (36, 27)

3. What does this program print?

```
t = (52,)
print(t * 2)
```

(a) [52, 52] **(b)** (52, 52) **(c)** 104 **(d)** (52,)

4. What happens when this program runs?

```
t = (47, 22, 6)
a, b = t
print(a, b)
```

(a) it prints 47 (22, 6)

(b) it prints (47, 22, 6)

(c) it stops with a ValueError: there are 3 values but only 2 names

(d) it prints 47 22

5. What happens when this program runs?

```
d = {'apple': 59, 'plum': 16, 'peach': 56, 'grape': 79}
print(d['mango'])
```

(a) it stops with a KeyError, because 'mango' is not a key

(b) it prints None

(c) it prints 'mango'

(d) it prints 0

6. What does this program print?

```
d = {'peach': 78, 'melon': 33, 'apple': 21}
d.update({'apple': 93, 'plum': 94})
print(d)
```

(a) None

(b) {'peach': 78, 'melon': 33, 'apple': 21, 'plum': 94}

(c) {'apple': 93, 'plum': 94}

(d) {'peach': 78, 'melon': 33, 'apple': 93, 'plum': 94}

7. What does this program print?

```
d = {'lemon': 20, 'kiwi': 85, 'melon': 94, 'mango': 63}
del d['melon']
print(len(d), 'melon' in d)
```

(a) 3 False **(b)** 4 True **(c)** None False **(d)** 3 True

8. What does this program print?

```
s = 'letter'
d = {}
for ch in s:
    d[ch] = d.get(ch, 0) + 1
print(d['t'], len(d))
```

(a) 2 4 **(b)** 4 2 **(c)** 2 6 **(d)** 1 4

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

9. Give two differences between a list and a tuple.

10. What does this program print? Give (a) the first line (b) the second.

```
t1 = (26, 17)
t2 = (42, 37)
print(t1 + t2)
print(len(t1 * 2 + t2))
```

11. What does this program print?

```
d = {'pear': 70, 'lemon': 68, 'peach': 60}
d['plum'] = 89
d['pear'] = d['pear'] + 10
del d['peach']
print(d)
```

12. What does this program print? Give (a) the first line (b) the second.

```
d = {'plum': 93, 'lemon': 70, 'mango': 38, 'grape': 62}
print(d.get('lemon', 7))
print(d.get('guava', 7))
```

13. What does this program print? Give (a) the first line (b) the second (c) the third.

```
s = 'banana'
d = {}
for ch in s:
    if ch in d:
        d[ch] = d[ch] + 1
    else:
        d[ch] = 1
print(d['n'])
print(len(d))
print(max(d.values()))
```

14. What does this program print? Give (a) the first line (b) the second.

```
salary = {'Priya': 41000, 'Vikram': 24000, 'Arjun': 43000, 'Rohan': 15000, 'Kabir': 20000}
total = 0
count = 0
for name in salary:
    total = total + salary[name]
    if salary[name] > 25000:
        count = count + 1
print(total)
print(count)
```

15. What does this program print? Give (a) the first line (b) the second (c) the third.

```
t = ((15, 19), (47, 59, 56), (62,))
print(t[1][2])
print(len(t[2]))
print(t[0] + t[2])
```

16. What does this program print?

```
marks = {'history': 47, 'english': 79, 'music': 42}
print(marks.items())
```

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

17. Write a program to make a dictionary of employees and their salaries, and print the names of those earning more than a given amount.

18. What does this program print? Give the four lines (a) to (d).

```
marks = {'hindi': 49, 'music': 40, 'history': 60}
print(len(marks))
marks['art'] = 84
print(sum(marks.values()))
print(marks.pop('hindi'))
print(sorted(marks))
```

19. This program stores the roll number, name and marks of 5 students. Write the names it prints, in order.

```
d = {1: ['Rahul', 87], 2: ['Meera', 58], 3: ['Ananya', 88], 4: ['Kabir', 94], 5: ['Vikram', 82]}
for roll in d:
    if d[roll][1] > 75:
        print(d[roll][0])
```

20. What does this program print? Give the three lines (a) to (c).

```
t = (20, 63, 95, 30, 27, 85, 95)
print(min(t), max(t))
print(sum(t) / len(t))
print(t.count(95), t.index(95))
```

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Answer key

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Q	Answer	Working
1	**(d) an ordered sequence that cannot be changed after it is made**	—
2	**(d) (36, 27)**	a slice of a tuple is a tuple; a one-item tuple prints with a comma
3	**(b) (52, 52)**	* repeats the tuple
4	**(c) it stops with a ValueError: there are 3 values but only 2 names**	the number of names must equal the number of values
5	**(a) it stops with a KeyError, because 'mango' is not a key**	use get() to avoid the error
6	**(d) {'peach': 78, 'melon': 33, 'apple': 93, 'plum': 94}**	update() changes an existing key in place and adds a new one at the end
7	**(a) 3 False**	del removes the key and its value
8	**(a) 2 4**	each letter is a key; 't' appears 2 times and there are 4 different letters
9	**A list is mutable and written in [ ]; a tuple is immutable and written in ( ); tuples can be dictionary keys and are a little faster.**	—
10	**(a) (26, 17, 42, 37); (b) 6**	+ joins tuples into a new tuple; * repeats
11	**{'pear': 80, 'lemon': 68, 'plum': 89}**	a new key goes at the end; changing a value keeps its place
12	**(a) 70; (b) 7**	'lemon' is a key; 'guava' is not, so the default 7 is given
13	**(a) 2; (b) 3; (c) 3**	counts: b 1, a 3, n 2
14	**(a) 143000; (b) 2**	41000 + 24000 + 43000 + 15000 + 20000; salaries above 25000
15	**(a) 56; (b) 1; (c) (15, 19, 62)**	t[2] is a one-item tuple; + joins tuples
16	**dict_items([('history', 47), ('english', 79), ('music', 42)])**	items() gives (key, value) tuples in a dict_items view
17	**sal = {'Asha': 30000, …}; for name in sal: if sal[name] > limit: print(name).**	—
18	**(a) 3; (b) 233; (c) 49; (d) ['art', 'history', 'music']**	each line uses the dictionary as the lines before left it
19	**Rahul, Ananya, Kabir, Vikram**	marks above 75: Rahul 87, Ananya 88, Kabir 94, Vikram 82
20	**(a) 20 95; (b) 59.285714285714285; (c) 2 2**	95 appears twice; index() gives the first position