

THEORY QUESTIONS ASSIGNMENT

Python based theory

To be completed at student's own pace and submitted before given deadline

NO	TASK	POINTS
PYTHON		
1	Theory questions	30
2	String methods	29
3	List methods	11
4	Dictionary methods	11
5	Tuple methods	2
6	Set methods	12
7	File methods	5
TOTAL		100

1. Python theory questions	30 points
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1. What is Python and what are its main features?
2. Discuss the difference between Python 2 and Python 3
3. What is PEP 8?
4. In computing / computer science what is a program?
5. In computing / computer science what is a process?
6. In computing / computer science what is cache?
7. In computing / computer science what is a thread and what do we mean by multithreading?
8. In computing / computer science what is concurrency and parallelism and what are the differences?
9. What is GIL in Python and how does it work?
10. What do these software development principles mean: DRY, KISS, BDFUP
11. What is a Garbage Collector in Python and how does it work?
12. How is memory managed in Python?
13. What is a Python module?
14. What is docstring in Python?
15. What is pickling and unpickling in Python? Example usage.
16. What are the tools that help to find bugs or perform static analysis?
17. How are arguments passed in Python by value or by reference? Give an example.

18. What are Dictionary and List comprehensions in Python? Provide examples.
19. What is namespace in Python?
20. What is pass in Python?
21. What is unit test in Python?
22. In Python what is slicing?
23. What is a negative index in Python?
24. How can the ternary operators be used in python? Give an example.
25. What does this mean: *args, **kwargs? And why would we use it?
26. How are range and xrange different from one another?
27. What is Flask and what can we use it for?
28. What are clustered and non-clustered index in a relational database?
29. What is a 'deadlock' a relational database?
30. What is a 'livelock' a relational database?

2. Python string methods: describe each method and provide an example	29 points
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METHOD	DESCRIPTION	EXAMPLE
capitalize()		
casefold()		
center()		
count()		
endswith()		
find()		
format()		
index()		
isalnum()		

isalpha()		
isdigit()		
islower()		
isnumeric()		
isspace()		
istitle()		
isupper()		
join()		
lower()		
lstrip()		
replace()		
rsplit()		
rstrip()		
split()		
splitlines()		
startswith()		
strip()		
swapcase()		

title()		
upper()		

3. Python list methods: describe each method and provide an example	11 points
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Method	Description	Example
append()		
clear()		
copy()		
count()		
extend()		
index()		
insert()		
pop()		
remove()		
reverse()		
sort()		

4. Python tuple methods: describe each method and provide an example	2 points
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Method	Description	Example
count()		
index()		

5. Python dictionary methods: describe each method and provide an example	11 points
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Method	Description	Example
clear()		
copy()		
fromkeys()		
get()		
items()		
keys()		
pop()		
popitem()		

<code>setdefault()</code>		
<code>update()</code>		
<code>values()</code>		

6. Python set methods: describe each method and provide an example	12 points
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Method	Description	Example
<code>add()</code>		
<code>clear()</code>		
<code>copy()</code>		
<code>difference()</code>		
<code>intersection()</code>		
<code>issubset()</code>		
<code>issuperset()</code>		
<code>pop()</code>		
<code>remove()</code>		
<code>symmetric_difference()</code>		
<code>union()</code>		

update()		
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7. Python file methods: describe each method and provide an example	5 points
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Method	Description	Example
read()		
readline()		
readlines()		
write()		
writelines()		