Theory question

1. Python theory questions
1. What is the program?
It is a sequence a steps to get a goal.
2. What is the process?
The process is the execution of a program in the computer.
3. What is Cache?
It is information and data that stores for a next use of a program or website.
4. What is Thread and Multithreading?

5. What is GIL in Python and how does it work?

The Global Interpreter Lock (GIL) is a single lock on the interpreter itself which adds a rule to the execution of any Python bytecode allowing only one thread to hold the control of the Python interpreter.

6. What is Concurrency and Parallelism and what are the differences?
   Concurrency is related to the executing and running the task, and parallelism are multiple tasks.

7. What do these stand for in programming: DRY, KISS, BDUF
   KISS : The "Keep It Simple, Stupid" the software or applications design must be done simple, without complexities, easy to understand.
   DRY : The "Don't Repeat Yourself" every software engineer should avoid the repetition of information or methods. Avoid redundancy.
   BDUF: Big Design Up Front, the program's design is to be completed and perfected before the implementation.

8. What is Garbage collector? How does it work?
   The garbage collector tracks all the objects in memory
9. What are 'deadlock' and 'livelock' in a relational database?
   The both are complicated situation in database when two or more transactions are constantly waiting for one another to release and give up.

10. What is Flask and what can we use it for?
    Flask is a web framework , is used to create web applications.

2. Discuss the difference between Python 2 and Python 3

There are many differences in python like function print where python 2 doesn't use brackets or () but in python 3 is necessary. In python 2 exists the xrange method and in python 3 doesn't. Python 2 has the method iteritems() for dictionaries but Python 3 don't. In python 2 an input is the type that we are inserting but in python 3 all input is a string.

5. Agile methodology, Scrum: name at least 3 types of meetings that are exercised by Agile teams and describe the objective of each meeting.
-Sprint
-Scrum
-Kanban

6. Exception handling in Python, explain what each of the following blocks means in the program flow:
Try, except, else, finally

Try; execute a function or function code when a requirement or condition is happening.
Except; If the requirement or condition in Try has errors, except returns a value in this cases.
Else; It executes if an additional block if something happening in the function.
Finally executes after all the other blocks or code executed and return a value.

7. How can we connect a Python program (process) with a database? Explain how it works and how do we fetch / insert data into DB tables from a python program.

8. Given two SQL tables below: authors and books.
● **The authors dataset has 1M+ rows**
● **The books dataset also has 1M+ rows**
Create an SQL query that shows the TOP 3 authors who sold the most books in total !

USE authors;

SELECT a.authors_name AS 'Author', SUM(b.sold_copies) AS 'Sold Books'

FROM AUTHORS a INNER JOIN BOOKS b

ON a.book_name=b. book_name

GROUP BY authors_name

HAVING SUM(sold_copies)

ORDER BY DESC

LIMIT 3;

AUTHORS

author_name	book_name
author_1	book_1
author_1	book_2
author_2	book_3
author_2	book_4
author_2	book_5
author_3	book_6

BOOKS

book_name	sold_copies
book_1	1000
book_2	1500
book_3	34000
book_4	29000
book_5	40000
book_6	4400