Theory questions:

1. A thread is python are tasks/instructions executed by the computer, and therefore multithreading is where lots of threads (2 or more) are run independently at the same time.

2. Concurrency is when the running of the tasks overlaps at some points in their execution (sometime between each of their start and stops), whereas parallelism is where both programmes simultaneously.

3. Garbage collector frees up memory in Python. The way it works is that when an object is referenced, it has a reference count. Therefore, when the reference count reaches 0, the garbage collector will delete the object as it is no longer needed.

4. Transactional management is

5. An endpoint is an important part of an API and is where the API and the server communicates, for example it could be a URL. HTTP requests include GET, POST, PUSH and DELETE and there are the most common methods to interact with the API data source.

6. Data normalisation is where the database in SQL is structured in such a way that it reduces the amount of redundant data, improves readability and retain database integrity. This can include creating a new database or improving an existing one.

2. Exception handling is an important part of programming, and it is where we able to account for exceptions that may arise e.g if you tried to divide a number by 0, it will raise the ZeroDivisionError. The way they are typically handled in Python is by using try, except, else and finally blocks of code. So first, it will use the try and except, which means that test the error and handle it appropriately. Then ‘else’ will be run if there no exception and ‘finally’ will be run regardless of whether there is an exception or not. Debugging is also an important part of coding and it something that can be handled by the editor such as Visual Studio Code.

3. On Python document

4. # Question 4

*class* SquareNumber(*unittest*.*TestCase*):

*def* sqr\_Test(*self*.assertEqual(

if *\_\_name\_\_* == '\_\_main\_\_':

unittest.main

5. 2 roles in a scrum agile team:

The first role I will be explaining is the role of the product owner:

The product owner is one person (rather than a team of people) that is responsible for managing the product backlog (which are all the list of items that need to get completed), and aim to maximise the value of the product from the whole scrum team and ultimately the final outcome. They are also responsible for communicating with the stakeholders

The second role I will be explaining is the role of the development team. These are the people who are responsible for creating the product (or deliverable). They are also responsible for sprint backlog, which is a list of items that have been selected from the product backlog, that will be worked in the current sprint. They also have to work towards the definition of done, which is a criterion used to see if the product/service is of an appropriate standard to be released to the consumer.

6. Advantages and disadvantages of test-driven development:

Some of the advantages of TDD is that is allows for more effective and easier collaboration, and it will allow for another programmer to edit the code because the tests will ensure that they are able to easily see how their changes are impacting the output of the code. In turn, this benefits the person writing the code because it ensures that their work is easy for them and others to understand, this is because you are likely to make your code modular (which means that the code is segmented into easier, smaller to manage chunks that are functionally different from each other). However, the disadvantages of TDD is that the extra time taken to write the tests, therefore, this could slow down the team when writing the code. Also, adding tests could make the run time of the program slower, which could be an issue in and of itself. Additionally, there has to be a consensus among the whole team that they are going to implement TDD otherwise, it would be a futile effort.

**7.** Python DB Cursor executes queries in Python and fetch the records from databases such as SQL.

8.

SELECT customer\_id, MAX(purch\_amt) as max\_purchase

FROM ORDERS

WHERE customer\_id BETWEEN 3002 and 3007

GROUP BY customer\_id;

Table

Description automatically generated

9. On Python file