**ASSESSMENT**

Python and MySQL

**Task 1.**

1.What is the program?

A program is a set of instructions that a computer can perform. It contains one-at-the-time sequences which the computer can read and follow. They together are algorithms which are easy to follow.

2.What is the process?

A process is a program that runs on the computer at that specific moment. A computer can run small tasks as well as run huge applications. There are many background tasks which are constantly running and we may not see them. That is why they are working all the time even if the applications are closed.

3.What is Cache?

Cashe is a type of memory that stores recently used information and saves them for later. There is very easy access to use it. There are many different types of cashe, for example browser cashe or processor cashe.

**4**.What is Thread and Multithreading?

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

GIL ( Global Interpret Lock ) limits the number of threads and prevents multithreading. Python executes a collection of statements using one thread and because of GIL, the performance of a single-threaded process will be the same as a multi-threaded process.

**6**.What is Concurrency and Parallelism and what are the differences?

7.What do these stand for in programming: DRY, KISS, BDUF

DRY – DON’T REPEAT YOURSELF

KISS – KEEP IT SIMPLE, STUPID

BDUF – BIG DESIGN UP FRONT

8.What is Garbage collector? How does it work?

Garbage Collector keeps track of everything in the memory and moves objects to the older generation once the one generation is full. There are 3 generations in total.

It makes sure that RAM is not full.

**9.**What are ‘deadlock’ and ‘livelock’ in a relational database?

10.What is Flask and what can we use it for?

Flask is a web framework and a module in Python that allows us to develop web applications.

**Task 2.**

Python 2 is an older version of Python. Python 3 was created around 2008 to fix the problem of the previous version. Python 3 has more rich libraries that we can use and is easily interpreted with other programming languages.

Python 3 works faster than Python 2.

Print() has been used as a statement in Python 2 and now it is a function.

Syntax in Python 3 are easier to understand.

**Task 3.**

example = "bob"  
  
def Palindrome (x):  
 return x[::-1]  
  
text = Palindrome(example)  
if example == text:  
 print("True")  
else: print("False")

**Task 4**

class Test(unittest.TestCase):  
 def test\_correct\_palindrome(self):  
 self.assertEqual("code", "edoc")  
 self.assertEqual("madam", "madam")  
 self.assertEqual(""), ("")

It checks if the chosen word is a palindrome. It returns OK for “madam” as it is the same as “madam”. And with “code” it returns Failed as edoc != code.

The last example is if the program can say False when the string is empty.

**Task 5.**

1. Sprint planning meeting

This is the meeting at the beginning where the Scrum team decides what they want to accomplish and plan the sprint, settle deadlines and assign tasks. It is a time to make sure everyone knows why they are working on this and makes everything clear.

1. Daily meeting

They are short but make sure everyone is on the track and allows them to communicate openly with everyone. It summarises what did I do yesterday and what am I going to work on today.

1. Sprint review meeting.

It is the meeting at the end of the sprint that everyone can show what they have accomplished, and it is a great time for feedback.

**Task 6.**

Try – This block contains the code that can raise the exceptions.

Except – This block is used to find the exceptions and it handles them

Else – This block will be executed if there are no exceptions raised in the program.

Finally – This block of code is always executed. It does not matter if the program raised the exception or not.

**Task 7.**

We need to import MySQL connector and connect to the database ( using connect() ) which means we need to write down the host, user and the password we use in MySQL. We use cursor()and execute() to choose a database. Fetchall() connects us to the database.

If we want to insert more data into a MySQL we can do that using cursor() and execute() where we insert info in a similar way as in MySQL.

**Task 8.**

SELECT a.author\_name, SUM(b.sold\_copies) AS sold

FROM authors a

JOIN books b

ON b.book\_name = a.book\_name

GROUP BY a.author\_name

ORDER BY sold DESC

LIMIT 3

Result:

'author\_2','103000'

'author\_4','5100'

'author\_3','4400'

**Task 9**

I have attached a pycharm file.

numbers = [3, 5, -4 ,8, 11, 1, -1, 6]  
target\_sum = 10  
sum\_to\_target = []  
  
  
def two\_number\_sum(numbers, target):  
 for number in numbers:  
 num\_to\_target = target\_sum - number  
 if num\_to\_target in numbers and num\_to\_target != number:  
 return [number, num\_to\_target]  
 sum\_to\_target.append(number)  
 return []  
  
  
print(two\_number\_sum(numbers, target\_sum))