THEORY QUESTIONS ASSIGNMENT

Software Stream

Maximum score: 100

KEY NOTES

- This assignment to be completed at student's own pace and submitted before given deadline.
- There are 10 questions in total and each question is marked on a scale 1 to 10. The maximum possible grade for this assignment is 100 points.
- Students are welcome to use any online or written resources to answer these questions.
- The answers need to be explained clearly and illustrated with relevant examples where necessary. Your examples can include code snippets, diagrams or any other evidence-based representation of your answer.

Theory questions	**10 point each**

1. How does Object Oriented Programming differ from Process Oriented Programming?

   In procedural programming, the program is divided into small parts called functions, while in object-oriented programming, the program is divided into small parts called objects. Top-down approaches are used in procedural programming. Bottom-up approaches are used in object-oriented programming.

2. What's polymorphism in OOP?

   The concept of polymorphism is a central component of object-oriented programming and describes a situation where something occurs in multiple forms.

3. What's inheritance in OOP?

   Inheritance is a feature in loop that takes an existing class and derives a new class from it. This process involves no modification of the original class.

4. If you had to make a program that could vote for the top three funniest people in the office, how would you do that? How would you make it possible to vote on those people?

   Firstly, I would create a list of all the people in the office and then I would allow the user to input their pick. I would create a bunch of if statements to check if the name is in the list.I would create a counter for each name that starts at zero and I would add one into each counter every time someone votes for that person. Once I get the final scores I would print a statement to show who the three funniest people are in the office.

5. What's the software development cycle?

   Software development lifecycles facilitate the production of high quality, low cost software, within the shortest production timeframe possible.

6. What's the difference between agile and waterfall?

   In waterfall testing, testing takes place after development is complete. In agile testing, testing is performed along with the development. In waterfall testing, testing is performed after development is complete.

7. What is a reduced function used for?

   Reduce(fun,seq) applies a function to all list elements in the sequence to which its passed.This function is defined in the functools module.

8. How does merge sort work

   During a merge sort, items are first divided into two halves called sublists, which are then repeatedly sliced into smaller sublists until sublists of single items are formed.

9. Generators - Generator functions allow you to declare a function that behaves like an iterator, i.e. it can be used in a for loop. What is the use case? Generators are special functions that don't return a single value, instead, they return an iterator object with a sequence of values. Iterators are objects that contain a countable number of values, and they can be iterated on, so you can traverse all the values.Python iterators implement the iterator protocol, which includes the methods __iter__() and __next__()

10. Decorators - A page for useful (or potentially abusive?) decorator ideas. What is the return type of the decorator? Decorators can be used in multiple ways, here some examples of good decorators in python. The @do_twice decorator is a great decorator because it can be used to run a function twice with a single call .