Tops Python Assignment

Name : Kunjan Patel

Module - 1 (Software Development Life Cycle)

- **What is Software?**

★ Software is a set of instructions, data or programs used to operate computers and execute specific tasks.Software is a generic term used to refer to applications, scripts and programs that run on a device.

- **What are the types of Applications?**

★ There are three types of applications like Web,Native and Hybrid.

- **What is programming?**

★ Programming is the **process of creating a set of instructions** that tell a computer how to perform a task. Programming can be done using a variety of computer programming languages, such as JavaScript, Python, and C.

- **What is Python?**

★ Python is an interpreted, object-oriented, high-level programming language with dynamic semantics developed by Guido van Rossum. .

★ Python is a computer programming language often used to build websites and software, automate tasks, and conduct data analysis.

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Module - 2 (Fundamentals of Python)

- **How memory is managed in Python?**

★ Memory management in Python involves a private heap containing all Python objects and data structures.

★ This private heap is taken care of by Python Interpreter itself, and a programmer doesn't have access to this private heap.

- **What is the purpose of the continue statement in python?**

★ The continue keyword is used to end the current iteration in a for loop (or a while loop), and continues to the next iteration.

- **What are negative indexes and why are they used?**

★ Negative Indexing is used in Python to begin slicing from the end of the string i.e. the last.The slicing range is set as parameters i.e. start, stop and step.

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Module-3 - (Collections, functions and Modules)

- **What is a List? How will you reverse a list?**

★ Lists are used to store multiple items in a single variable.List is a collection which is ordered and changeable and Allow Duplicate members.

★ Built in Function reverse() is used to reverse the list. The syntax of the reverse() method is: list.reverse()

- **How will you remove the last object from a list? Suppose list1 is [2, 33, 222, 14, and 25], what is list1 [-1]?**

★ The pop() method can be used to remove the last object from the list or the given index value.

★ List1[-1] = 25 # List index is negative and it is count from last

- **Differentiate between append () and extend () methods?**

★ append() method adds a single element to the end of the list.
extend() method can add multiple individual elements to the end of the list.

- **How will you compare the two lists?**

★ The list.sort() method sorts the two lists and the == operator compares the two lists item by item which means they have equal data items at equal positions.

- **What is tuple? Difference between list and tuple.**

★ A Tuple is a Collection of data that is ordered and Unchangeable.

★ List Data are written in Square Brackets and Tuple Data are written in Round Brackets.

★ List is Changeable Whereas Tuple is Unchangeable.

- **How will you create a dictionary using tuples in python?**

★ In Python, use the dict() function to convert a tuple to a dictionary. A key-value pair is contained in each tuple as an object.

★ The dictionary is returned by the dict() method, which takes a tuple of tuples as an argument.

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- **How Do You Traverse Through A Dictionary Object In Python?**

★ Dictionary Objects Iterate using following methods.

- ➔ dict.keys()
- ➔ dict.values()
- ➔ dict.items()
- ➔ dict.get(9) = Value of key 9
- ➔ dict.sort()

- **How Do You Check The Presence Of A Key In A Dictionary?**

★ The get() method is a dictionary method that returns the value of the associated key. If the key is not present it returns either a default value (if passed) or it returns None. Using this method we can pass a key and check if a key exists in the python dictionary.

- **Why Do You Use the Zip () Method in Python?**

★ The zip() function returns an iterator of tuples based on the iterable objects. If a single iterable is passed, zip() returns an iterator of tuples with each tuple having only one element. If multiple iterables are passed, zip() returns an iterator of tuples with each tuple having elements from all the iterables.

- **How Many Basic Types Of Functions Are Available In Python?**

★ There are two types of functions in python:

★ 1) User-Defined Functions - These types of functions are defined by the user to perform any specific task.
2) Built-in Functions - These types of functions are predefined in python.

- **How can you pick a random item from a list or tuple? .**

★ random.choice() method(This function returns a random element from the specified sequence i.e tuple,list) by passing the input tuple or list as an argument to the choice() function.

- **How can you pick a random item from a range?**

★ Use the random.randrange() function(Returns a random number within the specified range) to generate a random number within the given range by passing minimum, and maximum numbers as arguments.

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- **How can you get a random number in python?**

★ To generate random numbers in Python, the randint() function is used. This function is defined in a random module.

- **How will you set the starting value in generating random numbers?**

★ The random number generator needs a number to start with (a seed value), to be able to generate a random number. By default the random number generator uses the current system time. Use the seed() method to customize the start number of the random number generator.

- **How will you randomise the items of a list in place?**

★ The shuffle() method randomizes the items of a list in place.

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Module – 4 (Advance python programming)

- **What is a File function in python? What are the keywords to create and write files?**

★ Python file object provides methods and attributes to access and manipulate files. Using file objects, we can read or write any files. Whenever we open a file to perform any operations on it, Python returns a file object.

★ To create a new file in Python, use the open() method.

★ **"x": For Create and "w": For Write and "r": For Read File**

- **Explain Exception handling? What is an Error in Python?**

★ An exception is an event, which occurs during the execution of a program that disrupts the normal flow of the program's instructions. To Handle the Exception We can use three keywords: **try,except and finally.**

★ Errors are the problems or the faults that occur in the program, which makes the behaviour of the program abnormal,Stop Execution of Program.

★ There are mainly two types of errors in python programming.
1)Syntax errors
2)Logical Errors

- **How many except statements can a try-except block have? Name Some built-in exception classes:**

★ There has to be at least one except statement required.

★ Some Built in Exception Classes:
  - ★ ArithmeticError
  - ★ IndexError
  - ★ ValueError
  - ★ AttributeError
  - ★ NameError
  - ★ KeyError
  - ★ Type Error
  - ★ ZeroDivisionError

- **When will the else part of try-except-else be executed?**

★ The else part is executed when no exception occurs.

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- **Can one block of except statements handle multiple exceptions?**

★ Yes, try-except blocks can be used to catch and respond to one or multiple exceptions.. In cases where a process raises more than one possible exception, they can all be handled using a single except clause.

- **When is the finally block executed?**

★ The finally block always executes when the try block exits. This ensures that the finally block is executed even if an unexpected exception occurs.

- **What happens when „1"== 1 is executed?**

★ It simply evaluates to False and does not raise any exception.

- **How Do You Handle Exceptions With Try/Except/Finally In Python? Explain with coding snippets.**

★ The try block lets you test a block of code for errors. The except block lets you handle the error. The else block lets you execute code when there is no error. The finally block lets you execute code, regardless of the result of the try- and except blocks.

```
try:
    # code that may cause exception
except:
    # code to run when exception occurs
```

Example:

```
try:
    a= 10
    b= 0
    c= a/b
    print(c)
Except ZeroDivisionError as e:
    print(e)
```

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- **What are oops concepts? Is multiple inheritance supported in java.**
- **OOPS Concept:**
  - ★ Class & Object
  - ★ Inheritance
  - ★ Polymorphism
  - ★ Abstraction
  - ★ Encapsulation

  No Multiple Inheritance is not supported in java.

- **How to Define a Class in Python? What Is Self? Give An Example Of A Python Class**

★ A Class is like an object constructor, or a "blueprint" for creating objects. To create a class, use the keyword class.

★ The self is used to represent the instance of the class.

Example:

```
class Student:
        def __init__(self,name):
                self.name =name
s1 = Student(“Kunjan”)
```

- **Explain Inheritance in Python with an example? What is init? Or What Is A Constructor In Python?**

★ Inheritance relationship defines the classes that inherit from other classes as derived, subclass, or sub-type classes.For example, you have a Base class of “Animal,” and a “Lion” is a Derived class.

★ Example:

```
class Animal:              # Base Class
        def fun1():
                print(“Parent Class Method Called”)
class Lion(Animal):     # Derived Class
        def fun2():
                print(“Child Class Method Called”)
l = Lion()  # Object is Created
l.fun2()
l.fun1()
```

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★ The __init__ function is called every time an object is created from a class.
★ A constructor is a unique function that gets called automatically when an object is created of a class. The main purpose of a constructor is to initialize or assign values to the data members of that class. It cannot return any value other than none.

- **What is Instantiation in terms of OOP terminology?**

★ In the OOP language, instantiation describes the processes of creating a new object for a class using a new keyword.

- **What is used to check whether an object is an instance of class A?**

★ Using isinstance() function, we can test whether an object/variable is an instance of the specified type or class such as int or list. In the case of inheritance, we can check if the specified class is the parent class of an object.
★ Class A:

```
        name=”Kunjan”
a = obj()
x=isinstance(o,obj)
```

- **What relationship is appropriate for Course and Faculty?**

★ Association Relationship

- **What relationship is appropriate for Student and Person?**

★ Inheritance Relationship