Task-7

Date- 14/10/2025

① What are the different data types in python?

→ ① Numeric Type →

- int : Represent Whole numbers (e.g. 5, -100)
- Float: represent numbers with decimal point.
- complex: Represents complex numbers with a real & an imaginary part. (1+2j).

② sequence Type →

- str : Represents sequences of characters (text) enclosed in single, double, or triple quotes. (e.g. 'Python', "hello")
- list: represents ordered, changeable, collection of items, enclosed in square brackets (e.g. [1, "apple", 3.14].
- Tuple: Represents ordered, unchangeable collections of items, enclosed in parenthesis [e.g. (1, "banana", 2.71)].
- range: represents an immutable sequence of numbers, often used in loops [e.g. range(5)]

③ set Types →

- set : represents unordered, changebale collection of unique items, enclosed in curly braces (e.g. {1, 2, 3}).
- frozenset: Represent an immutable version of a set.

④ mapping type →

dict:- Represents unordered collections of key-value pairs, enclosed in curly braces (e.g. {"name": "Alice", "age": 30{).

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⑤ Boolean Type :
bool : Represents truth values, True or False.

⑥ Binary Type →
⑦ none Type →

② What is the difference between list & tuple?
→

List	Tuple.
- Mutable: You can add, remove, change elements after creation.	Immutable: cannot change the content after creation must create a new tuple to reflect changes.
- created using square braces. my_list = [1,2,3]	created using parentheses: mytuple = (1,2,3)
- Slower due to its dynamic nature.	faster for iteration & access because fixed size & optimised memory allocation
- support wide range of methods such as append(), remove(), sort().	- support few methods for accessing elements count(), index.

③ What are different ways to declare a string?
→ ① single quotation:
my_string = 'Hello, world';
② double quotation:
my_string = "Hello, world".
③ Triple quotation: (multiline string)

```
multiline_str = ''' This is
                  multiline
                  quotation'''.
```

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④ Why is tuple immutable in nature?

→ Tuples are immutceble in nature because,

→ like lists, tuples are ordered an we can access their elements using their index values.

→ we cannot update items to a tuple once it created.

→ Tuples cannot be appended or extended.

→ we cannot remove items from a tuple once it is created.

→ Tuples that contain immutable elements can be used as a key for a dictionary.

⑤ What is set?

→ →A set is a well-defined collection of distinct objects, called elements or members which can be numbers, letters or other items

→ represented by { { curly braces.

→ set having distinct elements.

⑥ Write a program to print 2 in a given list without indexing. list=[1,2,3,4,5]

→

```
list1 = [1,2,3,4,5]
For item in list1:
    if item == 2:
        print(item).
        break.
```

⑦ What is dictionary?

→ Python dictionary is a data structure that stores the value in key: value pairs. Values in dictionary can be of any data type and can be duplicated.

where keys can't be repeated and must be immutab

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- keys are case sensitive.
- keys must be immutable
- duplicate keys are not allowed.

⑧ What is the difference between append, extend and insert?

→

① append() → Adds a single element at end of list
list.append(5).

② extend() → Adds each individual items from an iterable (like a list, tuple or string) to the end of the list.
list.extend([[6,7]]).

③ insert() → Inserts an element at a specific index.
list. insert(2,10)
will insert number 10 at position index 2.
This is less efficient than append().

⑨ What is difference between extend & append?
→

append()	extend()
- adds a single element to the end of the list.	adds multiple elements from an iterable to the end of the list.
- Accepts a single element (any datatype)	Accepts an iterable (eg. list, tuple)
- length increases by 1	length increases by the number of elements in the iterable.
- When we want to add one item.	When we want to merge another iterable into the list.
- O(1)	O(k) where k is the no. of elements.

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(10) What is the difference between clear & delete?

→ clear()	del
clear() is a method available for mutable data structures like (list & dict.) that remove all elements from the object, effectively making it empty.	del is a statement used to delete objects, elements, or slices from various data ~~types~~ structures. It is also used to delete variables entirely, making them undefined.

e.g. my_list = [1,2,3]
my_list.clear()
print(my_list)
=> []
	e.g. my_list = [1,2,3]
	del my_list[2]
	print(my_list)
	#=> [1,2]
	del my_list
	#⇒ no output empty output

(11) What is the difference between ~~clear and~~ pop and delete?

→ pop()	delete (del)
- It is method	It is keyword / statement
- Return the removed elements.	does not return any value.
- ~~To delete~~ This method is used the index as a parameter to delete	To delete a value it uses the index.
- At a time delete only one value from the list	The del keyword can delete a single value from a list or delete whole list at a time.

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(12) Explain the function of count() & length() ?

→

① len() function:

The len() function is built in function that returns the total number of items in an object.

my_list = ['a', 'b', 'c', 'd']
length = len(my_list).
print(length)
⇒ 4.

② count() method:

The count() method is used to determine the frequency of a particular value within a specific object.

my_list = ['a', 'b', 'c', 'd', 'e', 'a', 'c']
count_a = ~~my_list{(~~ my_list.count('a')
⇒ 2.