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### Class Assessment

Topic wise

Q.1] Explain the difference bet' list & tuple in python.  
provide an example for each.

→ Lists : i) Lists are generally used for collections of item where the order & ability to change the element are important - for example

$$L = ["Aavej", 1, 2, 3, 0.5, 1+2j]$$

Tuple : ii) Tuple are suitable for fixed collections where the order of elements matters, but you don't want the values to be modified for ex.

$$T = (1, 2, 3, "Apple", "Banana")$$

Q.2] Describe the purpose of the set data type in python.  
Provide an example to illustrate its use.

→ i) Primary purpose of a set is to perform mathematical set operation like union, intersection, difference & symmetric difference efficiently

e.g.  $a = \{1, 2, 3, 4\}$

$b = \{3, 4, 5, 6, 7\}$

ii)  $a.add(8)$

$b.remove(7)$

sets can be used for tasks such as combining, finding common elements, identifying difference & more.

Q.3] What is the key difference bet' a float & an integer data type in python? Give an example where using a float would be more appropriate.

→ Integer (int) : Represents whole number without decimal point eg.: 1, 5, 100.

- float :- Represent number with decimal points or numbers expressed in exponential form eg :- 3.14, 2.5, 2e3

example :-

$$\text{Distance} = 10$$

$$\text{Time} = 2.5$$

$$\text{speed} = \text{Distance} / \text{Time}$$

```
print ("speed:-", speed, "m/s")
```

Q.4] How does dictionary data type in python differ from lists & tuple provide an example of dictionary & explain

→ The dictionary data type in python differs from lists & tuple in that it is unordered of key value pairs where each key must be unique.

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- i) dictionaries are defined must be using curly bracket {}
  - ii) keys & values are separated by colon (":") with each key - value pair.

Q.5] what is doc. string & use of this string in python

→ A docstring in python is a string literal used as comment at beginning of module, function, class or method definition. Its primary purpose is to provide documentation or information about the purpose & usage of the code.

\* use :- 1) Documentation 2) Accessibility

3) Interactive development.

Q.6] Explain purpose of the // operator in python. Provide example to illustrate its use.

→ // :- Its purpose is the floor division operator. It perform division & return the largest integer that is less than or equal to the result. It discard the fractional part of the division result & produces an integer quotient.

e.g. s = 10//3

print(s) = 3

In eg. 's' assigned the value of 3 because the floor division of 10 by 3 is 3 with remainder 1.

Q.7] Differentiate betn the == & is operators in python provide examples demonstrate their usage.

== operator == is operator.

→ It compares the content. If it reset for object of the object then it checks identity, not just equality.

a = [1, 2, 3]

x = [1, 2, 3]

b = [1, 2, 3]

y = [1, 2, 3]

result = a == b

result = x is y

print(result)

print(result)

a = b : return 'True' if a is b else return False

Q8] What is the use of the '+=' operator in python? Provide an example to demonstrate its functionality.

→ The '+=' operator in python is used as an assignment operator & it is a shorthand for updating the value of variable by adding another value to it commonly used for in place addition & assignment.

$a = 5$   
 $a += 2$

print(a)      output = 7

'+=' operator add the value '2' to variable a

Q9] Discuss the role of the 'in' operator in python. Provide an example of how it can be used.

→ i) The 'in' operator in python is used to test whether a specified value is present in sequence such as a string, list, tuple or dictionary.

eg.  $a = "Good Morning Aavej"$

$s = "Aavej" \text{ in } a$

print(s)      Output : True

Q10) Explain the concept of the ternary operator ( $x$  if condition else  $y$ ) in python. provide example scenario where it can be employed.

→ i) The ternary operator in python, also known as the conditional expression, provides a concise way to write a simple 'if-else' statement in a single line.

eg -  $a = 10$   
 $b = 15$

IF  $a > b$ ;

```
print (larger_number = a)
```

else:

```
    print (larger_number = b)
```

**Q.11] What is the purpose of the if statement in python? provide a example demonstrating the use of if**

→ i) The 'if' statement in python is used for conditional execution code. It also to specify a block of code to be executed only if a certain condition is true. If the condition is false, the code block is skipped or an alternative block may be executed if an 'else' clause is present for e.g.

```
Num = int (input ("Enter a number:"))
```

if Num > 0:

```
    print ("The entered num is positive")
```

elif Num < 0:

```
    print ("The entered Num is negative")
```

else:

```
    print ("The entered Num is zero")
```

**Q.12] Describe the difference betw while & for loops in python**

Give a example for each loop type

while loop

Ans) The 'while' loop in python - i) The 'for' loop in python is used to repeatedly execute to iterate over a sequence (as a block of code as long as as list, tuple or string) or specified condition is true other iterable object

ii) It keeps iterating until - ii) It executes a block of the condition become false code for each element in the sequence.

eg.

```

    count = 1
    color = ["red", "blue", "yellow"]
    for color in color
        print(count)
        print(color)
        count += 1
    
```

Q.13]

Explain the significance of the break statement in python. Provide a scenario where using break is appropriate.

→ The 'break' statement in python is used to exit loop prematurely before its normal termination condition is met when encountered. 'break' immediately terminates the loop & program continues with the next statement outside the loop.

Q.14)

eg. input = input ("Enter 'exit' to stop the loop")

```

if input lower () == 'exit':
    print ("Exiting the loop")
    break
    
```

```

print ("Continuing the loop...") 
```

Q.15)

Discuss the role of the continue statement in python. Provide a code snippet demonstrating its use.

→

1) The 'continue' statement in python is used to skip the rest of the code inside loop for the current iteration & processed to the next iteration. It is particularly useful when you want to

eg.

```

for Num in range (1, 11):
    
```

IF Num % 2 == 0:

```

    print ("Skipping even num: (Num)")
    continue
    
```

`print ("processing odd Num: (Num)")`

Q) How does the else clause in loop contribute to central feature in python? provide an example illustrating the use of the else clause in a loop



- i) The 'else' clause in a loop in python is executed when the loop condition become false. It is not executed if the loop is terminated by a 'break' statement
- ii) The else clause in loop provides a way to execute a block of code after the loop has completed its normal iteration.

Q)

eg.

`for num in range (2, 11):`

`for i in range (2, int (Num**0.5)+1):`

`if Num % i == 0:`

`print ("Num is Not a Prime Number")`

`break`

`else :`

`print ("Num is a prime Number")`