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Training Sessions

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Date	Sep-03-2024	Session No	1B

Topic : Python Basics - Loop, Functions, conditionals, lists

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main.py

```
1
2  numbers = [x for x in range(1, 5)]
3  print(numbers)
4
5  # 5! = 5*4*3*2*1
6  def factorial(num):
7      result = 1
8      for i in range(num, 1, -1):
9          result = result * i
10     return result
11
12 x = factorial(5)
13 #print(x)
14
15 y = [factorial(num) for num in numbers]
16 print(y)
17
18
19
20
```

Ln: 40, Col: 17

main.py +

```
'''

Write a Python function is_divisible(number, divisor) that returns True if
number is divisible by divisor, otherwise False. Use this function to print all numbers
between 50 and 150 that are divisible by 7.

'''

def is_divisible(number, divisor):
    if number%divisor == 0:
        return True
    else:
        return False

x = is_divisible(50, 7)
print(x)
a = [2, 3, 4, 5, 6]

for number in a:
    for i in range(50, 100):
```

Ln: 40, Col: 17

```
for number in a:
    for i in range(50, 100):
        if is_divisible(i, number):
            print(i)
    print('========')
```

Questions to try : level 1

Question 1: Create a Python list comprehension that generates a list of even numbers from 2 to 8. Print the resulting list.

Question 2: Write a Python function product_of_range(start, end) that calculates the product of all numbers in a given range from start to end (inclusive). Use this function to calculate the product of numbers from 2 to 5.

Question 3: Write a Python function is_multiple(number, multiple_of) that returns True if number is a multiple of multiple_of, and False otherwise. Use this function to print all numbers between 10 and 50 that are multiples of 6.

Question 4: Using the is_multiple(number, multiple_of) function, write a Python program that prints all numbers between 20 and 40 that are multiples of any number in the list [3, 4, 7].

Question 5: Create a Python function that takes a list of numbers and returns a list of the sums of each number and its corresponding factorial. Test this function with the list [2, 3, 4].

Level 2

Question 1: Write a Python function cumulative_product(numbers) that takes a list of numbers and returns a new list where each element is the cumulative product of the elements in the input list. For example, given [1, 2, 3, 4], the output should be [1, 2, 6, 24].

Question 2: Create a Python function is_prime(n) that checks if a number n is a prime number. Then, generate a list of prime numbers between 50 and 100 using a list comprehension and the is_prime function.

Question 3: Write a Python function divisible_in_range(start, end, divisors) that takes a starting and ending number, as well as a list of divisors. The function should return a dictionary where the keys are the divisors and the values are lists of numbers in the range [start, end] that are divisible by each divisor. Test this function with the range 1 to 50 and divisors [2, 3, 5].

Question 4: Write a Python program that generates a list of factorials for numbers in a given range [a, b], and then returns the number with the maximum factorial value in that range. For example, given the range [3, 7], return the number between 3 and 7 that has the highest factorial value.

Question 5: Create a Python function find_common_multiples(range1, range2) that finds all common multiples of numbers in two different ranges. The function should return a list of common multiples between the two ranges. For example, find the common multiples between [1, 50] and [51, 100] that are divisible by 7.

END