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Task 8: Implement python generator and decorators

a) Fibonacci Number Generator

Aim: Ho create a python program using a generator function that produce Fibonacci number using user defined limit

1. Start

2. Define a generator fibonacci (n)

a mitialize a = 0, b = 1

b Yield values while a < n

3. Input limit n from user

4. Call generator and print each value

5. End

program:
```

program:

def fibonacci(n):

a, b = 0, 1

while a ≤ n:

yield a

a, b = b, a+b

Limit = int (input ("Enter limit":"))

for num in fibonacci (limit):

print (num, end = ")

Result: Thus, python program to generate fiboracci

go sequence evering user defined limit is

implemented Successfully.

Sample output Enter limit: 50 0 1 1 2 3 5 8 13 21 34

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Task 8(b): Measuring Function Execution Time with
        a Decorator
Aim: To Create a python program using a decorator
that measures and display the execution time
of a junction that sorts a list of random numbers.
Algorithm:
1. Start
```

2. Import time and random modules

3. Déjune a decorator timés (func)

· Record Start end time

· print time taken

4. Define a function Sort - numbers ()

· Generate random list

· Sort the list

5. Apply the decorator to Sort\_numbers ()

6- Lall the function

7. End

```
program.
import time, random
dej timer (func):
  des wrappen ():
    Start = time . time ()
    func()
   end = time, time ()
   print (" Time taken: ", end -Start, " Seconds")
  return Grapper
 a timer
```

dy Sort\_numbers(): nums = [random · randint (1, 1000) for - in range (10000)] nums. Sort ()

Sort - numbers ()

Thomass Mamber Generator Sample output: Time taken: 0:0042 Seconds June Light water of the modern to Uprised thirtist E (missially) Estima co d'accorter facouración January P with the first saller 5. E . d : Enouted Historiace (n) a b=c/1 vishele as no dtrebeded, Linui = int (coput ("Encen linut")) for num in themselver winds: ( , - pas (unrow) grand morphy and mather and the

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EX No.
PERFORMANCE (5)
RESULT AND ANALYSIS (3)
VIVA VOCE (3)
RECORD (4)
TOTAL (15)
SIGN WITH DOTE

Result Thus, python I program yor mastering function Execution time with a Decorator is executed Successfully.