**Practical 11**

Write a program to test prime number using Miller Rabin Theorem.

* **CODE :-**

import random

def power(x, y, p):

res = 1;

x = x % p;

while (y > 0):

if (y & 1):

res = (res \* x) % p;

y = y>>1; # y = y/2

x = (x \* x) % p;

return res;

def miillerTest(d, n):

a = 2 + random.randint(1, n - 4);

x = power(a, d, n);

if (x == 1 or x == n - 1):

return True;

while (d != n - 1):

x = (x \* x) % n;

d \*= 2;

if (x == 1):

return False;

if (x == n - 1):

return True;

return False;

def isPrime( n, k):

if (n <= 1 or n == 4):

return False;

if (n <= 3):

return True;

d = n - 1;

while (d % 2 == 0):

d //= 2;

for i in range(k):

if (miillerTest(d, n) == False):

return False;

return True;

k = 4;

print("All primes smaller than 156: ");

for n in range(1,156):

if (isPrime(n, k)):

print(n , end=" ");

* **OUTPUT :-**

