CSA0670-Design and Analysis of Algorithms for Tractability Problems.

8. Write a Program to generate all the prime numbers using recursion.

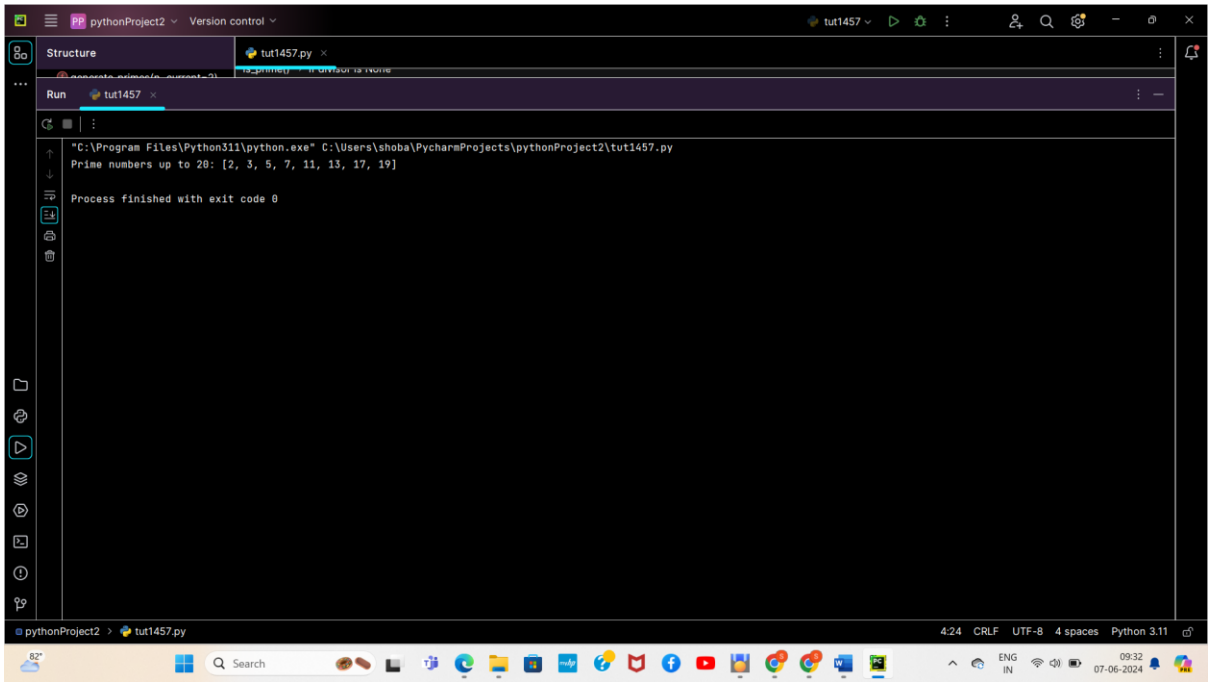
Program:

```
def is_prime(num, divisor=None):
    if num < 2:
        return False
    if divisor is None:
        divisor = num - 1
    if divisor == 1:
        return True
    if num % divisor == 0:
        return False
    return is_prime(num, divisor - 1)

def generate_primes(n, current=2):
    if current > n:
        return []
    if is_prime(current):
        return [current] + generate_primes(n, current + 1)
    else:
        return generate_primes(n, current + 1)

# Usage example
n = 20
print(f"Prime numbers up to {n}: {generate_primes(n)}")
```

Output:



Time Complexity: O(n^2)