Prime Number Generator and Checker

****

**Report By:**

**Kushal Verma [202401100300144]**

**Course: B. Tech - Computer Science and Engineering with Artificial Intelligence**

**Institution:**

**KIET Group of Institutions**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date:**

**11 March 2025**

# 1. Introduction

This project is a Python-based Prime Number Generator and Checker. It allows users to check if a number is prime and generate prime numbers within a specified range.

# 2. Methodology

The program consists of two main functions:  
- `is\_prime(n)`: Checks if a given number is prime.  
- `generate\_primes(start, end)`: Generates a list of prime numbers in a given range.  
A menu-driven approach is used to allow users to choose between checking a single number or generating primes.

# 3. Code

def is\_prime(n):  
 if n < 2:  
 return False  
 for i in range(2, int(n \*\* 0.5) + 1):  
 if n % i == 0:  
 return False  
 return True  
  
def generate\_primes(start, end):  
 primes = []  
 for num in range(start, end + 1):  
 if is\_prime(num):  
 primes.append(num)  
 return primes  
  
if \_\_name\_\_ == "\_\_main\_\_":  
 while True:  
 print("\nOptions:")  
 print("1. Check if a number is prime")  
 print("2. Generate prime numbers in a range")  
 print("3. Exit")  
 choice = input("Enter your choice (1/2/3): ")  
  
 if choice == "1":  
 num = int(input("Enter a number: "))  
 if is\_prime(num):  
 print(f"{num} is a prime number.")  
 else:  
 print(f"{num} is not a prime number.")  
  
 elif choice == "2":  
 start = int(input("Enter start of range: "))  
 end = int(input("Enter end of range: "))  
 primes = generate\_primes(start, end)  
 print(f"Prime numbers between {start} and {end}: {primes}")  
  
 elif choice == "3":  
 print("Exiting program...")  
 break  
 else:  
 print("Invalid choice! Please enter 1, 2, or 3.")

# 4. Screenshots of Output

Add screenshots of the program execution here.

