Here are the Python programs for your requests:

**1. Check if a Number is Positive, Negative, or Zero**

# Function to check if number is positive, negative, or zero

def check\_number(num):

if num > 0:

return "Positive"

elif num < 0:

return "Negative"

else:

return "Zero"

# Input from user

num = float(input("Enter a number: "))

print(f"The number is {check\_number(num)}.")

**2. Check if a Number is Odd or Even**

# Function to check if a number is odd or even

def check\_odd\_even(num):

if num % 2 == 0:

return "Even"

else:

return "Odd"

# Input from user

num = int(input("Enter a number: "))

print(f"The number is {check\_odd\_even(num)}.")

**3. Check Leap Year**

# Function to check if a year is a leap year

def check\_leap\_year(year):

if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):

return "Leap Year"

else:

return "Not a Leap Year"

# Input from user

year = int(input("Enter a year: "))

print(f"The year {year} is {check\_leap\_year(year)}.")

**4. Check Prime Number**

# Function to check if a number is prime

def check\_prime(num):

if num <= 1:

return False

for i in range(2, int(num \*\* 0.5) + 1):

if num % i == 0:

return False

return True

# Input from user

num = int(input("Enter a number: "))

if check\_prime(num):

print(f"{num} is a Prime Number.")

else:

print(f"{num} is Not a Prime Number.")

**5. Print all Prime Numbers in an Interval (1 to 10000)**

# Function to check if a number is prime

def check\_prime(num):

if num <= 1:

return False

for i in range(2, int(num \*\* 0.5) + 1):

if num % i == 0:

return False

return True

# Print all prime numbers in the range 1 to 10000

for num in range(1, 10001):

if check\_prime(num):

print(num, end=" ")