Programming Assignment-3

1. Write a Python Program to Check if a Number is Positive, Negative or Zero?

Ans.

```
def check_number_sign(number):
    if number > 0:
        return "Positive"
    elif number < 0:
        return "Negative"
    else:
        return "Zero"


def test_number():
    try:
        num = float(input("Enter a number: "))
        result = check_number_sign(num)
        print(f"The number {num} is {result}")
    except ValueError:
        print("Invalid input. Please enter a valid number.")


test_number()


test_cases = [5, -3, 0, 0.5, -0.7]
for num in test_cases:
    print(f"{num} is {check_number_sign(num)}")
```

2. Write a Python Program to Check if a Number is Odd or Even?

Ans.

```
def is_even(number):
    return number % 2 == 0
```

```
def check_odd_even():
    try:
        num = int(input("Enter an integer: "))
        if is_even(num):
            print(f"{num} is Even")
        else:
            print(f"{num} is Odd")
    except ValueError:
        print("Invalid input. Please enter a valid integer.")

check_odd_even()

print("\nChecking numbers from -5 to 5:")
for i in range(-5, 6):
    print(f"{i} is {'Even' if is_even(i) else 'Odd'}")
```

3. Write a Python Program to Check Leap Year?

Ans.

```
def is_leap_year(year):
    return year % 4 == 0 and (year % 100 != 0 or year % 400 == 0)

def check_leap_year():
    try:
        year = int(input("Enter a year: "))
        if year < 0:
            print("Please enter a valid year (non-negative number).")
            return

        if is_leap_year(year):
```

```
            print(f"{year} is a leap year")
        else:
            print(f"{year} is not a leap year")
    except ValueError:
        print("Invalid input. Please enter a valid year.")

check_leap_year()
```

4. Write a Python Program to Check Prime Number?

Ans.

```
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 check_prime_number():
    try:
        num = int(input("Enter a number to check if it's prime: "))
        if num < 0:
            print("Please enter a non-negative number.")
            return

        if is_prime(num):
            print(f"{num} is a prime number")
        else:
            print(f"{num} is not a prime number")
```

```
        factors = [i for i in range(1, num + 1) if num % i == 0]
        print(f"Factors of {num} are: {factors}")
    except ValueError:
        print("Invalid input. Please enter a valid integer.")

check_prime_number():
```

5. Write a Python Program to Print all Prime Numbers in an Interval of 1-10000?

Ans.

```
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

for start in range(0, 10000, 1000):
    end = start + 1000
    print(f"\nPrime numbers between {start} and {end-1}:")



    count = 0



    for num in range(start, end):
        if is_prime(num):
            print(f"{num:4d}", end=" ")
```

```
count += 1
if count % 10 == 0:
    print()
```