1.LEAP YEAR

main.py

```
year = int(input("Enter a year: "))
if (year % 400 == 0) or (year % 4 == 0 and year % 100 != 0):
    print("Leap year")
else:
    print("Not a leap year")
```

Output

```
Enter a year: 2024
Leap year

=== Code Execution Successful ===
```

2. SWAP

main.py

```
a = int(input("Enter first number: "))
b = int(input("Enter second number: "))
a, b = b, a
print("After swapping: a =", a, "b =", b)
```

Output

```
Enter first number: 18
Enter second number: 4
After swapping: a = 4 b = 18

=== Code Execution Successful ===
```

3.PRIME NUMBER

main.py

```
n = int(input("Enter a number: "))
flag = 0
if n > 1:
    for i in range(2, n):
        if n % i == 0:
            flag = 1
            break
if flag == 0 and n > 1:
    print("Prime number")
else:
    print("Not a prime number")
```

Output

```
Enter a number: 5
Prime number

=== Code Execution Successful ===
```

4.PALINDROME

main.py

```
s = input("Enter a string: ")
if s == s[::-1]:
    print("Palindrome")
else:
    print("Not a palindrome")

```

Output

```
Enter a string: AKSHAYA
Not a palindrome

=== Code Execution Successful ===
```

5.FIBNACCI SERIES

main.py

```
terms = int(input("Enter number of terms: "))
a, b = 0, 1
print("Fibonacci Series:")
for i in range(terms):
    print(a, end=" ")
    c = a + b
    a = b
    b = c
print()
```

Output

```
Enter number of terms: 5
Fibonacci Series:
0 1 1 2 3

=== Code Execution Successful ===
```

6. SECOND ORDER HOMOGENEOUS RECURSION

main.py

```
n = int(input("Enter number of terms for recurrence: "))
a0 = int(input("Enter a0: "))
a1 = int(input("Enter a1: "))
print("Series:")
print(a0, a1, end=" ")
for i in range(2, n):
    an = a1 + a0
    print(an, end=" ")
    a0 = a1
    a1 = an
print()
```

Output

```
Enter number of terms for recurrence: 3
Enter a0: 1
Enter a1: 2
Series:
1 2 3

=== Code Execution Successful ===6
```

7.RECURSION FACTORIAL

main.py

```
def fact(num):
    if num == 0 or num == 1:
        return 1
    else:
        return num * fact(num - 1)

num = int(input("Enter number for factorial: "))
print("Factorial of", num, "is", fact(num))


```

Output

```
Enter number for factorial: 4
Factorial of 4 is 24

=== Code Execution Successful ===
```

8.BIGGEST NUMBER

main.py

```
arr = []
n = int(input("Enter number of elements: "))
for i in range(n):
    val = int(input("Enter element: "))
    arr.append(val)

big = arr[0]
for i in range(1, n):
    if arr[i] > big:
        big = arr[i]
print("Biggest number:", big)
```

Output

```
Enter number of elements: 4
Enter element: 13
Enter element: 10
Enter element: 14
Enter element: 19
Biggest number: 19

=== Code Execution Successful ===
```

9.SELECTION SORT

main.py

```
a = list(map(int, input("Enter numbers separated by space: ").split()))
n = len(a)
for i in range(n - 1):
    m = i
    for j in range(i + 1, n):
        if a[j] < a[m]:
            m = j
    a[i], a[m] = a[m], a[i]
print("Sorted:", a)
```

Output

```
Enter numbers separated by space: 1 2 3 5 2 7 2 4 3
Sorted: [1, 2, 2, 2, 3, 3, 4, 5, 7]

=== Code Execution Successful ===
```

10.DUPLICATE

main.py

```
n = int(input("Enter number of elements: "))
a = [int(input()) for _ in range(n)]

f = 0
for i in range(n):
    for j in range(i+1, n):
        if a[i] == a[j]:
            print("Duplicate:", a[i])
            f = 1
            break
if f == 0:
    print("No duplicates")
```

Output

```
Enter number of elements: 6
4
2
6
2
8
4
Duplicate: 4
Duplicate: 2

=== Code Execution Successful ===
```