PRACTICAL 6

1. WAP to find sum of n even numbers

Solution:

```
n=int(input("enter the value of n: "))
sum=0

for i in range(1, n+1):
  even=2*i
  sum+=even

print("The sum of the first", n, "even numbers is : ", sum, )
```

Output:

```
enter the value of n: 19
The sum of the first 19 even numbers is :  380
```

2. WAP to find sum of n odd numbers.

Solution:

```
n = int(input("Enter the value of n: "))
sum = 0

for i in range(1, 2 * n + 1, 2):
        sum += i

 print("The sum of the first " ,n ," odd numbers is: ", sum)
```

Output:

```
Enter the value of n: 8
The sum of the first 8  odd numbers is:  64
```

3. WAP to find sum of the series 1+2^2+3^3+4^4+…n^n

Solution:

```
n = int(input("Enter the value of n: "))
sum= 0

for i in range(1, n + 1):
   sum+= i ** i

print(f"The sum of the series 1 + 2^2 + 3^3 + ... + {n}^{n} is: {sum}")
```

Output:

```
Enter the value of n: 10
The sum of the series 1 + 2^2 + 3^3 + ... + 10^10 is: 10405071317
```

4. WAP to find sum of the series 1+1/2+1/3+1/4+…+1/n

Solution:

```
n = int(input("Enter the value of n: "))
sum_of_series = 0

for i in range(1, n + 1):
    sum_of_series += 1 / i

print(f"The sum of the series 1 + 1/2 + 1/3 + ... + 1/{n} is: {sum_of_series}")
```

Output:

```
Enter the value of n: 12
The sum of the series 1 + 1/2 + 1/3 + ... + 1/12 is: 3.103210678210678
```

5. WAP to find sum of the series 1+1/2^2+1/3^3+1/4^4+…1/n^n

Solution:

```
n = int(input("Enter the value of n: "))
sum_of_series = 0

for i in range(1, n + 1):
    sum_of_series += 1 / (i ** i)

print(f"The sum of the series 1 + 1/2^2 + 1/3^3 + ... + 1/{n}^{n} is: {sum_of_series}")
```

Output:

```
Enter the value of n: 15
The sum of the series 1 + 1/2^2 + 1/3^3 + ... + 1/15^15 is: 1.2912859970626636
```

6. WAP to find factorial of a number

Solution:

```
n = int(input("Enter a positive integer: "))

factorial = 1

if n < 0:
    print("Factorial is not defined for negative numbers.")
elif n == 0:
    print("The factorial of 0 is 1")
else:
    for i in range(1, n + 1):
        factorial *= i

    print(f"The factorial of {n} is: {factorial}")
```

Output:

```
Enter a positive integer: 12
The factorial of 12 is: 479001600
```

7. WAP to calculate and print the sums of even and odd integers of the first n natural numbers.

Solution:

```
n = int(input("Enter the value of n: "))
sum_even = 0
sum_odd = 0

for i in range(1, n + 1):
    if i % 2 == 0:
        sum_even += i
    else:
        sum_odd += i

print(f"Sum of even numbers among the first {n} natural numbers: {sum_even}")
print(f"Sum of odd numbers among the first {n} natural numbers: {sum_odd}")
```

Output:

```
Enter the value of n: 20
Sum of even numbers among the first 20 natural numbers: 110
Sum of odd numbers among the first 20 natural numbers: 100
```

8. WAP to find the sum of individual digits of a number.

Solution:

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

sum_of_digits = 0

while num > 0:
    digit = num % 10
    sum_of_digits += digit
    num //= 10

print("Sum of the digits:", sum_of_digits)
```

Output:

```
Enter a number: 15
Sum of the digits: 6
```

9. WAP to reverse a number

Solution:

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

reversed_num = 0

while num > 0:
    digit = num % 10
    reversed_num = (reversed_num * 10) + digit
    num //= 10

print("Reversed number:", reversed_num)
```

Output:

```
Enter a number: 25
Reversed number: 52
```

10. WAP to find sum of the series: 1-2+3-4+5-6+7… n

Solution:

```
n = int(input("Enter the value of n: "))
sum_of_series = 0
sign = 1

for i in range(1, n + 1):
    sum_of_series += sign * i
    sign *= -1

print(f"The sum of the series 1 - 2 + 3 - 4 + 5 - 6 + 7 - ... + {n} is: {sum_of_series}")
```

Output:

```
Enter the value of n: 12
The sum of the series 1 - 2 + 3 - 4 + 5 - 6 + 7 - ... + 12 is: -6
```

11. WAP to check if a number is prime or not.

Solution:

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

if num < 2:
    is_prime = False
else:
    is_prime = True
    for i in range(2, int(num**0.5) + 1):
        if num % i == 0:
            is_prime = False
            break

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

Output:

```
Enter a number: 15
15 is not a prime number.
```

12. WAP to print all the prime numbers between a limit. Lower Limit and upper Limit has to be given by the user. Sample Input and Output: Enter lower limit: 10 Enter upper limit: 20 Prime numbers between 10 and 20 are: 11,13,17,19

Solution:

```
lower_limit = int(input("Enter lower limit: "))
upper_limit = int(input("Enter upper limit: "))

print(f"Prime numbers between {lower_limit} and {upper_limit} are:", end=" ")

for num in range(lower_limit, upper_limit + 1):
    if num > 1:
        is_prime = True
        for i in range(2, int(num**0.5) + 1):
            if num % i == 0:
                is_prime = False
                break
        if is_prime:
            print(num, end=", ")

print()
```

Output:

```
Enter lower limit: 2
Enter upper limit: 25
Prime numbers between 2 and 25 are: 2, 3, 5, 7, 11, 13, 17, 19, 23,
```

13. WAP to print Fibonacci series of first 20 elements. Some initial values of Fibonacci series are: 0 1 1 2 3 5 8…

Solution:

```
fibonacci_sequence = [0, 1]

while len(fibonacci_sequence) < 20:
    next_number = fibonacci_sequence[-1] + fibonacci_sequence[-2]
    fibonacci_sequence.append(next_number)

print("Fibonacci series of the first 20 elements:")
for number in fibonacci_sequence:
    print(number, end=" ")
```

Output:

```
Fibonacci series of the first 20 elements:
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987 1597 2584 4181
```

14. WAP to input two numbers and print their LCM and GCD

Solution:

```
num1 = int(input("Enter the first number: "))
num2 = int(input("Enter the second number: "))

lcm = 0
gcd = 0

max_num = max(num1, num2)
min_num = min(num1, num2)

for i in range(1, min_num + 1):
    if num1 % i == 0 and num2 % i == 0:
        gcd = i

lcm = (num1 * num2) // gcd

print(f"GCD of {num1} and {num2} is: {gcd}")
print(f"LCM of {num1} and {num2} is: {lcm}")
```

Output:

```
Enter the first number: 15
Enter the second number: 13
GCD of 15 and 13 is: 1
LCM of 15 and 13 is: 195
```

15. WAP to print first n odd numbers in descending order

Solution:

```
n = int(input("Enter the value of n: "))

if n <= 0:
    print("Please enter a positive integer for n.")
else:
    odd_numbers = []

    for i in range(2 * n - 1, 0, -2):
        odd_numbers.append(i)

    print(f"The first {n} odd numbers in descending order are: {', '.join(map(str,
odd_numbers))}")
```

Output:

```
Enter the value of n: 9
The first 9 odd numbers in descending order are: 17, 15, 13, 11, 9, 7, 5, 3, 1
```

16. WAP to print the following series: 1 -4 7 -10 … -40

Solution:

```
start = 1
limit = -40

diff = -3

while start >= limit:
    print(start, end=' ')
    start += diff
```

Output:

```
1 -2 -5 -8 -11 -14 -17 -20 -23 -26 -29 -32 -35 -38
```

17. WAP to find if a number entered by user is Palindrome or not. Note: Palindrome numbers are those numbers which are same even when you reverse it. e.g. 121 is a palindrome number 135 is not a palindrome number

Solution:

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

num_str = str(num)

reversed_str = num_str[::-1]

if num_str == reversed_str:
    print(f"{num} is a palindrome number.")
else:
    print(f"{num} is not a palindrome number.")
```

Output:

```
Enter a number: 9
9 is a palindrome number.
```

18. WAP to find sum of the given sequence: 2/9 – 5/13 + 8/17 … (print 7 terms)

Solution:

```
sum_of_sequence = 0
numerator = 2

numerator_difference = 3
denominator_difference = 4

num_terms = 7

add_term = True

for _ in range(num_terms):
    term = numerator / (numerator + denominator_difference)

    if add_term:
        sum_of_sequence += term
    else:
        sum_of_sequence -= term

    numerator += numerator_difference
    denominator_difference += 4

    add_term = not add_term

print(f"The sum of the sequence is: {sum_of_sequence:.4f}")
```

Output:

```
The sum of the sequence is: 0.3551
```

19. WAP to find sum of the following sequence: 1 + 1! + 2! + 3! + … +n!

Solution:

```
n = int(input("Enter a positive integer n: "))

if n < 0:
    print("Please enter a positive integer.")
else:
    sum_sequence = 0
    factorial = 1

    for i in range(0, n + 1):
        if i > 0:
            factorial *= i
        sum_sequence += factorial

    print(f"The sum of the sequence is: {sum_sequence}")
```

Output:

```
Enter a positive integer n: 12
The sum of the sequence is: 522956314
```

20. WAP to find sum of the following sequence: 1 + 1/1! + 1/2! + 1/3! + … + 1/n!

Solution:

```
n = int(input("Enter a positive integer n: "))

if n < 0:
    print("Please enter a positive integer.")
else:
    sum_sequence = 0
    factorial = 1

    for i in range(0, n + 1):
        if i > 0:
            factorial *= i
        sum_sequence += 1 / factorial

    print(f"The sum of the sequence is: {sum_sequence:.4f}")
```

Output:

```
Enter a positive integer n: 15
The sum of the sequence is: 2.7183
```