MINI PROJECT -2

1. Write a program to print the given number is odd or even?

CODE:

```
def check_odd_even(num):
    if num % 2 == 0:
        print(num, "is even")
    else:
        print(num, "is odd")

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

2. Write a program to find the given number is positive or negative?

CODE:

```
num = int(input("Enter a number: "))
print(num, "is positive" if num > 0 else "is negative" if num < 0 else "is zero")
```

3. Write a program to find the sum of two numbers?

CODE:

```
num1 = int(input("Enter first number: "))
num2 = int(input("Enter second number: "))
print("The sum is:", num1 + num2)
```

4. Write a program to find if the given number is prime or not?

CODE:

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

print(num, "is a prime number" if num > 1 and all(num % i != 0 for i in range(2, num)) else "is not a prime number"
```

5. Write a program to check if the given number is palindrome or not?

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

print(num, "is a palindrome number" if str(num) == str(num)[::-1] else "is not a palindrome number")
```

7. Write a program to check if the given strings are anagram or not?

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

print(num, "is an Armstrong number" if num == sum(int(digit) ** len(str(num)) for digit in str(num)) else "is not an Armstrong number")
```

8. Write a program to find a maximum of two numbers?

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

num2 = int(input("Enter second number: "))

print(max(num1, num2), "is the maximum number")
```

9. Write a program to find a minimum of two numbers?

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

num2 = int(input("Enter second number: "))

print(min(num1, num2), "is the minimum number")
```

10.Write a program to find a maximum of three numbers?

```
num1 = int(input("Enter first number: "))
num2 = int(input("Enter second number: "))
num3 = int(input("Enter third number: "))
print(max(num1, num2, num3), "is the maximum number")
```

QUESTIONS ON NUMPY:

1. How do you find the indices of the maximum value in a NumPy array?

```
mport numpy as np

# Create a sample array
arr = np.array([1, 2, 3, 4, 5])

# Find the index of the maximum value
max_index = np.argmax(arr)

print(max_index)
 # Output: 4
```

2. How do you find the indices of the minimum value in a NumPy array?

```
import numpy as np

# Create a sample 2D array
arr = np.array([[6, 5, 4], [3, 2, 1]])

# Find the index of the minimum value
min_index = np.unravel_index(np.argmin(arr), arr.shape)

print(min_index)
```

```
# Output: (1, 2)
```

3. How do you create a NumPy array with a specified data type

```
import numpy as np

# Create an array with float data type
arr = np.array([1, 2, 3], dtype=float)
print(arr.dtype)
# Output: float64
```

4. In NumPy, how do I change the data type of an array

```
import numpy as np

# Create an array with integer data type
arr = np.array([1, 2, 3])
print(arr.dtype)
# Output: int32
```

5. How to add matrices using NumPy?

```
# Add the matrices using the numpy.add() function
result = np.add(matrix1, matrix2)
print(result)
# Output:
# [[ 6  8]
#  [10 12]]
```

6.How to multiply matrices using NumPy?

```
# Create two matrices
```

```
matrix1 = np.array([[1, 2], [3, 4]])

matrix2 = np.array([[5, 6], [7, 8]])


# Multiply the matrices using the @ operator

result = matrix1 @ matrix2

print(result)

# Output:

# [[19 22]

#  [43 50]]
```

multiply matrices using NumPy, you can use the @ operator (Python 3.5+) or the numpy.dot() function.

7. How to find the transpose of the matrix using

NumPy?

find the transpose of a matrix using NumPy, you can use the T attribute or the numpy.transpose() function. Here's an example:

```
# Create a matrix

matrix = np.array([[1, 2], [3, 4]])


# Find the transpose using the T attribute

transpose = matrix.T

print(transpose)

# Output:

# [[1 3]

#  [2 4]]
```

8. What is array slicing and how do you do it in NumPy?

Array slicing is a technique used to extract a subset of elements from an array. In NumPy

```
Array[start:stop:step]
```

- start: The starting index of the slice (inclusive).

- stop: The ending index of the slice (exclusive).

- step: The step size (default is 1).

```
import numpy as np

array = np.array([1, 2, 3, 4, 5])

# Slice the array
sliced_array = array[1:3]

print(sliced_array)
 # Output: [2 3]

# Modify the sliced array
sliced_array[0] = 10

print(array)
 # Output: [ 1 10  3  4  5]
```

9. Create array by using arrange() function?

The arange() function in NumPy is used to create an array with evenly spaced values within a specified range.

```
numpy.arange(start, stop, step)
```

- start: The starting value of the array (inclusive).

- stop: The ending value of the array (exclusive).

- step: The step size (default is 1).

```
import numpy as np

# Create an array with values 0, 1, 2, 3, 4
array = np.arange(5)
print(array)
 # Output: [0 1 2 3 4]
```

10.How do you split a NumPy array into multiple sub-arrays?

You can split a NumPy array into multiple sub-arrays using the numpy.split() function

```
numpy.split(array, indices_or_sections, axis=0)
```

- array: The input array to be split.
- indices_or_sections: Either an integer or a list of indices.
    - If an integer, the array is split into that many equal sections.
    - If a list of indices, the array is split at those indices.
- axis: The axis along which to split the array (default is 0).

```
import numpy as np

# Create a 1D array
array = np.array([1, 2, 3, 4, 5, 6])
 Split the array at indices 1 and 3
sub_arrays = np.split(array, [1, 3])
print(sub_arrays)  # Output: [array([1]), array([2, 3]), array([4, 5, 6])]
```