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import numpy as np
import pandas as pd

# 1. Lists
list1 = [1, 2, 3, 4]
list2 = [5, 6, 7, 8]

# 2. Arrays
array1 = np.array(list1)
array2 = np.array(list2)

# 3. Identify their type using type()
type_list1 = type(list1)
type_array1 = type(array1)

# 4. Perform mathematical operations
multiplication_result = array1 * array2
division_result = array1 / array2
poweroff_result = np.power(array1, array2)

# 5. Combine text with Numpy function
text_output = f"Addition of Two: {array1} + {array2}"

# 6. Implement np.sin(), log(), log2(), np.exp()
sin_result = np.sin(array1)
log_result = np.log(array1)
log2_result = np.log2(array1)
exp_result = np.exp(array1)

# Displaying results
print("1. Lists:", list1, list2)
print("2. Arrays:", array1, array2)
print("3. Types:", type_list1, type_array1)
print("4. Mathematical Operations:")
print("    Multiplication:", multiplication_result)
print("    Division:", division_result)
print("    Power Off:", poweroff_result)
print("5. Textual Output:", text_output)
print("6. Numpy Functions:")
print("    sin:", sin_result)
print("    log:", log_result)
print("    log2:", log2_result)
print("    exp:", exp_result)

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1. Lists: [1, 2, 3, 4] [5, 6, 7, 8]
2. Arrays: [1 2 3 4] [5 6 7 8]
3. Types: <class 'list'> <class 'numpy.ndarray'>
4. Mathematical Operations:
  Multiplication: [ 5 12 21 32]
  Division: [0.2      0.33333333 0.42857143 0.5      ]
  Power Off: [  1    64 2187 65536]
5. Textual Output: Addition of Two: [1 2 3 4] + [5 6 7 8]
6. Numpy Functions:
  sin: [ 0.84147098  0.90929743  0.14112001 -0.7568025 ]
  log: [0.          0.69314718 1.09861229 1.38629436]
  log2: [0.          1.          1.5849625  2.          ]
  exp: [ 2.71828183  7.3890561  20.08553692 54.59815003]

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