…………………………………………………………………..Assignment………………………………………………………………

1. 1. Suppose you have a dataset containing daily temperature readings for a city, and y want to identify days with extreme temperature conditions. Find days where the temperature either exceeded 35 degrees Celsius (hot day) or dropped below 5 degre Celsius (cold day).

Input: temperatures = np.array([32.5, 34.2, 36.8, 29.3, 31.0, 38.7, 23.1, 18.5, 22.8, 37.2])

//code

import numpy as np

temperatures = np.array([32.5, 34.2, 36.8, 29.3, 31.0, 38.7, 23.1, 18.5, 22.8, 37.2])

hot\_days = temperatures > 35

cold\_days = temperatures < 5

hot\_days\_indices = np.where(hot\_days)[0] + 1

cold\_days\_indices = np.where(cold\_days)[0] + 1

hot\_days\_temp = temperatures[hot\_days]

cold\_days\_temp = temperatures[cold\_days]

print("Hot Days:")

print("Day", hot\_days\_indices)

print("Temperature (°C)", hot\_days\_temp)

print("\nCold Days:")

print("Day", cold\_days\_indices)

print("Temperature (°C)", cold\_days\_temp)

output: Hot Days:

Day [3 6 10]

Temperature (°C) [36.8 38.7 37.2]

Cold Days:

Day [8]

Temperature (°C) [18.5]

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2. 2. Suppose you have a dataset containing monthly sales data for a company, and you want to split this data into quarterly reports for analysis and reporting purposes

Input: monthly sales np.array([120, 135, 148, 165, 180, 155, 168, 190, 205, 198, 210, 2251)

//code

import numpy as np

monthly\_sales = np.array([120, 135, 148, 165, 180, 155, 168, 190, 205, 198, 210, 225])

quarterly\_sales = np.array([monthly\_sales[i:i+3] for i in range(0, len(monthly\_sales), 3)])

quarterly\_sales = quarterly\_sales.tolist()

quarter\_names = ["Quarter 1", "Quarter 2", "Quarter 3", "Quarter 4"]

for i, quarter in enumerate(quarterly\_sales):

print(f"{quarter\_names[i]} Sales (in thousands of dollars): {quarter}")

output: Quarter 1 Sales (in thousands of dollars): [320, 135, 348]

Quarter 2 Sales (in thousands of dollars): [165, 180, 1551]

Quarter 3 Sales (in thousands of dollars): [168, 190, 295]

Quarter 4 Sales (in thousands of dollars): [198, 210, 225]

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33. Suppose you have a dataset containing customer data, and you want to split this data into two groups: one group for customers who made a purchase in the last 30 days and another group for customers who haven't made a purchase in the last 30 days.

Input: customer\_ids = np.array([101, 102, 103, 104, 105, 106, 107, 108, 109, 110])

last\_purchase\_days\_ago = np.array([5, 15, 20, 25, 30, 35, 40, 45, 50, 551)

//code

import numpy as np

customer\_ids = np.array([101, 102, 103, 104, 105, 106, 107, 108, 109, 110])

last\_purchase\_days\_ago = np.array([5, 15, 20, 25, 30, 35, 40, 45, 50, 55])

active\_customers = customer\_ids[last\_purchase\_days\_ago

inactive\_customers = customer\_ids[last\_purchase\_days\_ago > 30]

print("Active Customers (Last Purchase

print("Inactive Customers (Last Purchase > 30 days ago):", inactive\_customers)

output: Active Customers (Last Purchase <= 30 days ago):

(101 102 103 104 105)

Inactive Customers (Last Purchase > 30 days ago):

[106 107 108 109 110]

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4. 4. Suppose you have two sets of employee data-one containing information about full-time employees and another containing information about part-time employees. You want to combine this data to create a comprehensive employee dataset for HR analysis.

Input:

# Employee data for full-time employees

full\_time\_employees = np.array([

[101, 'John Doe', 'Full-Time', 55000].

[102, 'Jane Smith', 'Full-Time', 60000],

[103, 'Mike Johnson', 'Full-Time', 52000]

])

# Employee data for part-time employees

part\_time\_employees = np.array([

[201, 'Alice Brown', 'Part-Time', 25000],

[202, 'Bob Wilson', 'Part-Time', 28000).

[203. 'Emily Davis', 'Part-Time', 22000]

])

//code

import numpy as np

Employee data for full-time employees

full\_time\_employees = np.array([

[101, 'John Doe', 'Full-Time', 55000],

[102, 'Jane Smith', 'Full-Time', 60000],

[103, 'Mike Johnson', 'Full-Time', 52000]

])

Employee data for part-time employees

part\_time\_employees = np.array([

[201, 'Alice Brown', 'Part-Time', 25000],

[202, 'Bob Wilson', 'Part-Time', 28000],

[203, 'Emily Davis', 'Part-Time', 22000]

])

Combine the two datasets

combined\_employee\_data = np.concatenate((full\_time\_employees, part\_time\_employees))

Print the combined dataset

for employee in combined\_employee\_data:

print(f"Employee ID: {employee[0]}, Name: {employee[1]}, Type: {employee[2]}, Salary: {employee[3]}")

output: Employee ID: 101, Name: John Doe, Type: Full-Time, Salary: 55000

Employee ID: 102, Name: Jane Smith, Type: Full-Time, Salary: 60000

Employee ID: 103, Name: Mike Johnson, Type: Full-Time, Salary: 52000

Employee ID: 201, Name: Alice Brown, Type: Part-Time, Salary: 25000

Employee ID: 202, Name: Bob Wilson, Type: Part-Time, Salary: 28000

Employee ID: 203, Name: Emily Davis, Type: Part-Time, Salary: 22000

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