P7_2347138

September 15, 2023

[ ]:
```
import numpy as np

# Define the data types for each column
dtypes = [
    ("Employee_ID", int),
    ("Last_Name", "U20"),
    ("First_Name", "U20"),
    ("Gender", "U1"),
    ("Role", "U20"),
]

# Define the employee data
data = np.array(
    [
        (1000, "Torbati", "Yolanda", "F", "Programmer"),
        (1001, "Kleinn", "Joel", "M", "Programmer"),
        (1002, "Grinsburg", "Laura", "F", "President"),
        (1003, "Cox", "Jennifer", "F", "Programmer"),
        (1005, "Ziada", "Mauri", "M", "Product Designer"),
        (1006, "Keyser", "Cara", "F", "Account Executive"),
        (1010, "Smith", "Roxie", "M", "Programmer"),
        (1011, "Nelson", "Robert", "M", "Programmer"),
        (1012, "Sachsen", "Lars", "M", "Support Technician"),
        (1003, "Shannon", "Don", "M", "Product Designer"),
    ],
    dtype=dtypes,
)

# Create the structured array
Employee = np.array(data, dtype=dtypes)

# 1. How many Male employees are in the company?
male_employees = Employee[Employee["Gender"] == "M"]
num_male_employees = len(male_employees)
print("Number of Male employees:", num_male_employees)

# 2. Display the details of employees whose Last_Name starts with S.
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s_last_name_employees = Employee[np.char.startswith(Employee["Last_Name"], "S")]
print("Employees with Last_Name starting with 'S':")
print(s_last_name_employees)

# 3. Sort the Female Employee details in descending order based on First_Name.
female_employees = Employee[Employee["Gender"] == "F"]
sorted_female_employees = np.sort(female_employees, order="First_Name")[::-1]
print("Female employees sorted by First_Name in descending order:")
print(sorted_female_employees)

# 4. Extract 1D array and reshape it into 2D array (e.g., Employee_ID)
employee_ids = Employee["Employee_ID"]
employee_ids_2d = employee_ids.reshape(-1, 1)
print("1D Employee_ID array:")
print(employee_ids)
print("Reshaped 2D Employee_ID array:")
print(employee_ids_2d)

# 5. Extract the specified matrix using Boolean and Fancy indexing
matrix_condition = (
    (Employee["Employee_ID"] == 1002)
    | (Employee["Employee_ID"] == 1003)
    | (Employee["Employee_ID"] == 1005)
    | (Employee["Employee_ID"] == 1006)
    | (Employee["Employee_ID"] == 1010)
    | (Employee["Employee_ID"] == 1011)
    | (Employee["Employee_ID"] == 1012)
)

condition = (data["Gender"] == "F") & (data["Role"] == "Programmer")
selected_matrix = data[condition]
print("Selected matrix:")
print(selected_matrix)
```

```
Number of Male employees: 6
Employees with Last_Name starting with 'S':
[(1010, 'Smith', 'Roxie', 'M', 'Programmer')
 (1012, 'Sachsen', 'Lars', 'M', 'Support Technician')
 (1003, 'Shannon', 'Don', 'M', 'Product Designer')]
Female employees sorted by First_Name in descending order:
[(1000, 'Torbati', 'Yolanda', 'F', 'Programmer')
 (1002, 'Grinsburg', 'Laura', 'F', 'President')
 (1003, 'Cox', 'Jennifer', 'F', 'Programmer')
 (1006, 'Keyser', 'Cara', 'F', 'Account Executive')]
1D Employee_ID array:
[1000 1001 1002 1003 1005 1006 1010 1011 1012 1003]
Reshaped 2D Employee_ID array:
[[1000]
```

```
 [1001]
 [1002]
 [1003]
 [1005]
 [1006]
 [1010]
 [1011]
 [1012]
 [1003]]
Selected matrix:
[(1000, 'Torbati', 'Yolanda', 'F', 'Programmer')
 (1003, 'Cox', 'Jennifer', 'F', 'Programmer')]
```

[ ]: