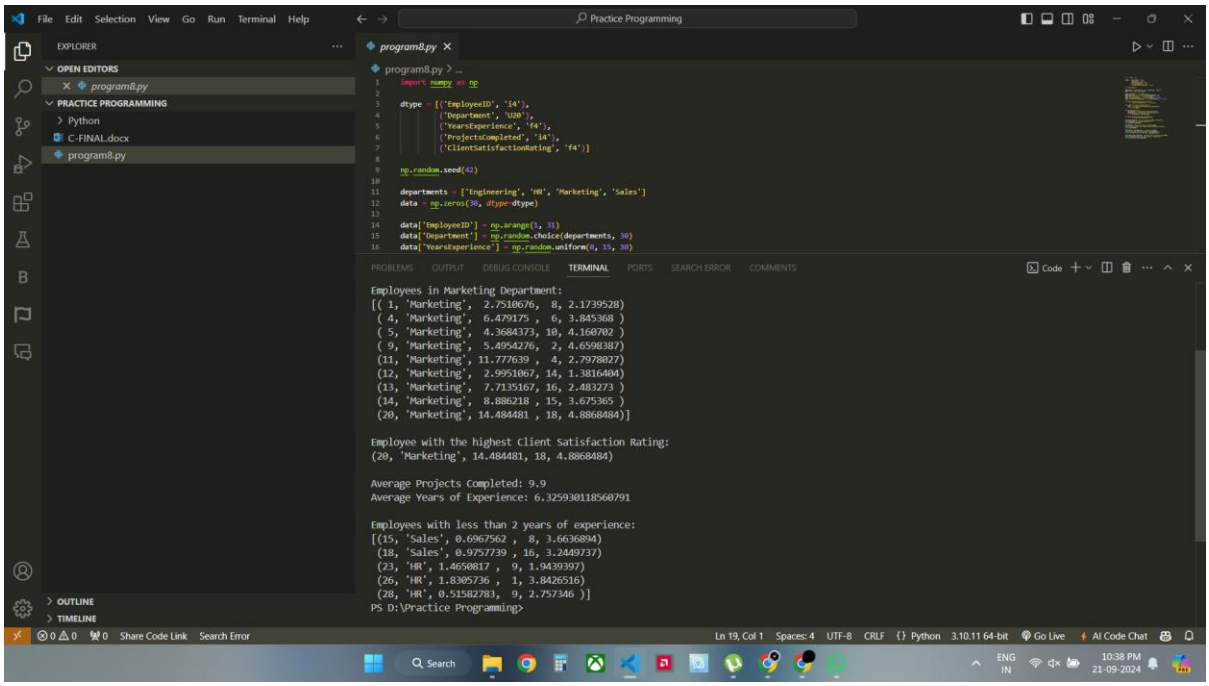
Python lab exercise 8

2447155

```python
import numpy as np

dtype = [('EmployeeID', 'i4'),
         ('Department', 'U20'),
         ('YearsExperience', 'f4'),
         ('ProjectsCompleted', 'i4'),
         ('ClientSatisfactionRating', 'f4')]

np.random.seed(42)

departments = ['Engineering', 'HR', 'Marketing', 'Sales']
data = np.zeros(30, dtype=dtype)

data['EmployeeID'] = np.arange(1, 31)
data['Department'] = np.random.choice(departments, 30)
data['YearsExperience'] = np.random.uniform(0, 15, 30)
data['ProjectsCompleted'] = np.random.randint(1, 21, 30)
data['ClientSatisfactionRating'] = np.random.uniform(1.0, 5.0, 30)

def filter_by_department(data, department):
    return data[data['Department'] == department]

def highest_satisfaction_employee(data):
    index = np.argmax(data['ClientSatisfactionRating'])
    return data[index]

def average_stats(data):
    avg_projects = np.mean(data['ProjectsCompleted'])
    avg_experience = np.mean(data['YearsExperience'])
    return avg_projects, avg_experience

def employees_with_less_than_2_years(data):
    return data[data['YearsExperience'] < 2]

marketing_employees = filter_by_department(data, 'Marketing')
print("Employees in Marketing Department:")
print(marketing_employees)

top_employee = highest_satisfaction_employee(data)
print("\nEmployee with the highest Client Satisfaction Rating:")
print(top_employee)

avg_projects, avg_experience = average_stats(data)
print(f"\nAverage Projects Completed: {avg_projects}")
print(f"Average Years of Experience: {avg_experience}")

less_than_2_years_employees = employees_with_less_than_2_years(data)
print("\nEmployees with less than 2 years of experience:")
print(less_than_2_years_employees)
```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PRACTICE PROGRAMMING
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program8.py
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PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR COMMENTS
Code
Employees in Marketing Department:
[(1, 'Marketing', 2.7518676, 8, 2.1739528)
(4, 'Marketing', 6.479175 , 6, 3.845368)
(5, 'Marketing', 4.3684373, 10, 4.160702)
(9, 'Marketing', 5.4954276, 2, 4.6598387)
(11, 'Marketing', 11.777639 , 4, 2.7978027)
(12, 'Marketing', 2.9951067, 14, 1.3816404)
(13, 'Marketing', 7.7135167, 16, 2.483273)
(14, 'Marketing', 8.886218 , 15, 3.675365)
(20, 'Marketing', 14.484481 , 18, 4.8868484)]
Employee with the highest Client Satisfaction Rating:
(20, 'Marketing', 14.484481, 18, 4.8868484)
Average Projects Completed: 9.9
Average Years of Experience: 6.325930118560791
Employees with less than 2 years of experience:
[(15, 'Sales', 0.6967562 , 8, 3.6636894)
(18, 'Sales', 0.9757739 , 16, 3.2449737)
(23, 'HR', 1.4650817 , 9, 1.9439397)
(26, 'HR', 1.8305736 , 1, 3.8426516)
(28, 'HR', 0.51582783, 9, 2.757346)]
PS D:\Practice Programming>
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