**Question 1**

class Employee:

    # data member to count the number of Employees

    employee\_count = 0

    def \_\_init\_\_(self, name, family, salary, department):

        self.name = name

        self.family = family

        self.salary = salary

        self.department = department

        Employee.employee\_count += 1

    def average\_salary(employees):

      total\_salary = 0

      for employee in employees:

          total\_salary += employee.salary

      return total\_salary / Employee.employee\_count

class FulltimeEmployee(Employee):

    pass

# Creating instances for Employee and FulltimeEmployee and adding to employees

employees = []

employee1 = Employee("John", "Doe", 10000, "IT")

employee2 = Employee("Jane", "Doe", 15000, "HR")

employees.append(employee1)

employees.append(employee2)

fulltime\_employee1 = FulltimeEmployee("Bob", "Smith", 20000, "Marketing")

employees.append(fulltime\_employee1)

print("Total Number of Employees:", Employee.employee\_count)

print("Average Salary of Employees:", FulltimeEmployee.average\_salary(employees))

Graphical user interface, application

Description automatically generated

**Question 2**

import numpy as np

# Create a random vector of size 20 between 1 and 20

vector = np.random.uniform(1, 20, 20)

print(vector)

# Reshape the array to 4x5

array = np.reshape(vector, (4, 5))

print("Array after reshaping to 4 x 5:")

print(array)

# Replace the max in each row by 0

array[np.arange(4), array.argmax(axis=1)] = 0

print("Array after replacing the max in each row by 0")

print(array)

Graphical user interface, text, application

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