ASSINGMENT 1

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1. **Create a class Employee and then do the following.**
   - **Create a data member to count the number of Employees**
   - **Create a constructor to initialize name, family, salary, department**
   - **Create a function to average salary**
   - **Create a Fulltime Employee class and it should inherit the properties of Employee class**
   - **Create the instances of Fulltime Employee class and Employee class and call their member functions.**

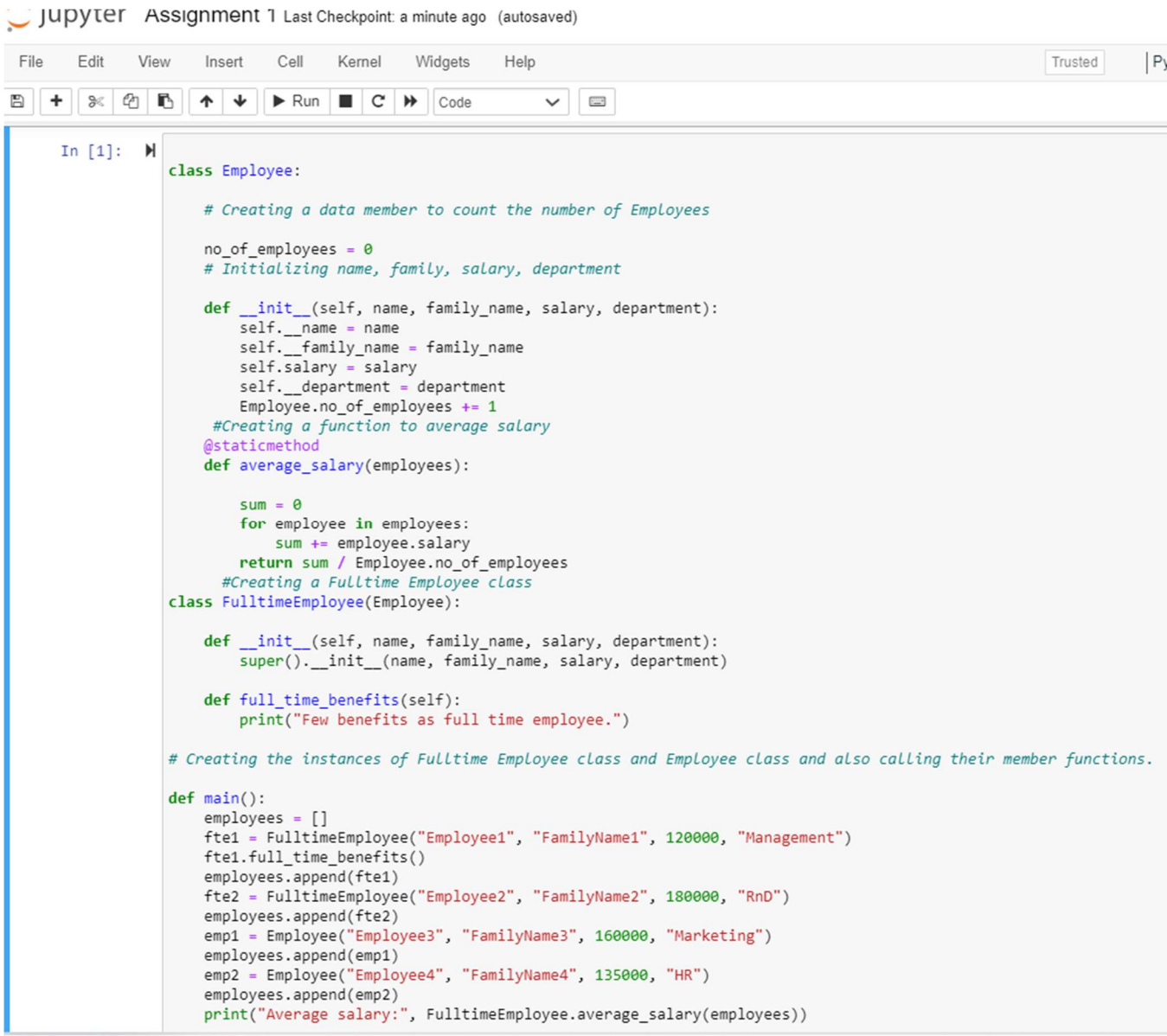
```
class Employee:

    # Creating a data member to count the number of Employees

    no_of_employees = 0
    # Initializing name, family, salary, department

    def __init__(self, name, family_name, salary, department):
        self.__name = name
        self.__family_name = family_name
        self.salary = salary
        self.__department = department
        Employee.no_of_employees += 1
     #Creating a function to average salary
    @staticmethod
    def average_salary(employees):

        sum = 0
        for employee in employees:
            sum += employee.salary
        return sum / Employee.no_of_employees
      #Creating a Fulltime Employee class
class FulltimeEmployee(Employee):

    def __init__(self, name, family_name, salary, department):
        super().__init__(name, family_name, salary, department)

    def full_time_benefits(self):
        print("Few benefits as full time employee.")
```

```
# Creating the instances of Fulltime Employee class and Employee class and also calling their member functions.

def main():
    employees = []
    fte1 = FulltimeEmployee("Employee1", "FamilyName1", 120000, "Management")
    fte1.full_time_benefits()
    employees.append(fte1)
    fte2 = FulltimeEmployee("Employee2", "FamilyName2", 180000, "RnD")
    employees.append(fte2)
    emp1 = Employee("Employee3", "FamilyName3", 160000, "Marketing")
    employees.append(emp1)
    emp2 = Employee("Employee4", "FamilyName4", 135000, "HR")
    employees.append(emp2)
    print("Average salary:", FulltimeEmployee.average_salary(employees))


if __name__ == "__main__":
    main()
```

Description:

Here I created a class for employee after that initialized name ,family,salary,department using And also called static method, to find out the average salary I created function to get it the average salary. And created full time employee class to nherit the properties of employe class created above. At last I created a main class to call all its member functions.

Screenshot of source code and output:



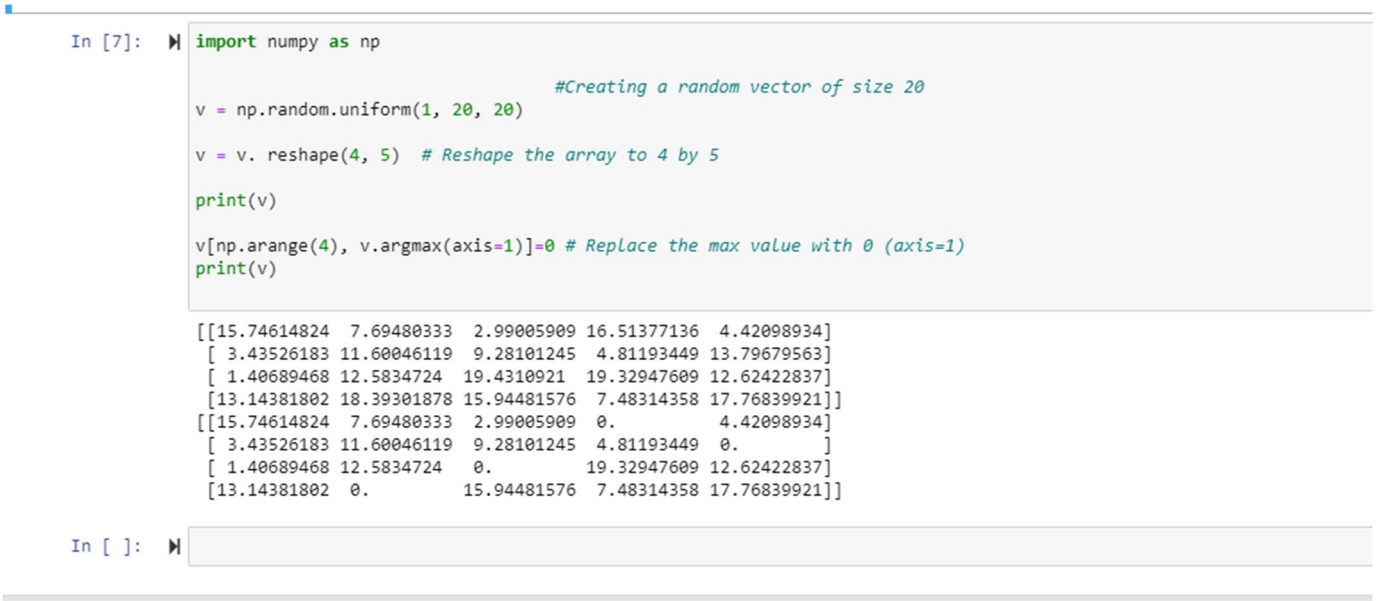
2. **NumPy**

Using NumPy create random vector of size 20 having only float in the range 1-20. Then reshape the array to 4 by 5 Then replace the max in each row by 0 (axis=1) (you can NOT implement it via for loop)

```
import numpy as np

                        #Creating a random vector of size 20
v = np.random.uniform(1, 20, 20)

v = v. reshape(4, 5)  # Reshape the array to 4 by 5

print(v)

v[np.arange(4), v.argmax(axis=1)]=0 # Replace the max value with 0 (axis=1)
print(v)
```

Description: In the below program I created a random vector of size 20 and using reshape function to reshape the array and used arrange and arg max functions to replace it with value 0.

Screenshot of source code and output:



```
In [7]: import numpy as np

                                    #Creating a random vector of size 20
        v = np.random.uniform(1, 20, 20)

        v = v. reshape(4, 5)  # Reshape the array to 4 by 5

        print(v)

        v[np.arange(4), v.argmax(axis=1)]=0 # Replace the max value with 0 (axis=1)
        print(v)

[[15.74614824  7.69480333  2.99005909 16.51377136  4.42098934]
 [ 3.43526183 11.60046119  9.28101245  4.81193449 13.79679563]
 [ 1.40689468 12.5834724  19.4310921  19.32947609 12.62422837]
 [13.14381802 18.39301878 15.94481576  7.48314358 17.76839921]]
[[15.74614824  7.69480333  2.99005909  0.          4.42098934]
 [ 3.43526183 11.60046119  9.28101245  4.81193449  0.        ]
 [ 1.40689468 12.5834724   0.         19.32947609 12.62422837]
 [13.14381802  0.         15.94481576  7.48314358 17.76839921]]

In [ ]:
```

Video Link:
https://drive.google.com/file/d/14rEnYdFDIQZ1wVhqNZ5EXaWUFUoE5VPK/view?usp=sharing

GitHub: