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SID:- 2461075

Subjet: - Machine Learning in Finance

Week: - 2 logbook

```
import pandas as pd

df = pd.read_csv("/content/adult_data_mini.csv")

print("=== ORIGINAL DATA (first 5 rows) ===")
print(df.head(), "\n")

sid = 2461075
n = sid % 10
if n == 0:
    n = 10

def reduce_hours(x):
    return x - n

df['reduced_hours'] = df['hours-per-week'].apply(reduce_hours)

grouped = df.groupby(['relationship',
    'reduced_hours']).size().reset_index(name='count')

# Display results
print("=== DATA AFTER APPLYING reduce_hours FUNCTION (first 5 rows) ===")
```

```
print(df.head(), "\n")
print("=== GROUPED SUMMARY BY relationship AND reduced_hours ===")
print(grouped.head(), "\n")
print(f"Reduction applied per person: {n} hours (SID = {sid})")
      4 Married-civ-spouse
                             Prof-specialty
                                                       Wife Black
                                                                     Female
  ₹
         capital-gain capital-loss hours-per-week native-country Answer
                             NaN
                                             40
                                                 United-States
                                             13 United-States
                                             40 United-States
40 United-States
                 NaN
                             NaN
                                                                <=50K
      2
      3
                 NaN
                             NaN
                                                                <=50K
                 0.0
                             NaN
                                             40
                                                          Cuba <=50K
      === DATA AFTER APPLYING reduce_hours FUNCTION (first 5 rows) ===
      age workclass fnlwgt education education-num \
0 39 State-gov 77516 Bachelors 13
1 50 Self-emp-not-inc 83311 Bachelors 13
      2 38
                      Private 215646 HS-grad
                                                           9
      3
         53
                      Private 234721
                                        11th
                                                            7
                      Private 338409 Bachelors
                                                           13
                                  occupation
            marital-status
                                               relationship
                                                                        sex \
                                                               race
      0
             Never-married
                                Adm-clerical Not-in-family
                                                              White
                                                                       Male
         Married-civ-spouse
                             Exec-managerial
                                                   Husband
                                                              White
                 Divorced Handlers-cleaners Not-in-family
                                                              White
         Married-civ-spouse Handlers-cleaners
                                               Husband
                                                              Black
                                                                       Male
      3
      4 Married-civ-spouse
                               Prof-specialty
                                                       Wife Black Female
        capital-gain capital-loss hours-per-week native-country Answer \
              2174.0
                            NaN
                                           40 United-States <=50K
                                            13 United-States
40 United-States
                                                                <=50K
      1
                 NaN
                             0.0
      2
                 NaN
                             NaN
                                                 United-States
                                                                <=50K
                             NaN
                                             40 United-States <=50K
                 NaN
                             NaN
                                             40
      4
                0.0
                                                         Cuba <=50K
         reduced_hours
                 35
                   8
      1
      2
                   35
      3
                   35
      === GROUPED SUMMARY BY relationship AND reduced_hours ===
          relationship reduced_hours count
      1
               Husband
                                 35
      2
               Husband
                                 40
                                         1
      3
               Husband
                                 75
                                         1
      4 Not-in-family
                                11
      Reduction applied per person: 5 hours (SID = 2461075)
```

```
print(grouped.head(), "\n")
print(f"Reduction applied per person: {n} hours (SID = {sid})")
=== ORIGINAL DATA (first 5 rows) ===
```

```
State-gov 77516
Self-emp-not-inc 83311
Private 215646
        2 38
3 53
4 28
                                                                  HS-grad
11th
                                                                                                         9
7
                                      Private 234721
                                      Private 338409 Bachelors
                                                         occupation relationship
                   marital-status
                                                                                                               race
                                                                                                                               sex \
                                                occupation relationship
Adm-clerical Not-in-family
Exec-managerial Husband
Handlers-cleaners Husband
Prof-specialty Wife
             Never-married
Married-civ-spouse
Divorced
Married-civ-spouse
                                                                                                            White
White
White
Black
                                                                                                                            Male
Male
Male
                                                                                                                             Male
              Married-civ-spouse
                                                                                                            Black
                                                                                                                          Female
             capital-gain capital-loss hours-per-week native-country Answer
                     2174.0
                                                  NaN
0.0
                                                                        40 United-States
13 United-States
                                                                                                               <=50K
<=50K
                            NaN
                                                  NaN
NaN
NaN
                                                                             40
40
40
                                                                                     United-States
United-States
                            NaN
                                                                                                                  <=50K
                            0.0
                                                                                                    Cuba
        === DATA AFTER APPLYING reduce hours FUNCTION (first 5 rows) === age workclass fnlwgt education education-num \ 8 39 State-gov 77516 Bachelors 13 1 50 Self-emp-not-inc 83311 Bachelors 13 2 38 Private 215646 HS-grad 9 3 53 Private 24721 11th 7
        0
1
2
3
4
              28
                                   Private 338409 Bachelors
                                                                                                       13
                                                occupation relationship
Adm-clerical Not-in-family
Exec-managerial Husband
Handlers-cleaners Husband
Prof-specialty Wife
                   marital-status
                                                                                                            race
White
             Never-married
Married-civ-spouse
Divorced
Married-civ-spouse
Married-civ-spouse
                                                                                                                             Male
                                                                                                            White
White
Black
                                                                                                                            Male
Male
Male
                                                                                  Not-in-family
Husband
Wife
                                                                                                                          Female
                                                                                                            Black
             capital-gain capital-loss
2174.0 NaN
NaN 0.0
                                                           hours-per-week native-country
40 United-States
13 United-States
                                                                                                                Answer
<=50K
<=50K
<=50K
                            NaN
                                                   NaN
                                                                               40
                                                                                       United-States
                                                  NaN
NaN
                                                                                      United-States
Cuba
                            NaN
                                                                                                                  <=50K
                                                                                                                  <=50K
                            0.0
```