```
In [16]: import pandas as pd
            import numpy as np
           from google.colab import drive
           drive.mount('/content/drive')
           from google.colab import drive
           import os
           import pandas as pd
           Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force_rem
 In [70]: path = "/content/drive/MyDrive/Jntu/Assignment4/"
            fnames = os.listdir(path)
           print(fnames)
           df = pd.read_csv(os.path.join(path, fnames[1]))
           df
           ['Adult.ipynb', 'adult.data', 'adult.names', 'Assignment 4.txt']
 Out[70]:
                   39
                           State-gov 77516 Bachelors 13
                                                           Never-married
                                                                           Adm-clerical Not-in-family White
                                                                                                               2174 0 40 United-States <=50K
                                                                                                                  0 0 13 United-States <=50K
                0 50 Self-emp-not-inc 83311
                                            Bachelors 13 Married-civ-spouse Exec-managerial
                                                                                          Husband White
                                                                                                                  0 0 40 United-States <=50K
                1 38
                             Private 215646
                                             HS-grad 9
                                                               Divorced Handlers-cleaners
                                                                                       Not-in-family White
                2 53
                             Private 234721
                                                11th 7 Married-civ-spouse Handlers-cleaners
                                                                                                                  0 0 40 United-States <=50K
                                                                                          Husband Black
                3 28
                                            Bachelors 13 Married-civ-spouse
                                                                                                                  0 0 40
                                                                                                                                  Cuba <=50K
                             Private 338409
                                                                           Prof-specialty
                                                                                             Wife Black Female
                4 37
                                                                                                                  0 0 40 United-States <=50K
                             Private 284582
                                             Masters 14 Married-civ-spouse Exec-managerial
                                                                                             Wife White Female
                ...
                             Private 257302 Assoc-acdm 12 Married-civ-spouse
            32555 27
                                                                            Tech-support
                                                                                             Wife White Female
                                                                                                                  0 0 38 United-States <=50K
                                                                                                                  0 0 40 United-States
            32556 40
                             Private 154374
                                             HS-grad 9 Married-civ-spouse Machine-op-inspct
                                                                                          Husband White
            32557 58
                             Private 151910
                                                                                                                  0 0 40 United-States <=50K
                                             HS-grad 9
                                                               Widowed
                                                                            Adm-clerical
                                                                                         Unmarried White Female
                                                            Never-married
            32558 22
                             Private 201490
                                                                            Adm-clerical
                                                                                                                  0 0 20 United-States <=50K
                                             HS-grad 9
                                                                                         Own-child White
            32559 52
                         Self-emp-inc 287927
                                             HS-grad 9 Married-civ-spouse Exec-managerial
                                                                                             Wife White Female 15024 0 40 United-States >50K
           32560 rows × 15 columns
In [133]: features = ["Age", "Workclass", "fnlwgt", "Education", "Education-Num", "Martial Status", "Occupation", "Relationshi
           p",
                           "Race", "Sex", "Capital Gain", "Capital Loss", "Hours per week", "Country", "Target"]
           df = pd.read_csv(os.path.join(path, fnames[1]), names=features)
           #/content/drive/MyDrive/my_data/data.csv
           df
Out[133]:
                                                                                                          Capital
                                                   Education-
                                                               Martial
                                                                                                                 Capital
                   Age Workclass fnlwgt Education
                                                                       Occupation Relationship Race
                                                                                                     Sex
                                                                                                                                 Country Target
                                                                                                                           per
                                                       Num
                                                               Status
                                                                                                                   Loss
                                                                                                                           week
                                                                                                                                  United-
                                  77516 Bachelors
                                                                                                                                         <=50K
                0 39
                         State-gov
                                                         13
                                                                       Adm-clerical
                                                                                  Not-in-family
                                                                                                            2174
                                                                                                                             40
                                                               married
                                                                                                                                  States
                         Self-emp-
                                                               Married-
                                                                           Exec-
                                                                                                                                  United-
                1 50
                                  83311
                                                                                    Husband White
                                                                                                                            13
                                                                                                                                         <=50K
                                         Bachelors
                                                         13
                                                                                                              0
                                                                                                                      0
                                                             civ-spouse
                                                                        managerial
                                                                                                                                  States
                           not-inc
                                                                         Handlers-
                                                                                                                                  United-
                                                                                  Not-in-family White
                                                                                                                             40
                                                                                                                                         <=50K
                2 38
                           Private 215646
                                          HS-grad
                                                          9 Divorced
                                                                          cleaners
                                                                                                                                  States
                                                               Married-
                                                                         Handlers-
                                                                                                                                  United-
                                                                                                                                        <=50K
                3 53
                           Private 234721
                                             11th
                                                                                     Husband Black
                                                                                                              0
                                                             civ-spouse
                                                                          cleaners
                                                                                                                                  States
                                                                            Prof-
                                                              Married-
                                                        13 civ-spouse
                                                                                                                                   Cuba <=50K
                4 28
                           Private 338409 Bachelors
                                                                                        Wife Black Female
                                                                          specialty
                                            Assoc-
                                                              Married-
                                                                                                                                  United-
                                                        12 civ-spouse
                           Private 257302
                                                                      Tech-support
                                                                                                                                         <=50K
                                                               Married-
                                                                      Machine-op-
            32557
                           Private 154374
                                          HS-grad
                                                                                                                                          >50K
                                                            civ-spouse
                                                                                                                                  States
                                                                                                                                  United-
            32558
                           Private 151910
                                          HS-grad
                                                          9 Widowed
                                                                       Adm-clerical
                                                                                   Unmarried White Female
                                                                                                                                         <=50K
                                                                                                                                  States
                                                                                                                                  United-
                                                               Never-
            32559 22
                           Private 201490
                                          HS-grad
                                                                       Adm-clerical
                                                                                    Own-child White
                                                                                                                                        <=50K
                                                                                                                                  States
                                                               married
                                                               Married-
                                                                            Exec-
                                                                                                                                  United-
                         Self-emp-
                                                         9 civ-spouse
                                 287927
                                         HS-grad
                                                                                        Wife White Female
                                                                                                           15024
                                                                        managerial
           32561 rows × 15 columns
            https://rstudio-pubs-static.s3.amazonaws.com/538563 85cb2b4cd06b4dc48d33de73fa97a297.html
            https://archive.ics.uci.edu/dataset/2/adult
 In [30]: df["Sex"].value_counts()
 Out[30]: Male
                        21790
             Female 10771
           Name: Sex, dtype: int64
 In [39]: | df.loc[df['Sex'] == 'Female', 'Age'].mean()
            #What is the average age (age feature) of women? 38.58164675532078
 Out[39]: 38.58164675532078
 In [69]: df['Country'].value_counts()
            get_count = 137/32561
           print(get_count)
           # What is the proportion of German citizens (native-country feature)? 0.004207487485028101
           0.004207487485028101
In [104]: age1 = df.loc[df['Target'] == '>50K', 'Age'].std()
           print(age1)
           13.640432553581341
In [131]: df['Target'] == '<=50K'</pre>
Out[131]: 0
                      False
                      False
           2
                      False
           3
                      False
                      False
            32556
                      False
           32557
                      False
           32558
                      False
           32559
                      False
           32560
                     False
           Name: Target, Length: 32561, dtype: bool
In [156]: df.loc[df['Target'] == '>50K', 'Education'].unique()
             #Is it true that people who receive more than 50k have at least high school education? (education - Bachelors, Prof
            -school, Assoc-acdm, Assoc-voc, Masters or Doctorate feature)
             #No
Out[156]: array([' Bachelors', ' HS-grad', ' 11th', ' Masters', ' 9th',
                     Some-college', 'Assoc-acdm', 'Assoc-voc', '7th-8th',
                    ' Doctorate', ' Prof-school', ' 5th-6th', ' 10th', ' 1st-4th', ' Preschool', ' 12th'], dtype=object)
```