task2

January 29, 2024

[1]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import streamlit as st

import streamlit as st

from streamlit_jupyter import StreamlitPatcher, tqdm

StreamlitPatcher().jupyter()


# https://www.kaggle.com/datasets/missionjee/
  ↪students-dropout-and-academic-success-dataset
```

[2]:
```
df = pd.read_csv('file.csv', sep=";")
```

[3]:
```
df.describe()
```

[3]:

	Marital status	Application mode	Application order	Course	\
count	4424.000000	4424.000000	4424.000000	4424.000000	
mean	1.178571	18.669078	1.727848	8856.642631	
std	0.605747	17.484682	1.313793	2063.566416	
min	1.000000	1.000000	0.000000	33.000000	
25%	1.000000	1.000000	1.000000	9085.000000	
50%	1.000000	17.000000	1.000000	9238.000000	
75%	1.000000	39.000000	2.000000	9556.000000	
max	6.000000	57.000000	9.000000	9991.000000	

	Daytime/evening attendance\t	Previous qualification	\
count	4424.000000	4424.000000	
mean	0.890823	4.577758	
std	0.311897	10.216592	
min	0.000000	1.000000	
25%	1.000000	1.000000	
50%	1.000000	1.000000	
75%	1.000000	1.000000	
max	1.000000	43.000000	

```
       Previous qualification (grade)  Nacionality  Mother's qualification  \
count                     4424.000000  4424.000000             4424.000000
mean                       132.613314     1.873192               19.561935
std                         13.188332     6.914514               15.603186
min                         95.000000     1.000000                1.000000
25%                        125.000000     1.000000                2.000000
50%                        133.100000     1.000000               19.000000
75%                        140.000000     1.000000               37.000000
max                        190.000000   109.000000               44.000000

       Father's qualification  …  \
count             4424.000000  …
mean                22.275316  …
std                 15.343108  …
min                  1.000000  …
25%                  3.000000  …
50%                 19.000000  …
75%                 37.000000  …
max                 44.000000  …

       Curricular units 1st sem (without evaluations)  \
count                                     4424.000000
mean                                        0.137658
std                                         0.690880
min                                         0.000000
25%                                         0.000000
50%                                         0.000000
75%                                         0.000000
max                                        12.000000

       Curricular units 2nd sem (credited)  \
count                           4424.000000
mean                               0.541817
std                                1.918546
min                                0.000000
25%                                0.000000
50%                                0.000000
75%                                0.000000
max                               19.000000

       Curricular units 2nd sem (enrolled)  \
count                           4424.000000
mean                               6.232143
std                                2.195951
min                                0.000000
25%                                5.000000
```

```
50%                                 6.000000
75%                                 7.000000
max                                23.000000

       Curricular units 2nd sem (evaluations)  \
count                             4424.000000
mean                                 8.063291
std                                  3.947951
min                                  0.000000
25%                                  6.000000
50%                                  8.000000
75%                                 10.000000
max                                 33.000000

       Curricular units 2nd sem (approved)  Curricular units 2nd sem (grade)  \
count                          4424.000000                       4424.000000
mean                              4.435805                         10.230206
std                               3.014764                          5.210808
min                               0.000000                          0.000000
25%                               2.000000                         10.750000
50%                               5.000000                         12.200000
75%                               6.000000                         13.333333
max                              20.000000                         18.571429

       Curricular units 2nd sem (without evaluations)  Unemployment rate  \
count                                     4424.000000        4424.000000
mean                                         0.150316          11.566139
std                                          0.753774           2.663850
min                                          0.000000           7.600000
25%                                          0.000000           9.400000
50%                                          0.000000          11.100000
75%                                          0.000000          13.900000
max                                         12.000000          16.200000

       Inflation rate          GDP
count     4424.000000  4424.000000
mean         1.228029     0.001969
std          1.382711     2.269935
min         -0.800000    -4.060000
25%          0.300000    -1.700000
50%          1.400000     0.320000
75%          2.600000     1.790000
max          3.700000     3.510000

[8 rows x 36 columns]
```

[4]:
```
df.head()
```

[4]:

	Marital status	Application mode	Application order	Course	\
0	1	17	5	171	
1	1	15	1	9254	
2	1	1	5	9070	
3	1	17	2	9773	
4	2	39	1	8014	

	Daytime/evening attendance\t	Previous qualification	\
0	1	1	
1	1	1	
2	1	1	
3	1	1	
4	0	1	

	Previous qualification (grade)	Nacionality	Mother's qualification	\
0	122.0	1	19	
1	160.0	1	1	
2	122.0	1	37	
3	122.0	1	38	
4	100.0	1	37	

	Father's qualification	…	Curricular units 2nd sem (credited)	\
0	12	…	0	
1	3	…	0	
2	37	…	0	
3	37	…	0	
4	38	…	0	

	Curricular units 2nd sem (enrolled)	\
0	0	
1	6	
2	6	
3	6	
4	6	

	Curricular units 2nd sem (evaluations)	\
0	0	
1	6	
2	0	
3	10	
4	6	

	Curricular units 2nd sem (approved)	Curricular units 2nd sem (grade)	\
0	0	0.000000	
1	6	13.666667	
2	0	0.000000	
3	5	12.400000	

```
4                                   6                         13.000000

   Curricular units 2nd sem (without evaluations)  Unemployment rate  \
0                                               0               10.8
1                                               0               13.9
2                                               0               10.8
3                                               0                9.4
4                                               0               13.9

   Inflation rate   GDP    Target
0             1.4  1.74   Dropout
1            -0.3  0.79  Graduate
2             1.4  1.74   Dropout
3            -0.8 -3.12  Graduate
4            -0.3  0.79  Graduate

[5 rows x 37 columns]
```

[5]:
```
df.columns
```

[5]:
```
Index(['Marital status', 'Application mode', 'Application order', 'Course',
       'Daytime/evening attendance\t', 'Previous qualification',
       'Previous qualification (grade)', 'Nacionality',
       'Mother's qualification', 'Father's qualification',
       'Mother's occupation', 'Father's occupation', 'Admission grade',
       'Displaced', 'Educational special needs', 'Debtor',
       'Tuition fees up to date', 'Gender', 'Scholarship holder',
       'Age at enrollment', 'International',
       'Curricular units 1st sem (credited)',
       'Curricular units 1st sem (enrolled)',
       'Curricular units 1st sem (evaluations)',
       'Curricular units 1st sem (approved)',
       'Curricular units 1st sem (grade)',
       'Curricular units 1st sem (without evaluations)',
       'Curricular units 2nd sem (credited)',
       'Curricular units 2nd sem (enrolled)',
       'Curricular units 2nd sem (evaluations)',
       'Curricular units 2nd sem (approved)',
       'Curricular units 2nd sem (grade)',
       'Curricular units 2nd sem (without evaluations)', 'Unemployment rate',
       'Inflation rate', 'GDP', 'Target'],
      dtype='object')
```

[6]:
```
missing_values = df.isnull().sum()
```

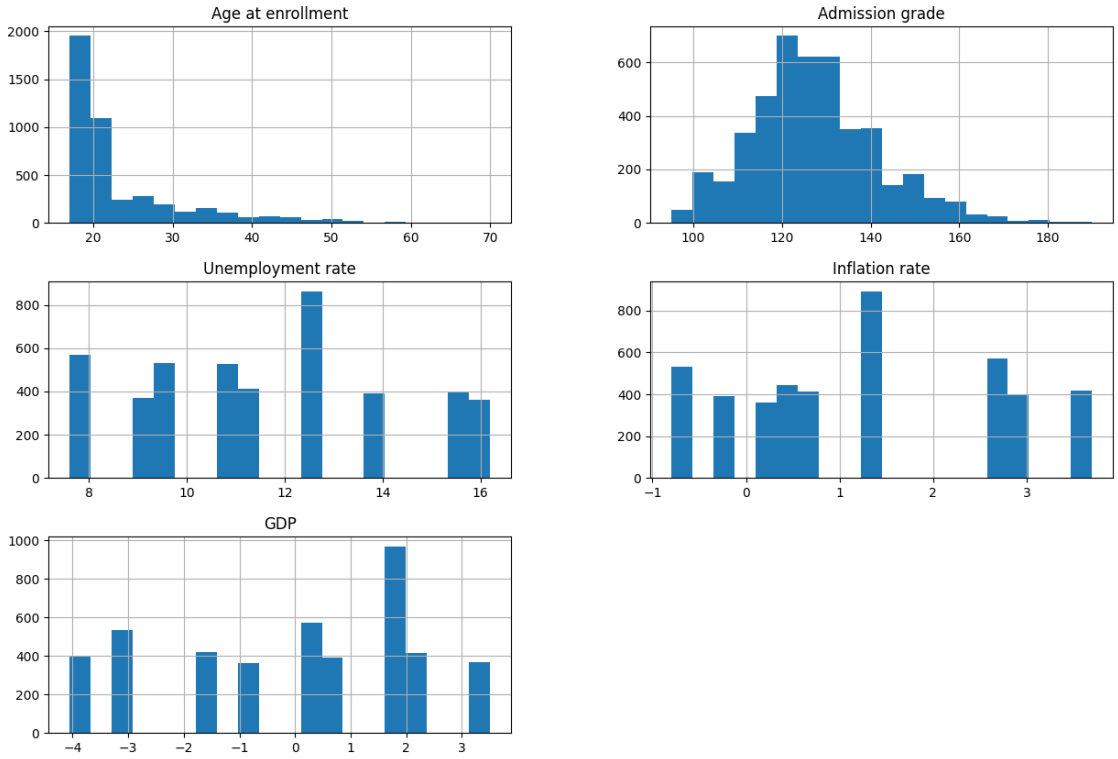
[7]:
```
```

```
categorical_vars = ['Marital status', 'Application mode', 'Daytime/evening␣
 ↪attendance\t', 'Previous qualification', 'Nacionality', 'Mother\'s␣
 ↪qualification', 'Father\'s qualification', 'Mother\'s occupation',␣
 ↪'Father\'s occupation', 'Gender', 'International']
numeric_vars = ['Age at enrollment', 'Admission grade', 'Unemployment rate',␣
 ↪'Inflation rate', 'GDP']

for var in categorical_vars:
    print(f'              {var}: {df[var].unique()}')
```

```
              Marital status: [1 2 4 3 5 6]
              Application mode: [17 15  1 39 18 53 44 51 43  7 42 16
5  2 10 57 26 27]
              Daytime/evening attendance      : [1 0]
              Previous qualification: [ 1 19 42 39 10  3 40  2  4 12
43 15  6  9 38  5 14]
              Nacionality: [  1  62   6  41  26 103  13  25  21 101
11  22  32 100  24 109   2 108
 105  14  17]
              Mother's qualification: [19  1 37 38  3  4 42  2 34 12
40  9  5 39 11 41 30 14 35 36  6 10 29 43
 18 22 27 26 44]
              Father's qualification: [12  3 37 38  1 19  5  4 34  2
39 11  9 36 26 40 14 20 35 41 22 13 29 43
 18 42 10  6 30 25 44 33 27 31]
              Mother's occupation: [  5   3   9   7   4   1 125   0
6   2  90   8 141 175  99 191 151 194
 192 132 152 134  10 143 123 173 193 122 144 131 171 153]
              Father's occupation: [  9   3   7  10   5   8   4   1
2 124   6   0  90 175 121  99 144 195
 192 161 193 151 182 132 131 194 163 135 143 171 103 172 152 183 122 102
 181 134 123 112 153 174 141 114 101 154]
              Gender: [1 0]
              International: [0 1]
```

[8]:
```
df[numeric_vars].hist(bins=20, figsize=(15, 10))
plt.show()
```



[9]:
```
df[(df['Age at enrollment']<20) & (df['Target'] == "Dropout")]
```

[9]:

	Marital status	Application mode	Application order	Course	\
2	1	1	5	9070	
9	1	1	1	9238	
12	1	1	2	9853	
40	1	1	5	9773	
68	1	1	3	9147	
…	…	…	…	…	
4358	1	43	1	9254	
4363	1	17	3	9853	
4385	1	1	1	9238	
4395	1	17	3	9773	
4420	1	1	2	9773	

	Daytime/evening attendance\t	Previous qualification	\
2	1	1	
9	1	1	
12	1	1	
40	1	1	
68	1	1	
…	…	…	
4358	1	1	

```
4363                              1                       1
4385                              1                       1
4395                              1                       1
4420                              1                       1

      Previous qualification (grade)  Nacionality  Mother's qualification  \
2                                122.0            1                      37
9                                138.0            1                       1
12                               133.0            1                      19
40                               126.0            1                       3
68                               125.0            1                       1
…                                    …          …                       …
4358                             134.0            1                      37
4363                             133.1            1                      34
4385                             122.0            1                      19
4395                             153.0            1                      34
4420                             120.0          105                       1

      Father's qualification  …  Curricular units 2nd sem (credited)  \
2                         37  …                                    0
9                         19  …                                    0
12                        37  …                                    0
40                         3  …                                    0
68                        38  …                                    0
…                      …  …                                    …
4358                      37  …                                    0
4363                      34  …                                    0
4385                      19  …                                    0
4395                      34  …                                    0
4420                       1  …                                    0

      Curricular units 2nd sem (enrolled)  \
2                                       6
9                                       6
12                                      6
40                                      5
68                                      5
…                                     …
4358                                    6
4363                                    6
4385                                    6
4395                                    6
4420                                    6

      Curricular units 2nd sem (evaluations)  \
2                                          0
9                                         14
```

```
12                                        0
40                                        5
68                                       10
…                                         …
4358                                     13
4363                                     13
4385                                      0
4395                                      8
4420                                      6

      Curricular units 2nd sem (approved)  Curricular units 2nd sem (grade)  \
2                                       0                             0.00
9                                       2                            13.50
12                                      0                             0.00
40                                      0                             0.00
68                                      4                            10.75
…                                       …                             …
4358                                    1                            11.00
4363                                    0                             0.00
4385                                    0                             0.00
4395                                    5                            12.40
4420                                    2                            11.00

      Curricular units 2nd sem (without evaluations)  Unemployment rate  \
2                                                  0               10.8
9                                                  0                8.9
12                                                 0               12.7
40                                                 0               12.7
68                                                 3               16.2
…                                                  …                …
4358                                               0                7.6
4363                                               0                7.6
4385                                               0               12.4
4395                                               0                9.4
4420                                               0               11.1

      Inflation rate   GDP   Target
2                1.4  1.74  Dropout
9                1.4  3.51  Dropout
12               3.7 -1.70  Dropout
40               3.7 -1.70  Dropout
68               0.3 -0.92  Dropout
…                …   …      …
4358             2.6  0.32  Dropout
4363             2.6  0.32  Dropout
4385             0.5  1.79  Dropout
4395            -0.8 -3.12  Dropout
```

```
4420             0.6  2.02  Dropout

[409 rows x 37 columns]
```

[10]:
```
df[df['Age at enrollment'] > 25].__len__()
```

[10]:
```
1045
```

[11]:
```
df[(df['Age at enrollment'] > 50) & (df["Target"]=="Graduate")]
```

[11]:

	Marital status	Application mode	Application order	Course	\
707	2	39	1	9003	
725	4	7	1	9500	
744	1	39	1	9773	
768	2	39	1	8014	
887	1	43	2	9238	
1532	2	15	1	9773	
1552	1	7	1	9147	
1630	2	39	1	9130	
1632	2	39	1	9991	
2401	2	39	1	9991	
2447	2	39	1	9254	
2456	1	39	1	9070	
2661	2	39	1	9773	
2867	1	39	1	9003	
2884	1	7	1	9003	
2959	5	39	1	9254	
2969	1	39	1	9670	
3756	1	39	1	8014	
3807	1	39	1	8014	

	Daytime/evening attendance\t	Previous qualification	\
707	1	1	
725	1	3	
744	1	12	
768	0	1	
887	1	1	
1532	1	1	
1552	1	40	
1630	1	19	
1632	0	12	
2401	0	1	
2447	1	19	
2456	1	1	
2661	1	38	
2867	1	19	
2884	1	3	

```
2959                              1                       1
2969                              1                       1
3756                              0                       1
3807                              0                      19

      Previous qualification (grade)  Nacionality  Mother's qualification  \
707                            150.0            1                      37
725                            140.0            1                      37
744                            120.0            1                       1
768                            133.1            1                      37
887                            110.0            1                      37
1532                           133.1           41                      37
1552                           110.0            1                      37
1630                           133.1            1                      37
1632                           133.1            1                      37
2401                           140.0            1                      37
2447                           133.1            1                      37
2456                           110.0            1                      37
2661                           100.0            1                      37
2867                           133.1            1                      37
2884                           120.0            1                      37
2959                           133.1            1                       2
2969                           130.0            1                      19
3756                           130.0            1                      37
3807                           149.0            1                      34

      Father's qualification  …  Curricular units 2nd sem (credited)  \
707                       37  …                                   11
725                       38  …                                    6
744                        1  …                                    0
768                       37  …                                    2
887                       37  …                                    2
1532                      37  …                                    0
1552                      37  …                                    9
1630                      38  …                                    0
1632                      37  …                                    0
2401                      37  …                                    0
2447                      19  …                                    4
2456                      37  …                                    0
2661                      37  …                                    0
2867                      37  …                                    0
2884                      37  …                                    5
2959                       2  …                                    0
2969                       3  …                                    0
3756                      37  …                                    0
3807                      34  …                                    1
```

```
      Curricular units 2nd sem (enrolled)  \
707                                    13
725                                     8
744                                     6
768                                     7
887                                     7
1532                                    6
1552                                   12
1630                                    5
1632                                    5
2401                                    5
2447                                    9
2456                                    6
2661                                    6
2867                                    6
2884                                   12
2959                                    6
2969                                    6
3756                                    6
3807                                    6

      Curricular units 2nd sem (evaluations)  \
707                                      13
725                                       8
744                                       6
768                                       7
887                                       9
1532                                      7
1552                                     16
1630                                      8
1632                                      5
2401                                      6
2447                                     10
2456                                      6
2661                                      6
2867                                      6
2884                                     15
2959                                     10
2969                                      9
3756                                     10
3807                                      6

      Curricular units 2nd sem (approved)  Curricular units 2nd sem (grade)  \
707                                    13                         14.230769
725                                     8                         16.575000
744                                     6                         15.000000
768                                     7                         13.857143
```

887	7	11.000000
1532	4	11.750000
1552	12	10.923077
1630	4	11.750000
1632	5	14.200000
2401	5	12.800000
2447	3	10.000000
2456	6	13.500000
2661	6	14.166667
2867	4	14.750000
2884	12	15.230769
2959	6	12.833333
2969	5	14.200000
3756	5	11.600000
3807	6	12.833333

	Curricular units 2nd sem (without evaluations)	Unemployment rate	\
707	0	15.5	
725	0	13.9	
744	0	9.4	
768	0	8.9	
887	0	9.4	
1532	0	11.1	
1552	0	13.9	
1630	0	9.4	
1632	0	7.6	
2401	1	7.6	
2447	4	16.2	
2456	0	11.1	
2661	0	9.4	
2867	0	13.9	
2884	0	15.5	
2959	0	10.8	
2969	0	12.4	
3756	0	9.4	
3807	0	7.6	

	Inflation rate	GDP	Target
707	2.8	-4.06	Graduate
725	-0.3	0.79	Graduate
744	-0.8	-3.12	Graduate
768	1.4	3.51	Graduate
887	-0.8	-3.12	Graduate
1532	0.6	2.02	Graduate
1552	-0.3	0.79	Graduate
1630	-0.8	-3.12	Graduate
1632	2.6	0.32	Graduate

```
2401             2.6  0.32  Graduate
2447             0.3 -0.92  Graduate
2456             0.6  2.02  Graduate
2661            -0.8 -3.12  Graduate
2867            -0.3  0.79  Graduate
2884             2.8 -4.06  Graduate
2959             1.4  1.74  Graduate
2969             0.5  1.79  Graduate
3756            -0.8 -3.12  Graduate
3807             2.6  0.32  Graduate

[19 rows x 37 columns]
```

[12]:
```
df.groupby('Marital status')['Age at enrollment'].mean()
```

[12]:
```
Marital status
1    21.525644
2    36.720317
3    33.000000
4    38.395604
5    30.880000
6    41.833333
Name: Age at enrollment, dtype: float64
```

[13]:
```
df[df['International'] == 1]
```

[13]:
```
      Marital status  Application mode  Application order  Course  \
8                  1                 1                  3    9238
39                 1                44                  1    9130
91                 1                17                  2    9773
92                 1                15                  1    9130
95                 1                15                  1    9119
…                …                …                  …      …
4318               1                 1                  1     171
4320               1                15                  1    9147
4322               1                 1                  1    9773
4420               1                 1                  2    9773
4423               1                10                  1    9773

      Daytime/evening attendance\t  Previous qualification  \
8                                1                       1
39                               1                      39
91                               1                       1
92                               1                       1
95                               1                       1
…                              …                       …
4318                             1                       1
```

```
4320                              1                       1
4322                              1                       1
4420                              1                       1
4423                              1                       1

      Previous qualification (grade)  Nacionality  Mother's qualification  \
8                                137.0           62                       1
39                               120.0            6                       4
91                               133.1           41                      19
92                               133.1           41                       1
95                               130.0           26                      38
…                                    …          …                       …
4318                             161.0           41                       1
4320                             135.0           26                       1
4322                             124.0           17                       1
4420                             120.0          105                       1
4423                             152.0           22                      38

      Father's qualification  …  Curricular units 2nd sem (credited)  \
8                          1  …                                    0
39                         4  …                                    1
91                         1  …                                    0
92                         1  …                                    0
95                         3  …                                    0
…                        …  …                                    …
4318                       1  …                                    4
4320                       1  …                                    0
4322                       1  …                                    0
4420                       1  …                                    0
4423                      37  …                                    0

      Curricular units 2nd sem (enrolled)  \
8                                       6
39                                      6
91                                      6
92                                      6
95                                      5
…                                       …
4318                                   11
4320                                    5
4322                                    6
4420                                    6
4423                                    6

      Curricular units 2nd sem (evaluations)  \
8                                          7
39                                        11
```

```
91                                          6
92                                          6
95                                         11
…                                           …
4318                                       12
4320                                        8
4322                                        6
4420                                        6
4423                                        6

      Curricular units 2nd sem (approved)  Curricular units 2nd sem (grade)  \
8                                       6                         14.142857
39                                      3                         12.000000
91                                      6                         13.500000
92                                      0                          0.000000
95                                      3                         13.250000
…                                       …                               …
4318                                   11                         15.000000
4320                                    4                         11.250000
4322                                    4                         11.750000
4420                                    2                         11.000000
4423                                    6                         13.000000

      Curricular units 2nd sem (without evaluations)  Unemployment rate  \
8                                                  0               16.2
39                                                 0               12.4
91                                                 0                8.9
92                                                 0                8.9
95                                                 0               13.9
…                                                  …                 …
4318                                               0                8.9
4320                                               0                8.9
4322                                               0               16.2
4420                                               0               11.1
4423                                               0               12.7

      Inflation rate   GDP    Target
8                0.3 -0.92  Graduate
39               0.5  1.79   Dropout
91               1.4  3.51  Graduate
92               1.4  3.51   Dropout
95              -0.3  0.79  Enrolled
…                  …   …        …
4318             1.4  3.51  Graduate
4320             1.4  3.51  Enrolled
4322             0.3 -0.92   Dropout
4420             0.6  2.02   Dropout
```

```
4423            3.7 -1.70  Graduate

[110 rows x 37 columns]
```

[14]:
```
df[df['Target'] == "Graduate"]
```

[14]:

	Marital status	Application mode	Application order	Course	\
1	1	15	1	9254	
3	1	17	2	9773	
4	2	39	1	8014	
5	2	39	1	9991	
6	1	1	1	9500	
…	…	…	…	…	
4417	1	1	1	9070	
4418	1	44	1	9070	
4419	1	1	6	9773	
4422	1	1	1	9147	
4423	1	10	1	9773	

	Daytime/evening attendance\t	Previous qualification	\
1	1	1	
3	1	1	
4	0	1	
5	0	19	
6	1	1	
…	…	…	
4417	1	1	
4418	1	39	
4419	1	1	
4422	1	1	
4423	1	1	

	Previous qualification (grade)	Nacionality	Mother's qualification	\
1	160.0	1	1	
3	122.0	1	38	
4	100.0	1	37	
5	133.1	1	37	
6	142.0	1	19	
…	…	…	…	
4417	132.0	1	1	
4418	120.0	1	3	
4419	125.0	1	1	
4422	180.0	1	37	
4423	152.0	22	38	

	Father's qualification	…	Curricular units 2nd sem (credited)	\
1	3	…	0	

```
3                          37  …                                    0
4                          38  …                                    0
5                          37  …                                    0
6                          38  …                                    0
…                        …  …                                  …
4417                        1  …                                    0
4418                       38  …                                    5
4419                        1  …                                    0
4422                       37  …                                    0
4423                       37  …                                    0

      Curricular units 2nd sem (enrolled)  \
1                                        6
3                                        6
4                                        6
5                                        5
6                                        8
…                                      …
4417                                     6
4418                                     9
4419                                     6
4422                                     5
4423                                     6

      Curricular units 2nd sem (evaluations)  \
1                                           6
3                                          10
4                                           6
5                                          17
6                                           8
…                                         …
4417                                        6
4418                                       10
4419                                        8
4422                                        6
4423                                        6

      Curricular units 2nd sem (approved)  Curricular units 2nd sem (grade)  \
1                                        6                          13.666667
3                                        5                          12.400000
4                                        6                          13.000000
5                                        5                          11.500000
6                                        8                          14.345000
…                                      …                                …
4417                                     6                          13.500000
4418                                     7                          13.142857
4419                                     5                          12.666667
```

```
4422                                    5                        12.000000
4423                                    6                        13.000000

      Curricular units 2nd sem (without evaluations)  Unemployment rate  \
1                                                  0               13.9
3                                                  0                9.4
4                                                  0               13.9
5                                                  5               16.2
6                                                  0               15.5
…                                                  …                  …
4417                                               0               16.2
4418                                               1               16.2
4419                                               0               15.5
4422                                               0                9.4
4423                                               0               12.7

      Inflation rate   GDP    Target
1               -0.3  0.79  Graduate
3               -0.8 -3.12  Graduate
4               -0.3  0.79  Graduate
5                0.3 -0.92  Graduate
6                2.8 -4.06  Graduate
…                …   …        …
4417             0.3 -0.92  Graduate
4418             0.3 -0.92  Graduate
4419             2.8 -4.06  Graduate
4422            -0.8 -3.12  Graduate
4423             3.7 -1.70  Graduate

[2209 rows x 37 columns]
```

[15]:
```
df.groupby('Previous qualification')['Admission grade'].max()
```

[15]:
```
Previous qualification
1     190.0
2     155.7
3     184.0
4     190.0
5     140.0
6     145.0
9     128.2
10    128.8
12    160.0
14    100.0
15    101.0
19    170.0
38    154.0
```

```
39    180.0
40    190.0
42    170.0
43    180.0
Name: Admission grade, dtype: float64
```

[16]:
```
df.groupby(['Marital status'])
```

[16]:
```
<pandas.core.groupby.generic.DataFrameGroupBy object at 0x7f9338394dd0>
```

[26]:
```
st.title('Student Data Analysis')

st.subheader('Raw Data')
st.write(df)

analysis_option = st.sidebar.selectbox('Choose Analysis', ['Descriptive␣
 ↪Statistics', 'Correlation Analysis', 'Distribution Analysis'])

if analysis_option == 'Descriptive Statistics':
    st.subheader('Descriptive Statistics')
    st.write(df.describe())

elif analysis_option == 'Correlation Analysis':
    st.subheader('Correlation Analysis')
    correlation_matrix = df.corr()
    sns.heatmap(correlation_matrix, annot=True, cmap='coolwarm')
    st.pyplot()

elif analysis_option == 'Distribution Analysis':
    st.subheader('Distribution Analysis')
    selected_column = st.sidebar.selectbox('Select Column', df.columns)
    st.write(f'Distribution of {selected_column}')
    sns.histplot(df[selected_column], kde=True)
    st.pyplot()


st.subheader('Target Variable Distribution')
st.write(df['Target'].value_counts())
```

1 Student Data Analysis

1.0.1 Raw Data

	Marital status	Application mode	Application order	Course	\
0	1	17	5	171	
1	1	15	1	9254	
2	1	1	5	9070	
3	1	17	2	9773	

```
4                  2                39                   1    8014
…                …                …                    …      …
4419               1                 1                   6    9773
4420               1                 1                   2    9773
4421               1                 1                   1    9500
4422               1                 1                   1    9147
4423               1                10                   1    9773

      Daytime/evening attendance\t  Previous qualification  \
0                                1                       1
1                                1                       1
2                                1                       1
3                                1                       1
4                                0                       1
…                              …                       …
4419                             1                       1
4420                             1                       1
4421                             1                       1
4422                             1                       1
4423                             1                       1

      Previous qualification (grade)  Nacionality  Mother's qualification  \
0                              122.0            1                      19
1                              160.0            1                       1
2                              122.0            1                      37
3                              122.0            1                      38
4                              100.0            1                      37
…                                …          …                       …
4419                           125.0            1                       1
4420                           120.0          105                       1
4421                           154.0            1                      37
4422                           180.0            1                      37
4423                           152.0           22                      38

      Father's qualification  …  Curricular units 2nd sem (credited)  \
0                         12  …                                    0
1                          3  …                                    0
2                         37  …                                    0
3                         37  …                                    0
4                         38  …                                    0
…                       …  …                                    …
4419                       1  …                                    0
4420                       1  …                                    0
4421                      37  …                                    0
4422                      37  …                                    0
4423                      37  …                                    0

      Curricular units 2nd sem (enrolled)  \
```

```
0                                       0
1                                       6
2                                       6
3                                       6
4                                       6
…                                     …
4419                                    6
4420                                    6
4421                                    8
4422                                    5
4423                                    6

      Curricular units 2nd sem (evaluations)  \
0                                          0
1                                          6
2                                          0
3                                         10
4                                          6
…                                        …
4419                                       8
4420                                       6
4421                                       9
4422                                       6
4423                                       6

      Curricular units 2nd sem (approved)  Curricular units 2nd sem (grade)  \
0                                       0                          0.000000
1                                       6                         13.666667
2                                       0                          0.000000
3                                       5                         12.400000
4                                       6                         13.000000
…                                     …                             …
4419                                    5                         12.666667
4420                                    2                         11.000000
4421                                    1                         13.500000
4422                                    5                         12.000000
4423                                    6                         13.000000

      Curricular units 2nd sem (without evaluations)  Unemployment rate  \
0                                                  0               10.8
1                                                  0               13.9
2                                                  0               10.8
3                                                  0                9.4
4                                                  0               13.9
…                                                …                 …
4419                                               0               15.5
4420                                               0               11.1
4421                                               0               13.9
```

```
4422                                                 0                9.4
4423                                                 0               12.7

      Inflation rate   GDP    Target
0                1.4  1.74   Dropout
1               -0.3  0.79  Graduate
2                1.4  1.74   Dropout
3               -0.8 -3.12  Graduate
4               -0.3  0.79  Graduate
…                …    …        …
4419             2.8 -4.06  Graduate
4420             0.6  2.02   Dropout
4421            -0.3  0.79   Dropout
4422            -0.8 -3.12  Graduate
4423             3.7 -1.70  Graduate

[4424 rows x 37 columns]
```

1.0.2 Descriptive Statistics

```
       Marital status  Application mode  Application order       Course  \
count     4424.000000       4424.000000        4424.000000  4424.000000
mean         1.178571         18.669078           1.727848  8856.642631
std          0.605747         17.484682           1.313793  2063.566416
min          1.000000          1.000000           0.000000    33.000000
25%          1.000000          1.000000           1.000000  9085.000000
50%          1.000000         17.000000           1.000000  9238.000000
75%          1.000000         39.000000           2.000000  9556.000000
max          6.000000         57.000000           9.000000  9991.000000

       Daytime/evening attendance\t  Previous qualification  \
count                   4424.000000             4424.000000
mean                       0.890823                4.577758
std                        0.311897               10.216592
min                        0.000000                1.000000
25%                        1.000000                1.000000
50%                        1.000000                1.000000
75%                        1.000000                1.000000
max                        1.000000               43.000000

       Previous qualification (grade)  Nacionality  Mother's qualification  \
count                     4424.000000  4424.000000             4424.000000
mean                       132.613314     1.873192               19.561935
std                         13.188332     6.914514               15.603186
min                         95.000000     1.000000                1.000000
25%                        125.000000     1.000000                2.000000
50%                        133.100000     1.000000               19.000000
75%                        140.000000     1.000000               37.000000
```

```
max                        190.000000   109.000000                44.000000

       Father's qualification  …  \
count             4424.000000  …
mean                22.275316  …
std                 15.343108  …
min                  1.000000  …
25%                  3.000000  …
50%                 19.000000  …
75%                 37.000000  …
max                 44.000000  …

       Curricular units 1st sem (without evaluations)  \
count                                     4424.000000
mean                                         0.137658
std                                          0.690880
min                                          0.000000
25%                                          0.000000
50%                                          0.000000
75%                                          0.000000
max                                         12.000000

       Curricular units 2nd sem (credited)  \
count                           4424.000000
mean                               0.541817
std                                1.918546
min                                0.000000
25%                                0.000000
50%                                0.000000
75%                                0.000000
max                               19.000000

       Curricular units 2nd sem (enrolled)  \
count                           4424.000000
mean                               6.232143
std                                2.195951
min                                0.000000
25%                                5.000000
50%                                6.000000
75%                                7.000000
max                               23.000000

       Curricular units 2nd sem (evaluations)  \
count                              4424.000000
mean                                  8.063291
std                                   3.947951
min                                   0.000000
25%                                   6.000000
```

```
50%                                     8.000000
75%                                    10.000000
max                                    33.000000

       Curricular units 2nd sem (approved)  Curricular units 2nd sem (grade)  \
count                          4424.000000                       4424.000000
mean                              4.435805                         10.230206
std                               3.014764                          5.210808
min                               0.000000                          0.000000
25%                               2.000000                         10.750000
50%                               5.000000                         12.200000
75%                               6.000000                         13.333333
max                              20.000000                         18.571429

       Curricular units 2nd sem (without evaluations)  Unemployment rate  \
count                                     4424.000000        4424.000000
mean                                         0.150316          11.566139
std                                          0.753774           2.663850
min                                          0.000000           7.600000
25%                                          0.000000           9.400000
50%                                          0.000000          11.100000
75%                                          0.000000          13.900000
max                                         12.000000          16.200000

       Inflation rate          GDP
count     4424.000000  4424.000000
mean         1.228029     0.001969
std          1.382711     2.269935
min         -0.800000    -4.060000
25%          0.300000    -1.700000
50%          1.400000     0.320000
75%          2.600000     1.790000
max          3.700000     3.510000

[8 rows x 36 columns]
```

1.0.3 Target Variable Distribution

```
Target
Graduate    2209
Dropout     1421
Enrolled     794
Name: count, dtype: int64
```

[28]:
```
st.subheader('Bar Charts')

st.write('Courses')
course_counts = df['Course'].value_counts()
```

```
st.bar_chart(course_counts)

st.write('Gender')
gender_counts = df['Gender'].value_counts()
st.bar_chart(gender_counts)

st.subheader('Target Variable Distribution')
st.write(df['Target'].value_counts())

st.write('Bar Chart for Age Distribution')
age_counts = df['Age at enrollment'].value_counts()
st.bar_chart(age_counts)
```

1.0.4 Bar Charts

Courses

Gender

1.0.5 Target Variable Distribution

```
Target
Graduate    2209
Dropout     1421
Enrolled     794
Name: count, dtype: int64
```

Bar Chart for Age Distribution

[28]:
```
DeltaGenerator()
```

[ ]:
```

```