

## cleaning\_\_process

May 19, 2025

```
[1]: import pandas as pd

#reads csv file and initializes first row as headers and first column as index_
↳column
df = pd.read_csv(r"uncleaned_student_depression_dataset.csv",index_col=
↳0,header = 0 )
```

```
[2]: print(df.shape)
```

(27902, 17)

```
[3]: #creates a new index column and keeps the old 'id' column too
df.reset_index(inplace=True)

#changes the name of new index column to 'serial number'
df.index.name = 'Serial Number'

df.info()
```

<class 'pandas.core.frame.DataFrame'>

RangeIndex: 27902 entries, 0 to 27901

Data columns (total 18 columns):

#	Column	Non-Null Count	Dtype
0	id	27902 non-null	int64
1	Gender	27902 non-null	object
2	Age	27902 non-null	int64
3	City	27902 non-null	object
4	Profession	27902 non-null	object
5	Academic Pressure	27902 non-null	int64
6	Work Pressure	27902 non-null	int64
7	CGPA	27902 non-null	float64
8	Study Satisfaction	27902 non-null	int64
9	Job Satisfaction	27902 non-null	int64
10	Sleep Duration	27902 non-null	object
11	Dietary Habits	27902 non-null	object
12	Degree	27902 non-null	object
13	Have you ever had suicidal thoughts ?	27902 non-null	object
14	Work/Study Hours	27902 non-null	int64

```

15 Financial Stress                27902 non-null object
16 Family History of Mental Illness 27902 non-null object
17 Depression                      27902 non-null int64
dtypes: float64(1), int64(8), object(9)
memory usage: 3.8+ MB

```

```

[4]: #first five rows of the dataframe
df.head()

```

```

[4]:
      id Gender Age      City Profession Academic Pressure \
Serial Number
0      1   Male  19      Delhi   Student              4
1      2   Male  33 Visakhapatnam Student              5
2      8  Female  24    Bangalore Student              2
3     26   Male  31    Srinagar   Student              3
4     30  Female  28    Varanasi   Student              3

```

```

      Work Pressure  CGPA  Study Satisfaction  Job Satisfaction \
Serial Number
0              0  6.00              3              0
1              0  8.97              2              0
2              0  5.90              5              0
3              0  7.03              5              0
4              0  5.59              2              0

```

```

      Sleep Duration Dietary Habits  Degree \
Serial Number
0      '6-7 hours'      Moderate   B.Com
1      '5-6 hours'      Healthy   B.Pharm
2      '5-6 hours'      Moderate   BSc
3  'Less than 5 hours'      Healthy   BA
4      '7-8 hours'      Moderate   BCA

```

```

      Have you ever had suicidal thoughts ?  Work/Study Hours \
Serial Number
0              Yes              8
1              Yes              3
2              No              3
3              No              9
4              Yes              4

```

```

      Financial Stress Family History of Mental Illness  Depression
Serial Number
0              4              No              1
1              1              No              1
2              2              Yes              0
3              1              Yes              0

```

4	5	Yes	1
---	---	-----	---

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

```
[5]:
```

	id	Age	Academic Pressure	Work Pressure \
count	27902.000000	27902.000000	27902.000000	27902.000000
mean	70439.624830	25.822056	3.141244	0.000430
std	40642.634749	4.905770	1.381450	0.043991
min	1.000000	18.000000	0.000000	0.000000
25%	35035.250000	21.000000	2.000000	0.000000
50%	70673.000000	25.000000	3.000000	0.000000
75%	105817.000000	30.000000	4.000000	0.000000
max	140699.000000	59.000000	5.000000	5.000000

  

	CGPA	Study Satisfaction	Job Satisfaction	Work/Study Hours \
count	27902.000000	27902.000000	27902.000000	27902.000000
mean	7.656045	2.943839	0.000681	7.157014
std	1.470714	1.361124	0.044394	3.707579
min	0.000000	0.000000	0.000000	0.000000
25%	6.290000	2.000000	0.000000	4.000000
50%	7.770000	3.000000	0.000000	8.000000
75%	8.920000	4.000000	0.000000	10.000000
max	10.000000	5.000000	4.000000	12.000000

  

	Depression
count	27902.000000
mean	0.585514
std	0.492642
min	0.000000
25%	0.000000
50%	1.000000
75%	1.000000
max	1.000000

```
[6]: df['Gender'].nunique()
```

```
[6]: 2
```

```
[7]: df['Gender'].unique()
```

```
[7]: array(['Male', 'Female'], dtype=object)
```

```
[8]: df['Gender'].value_counts()
```

```
[8]: Gender
Male      15548
Female    12354
Name: count, dtype: int64
```

```
[9]: df['Age'].nunique()
```

```
[9]: 34
```

```
[10]: df['Age'].unique()
```

```
[10]: array([19, 33, 24, 31, 28, 25, 29, 30, 27, 20, 23, 18, 21, 22, 34, 32, 26,  
        39, 35, 42, 36, 58, 49, 38, 51, 44, 43, 46, 59, 54, 48, 56, 37, 41])
```

```
[11]: df['Age'].value_counts()
```

```
[11]: Age  
24      2258  
20      2237  
28      2133  
29      1950  
33      1893  
25      1784  
21      1726  
23      1645  
18      1587  
19      1561  
34      1468  
27      1462  
31      1427  
32      1262  
22      1160  
26      1155  
30      1145  
35         10  
38          8  
36          7  
42          4  
48          3  
39          3  
43          2  
46          2  
37          2  
49          1  
51          1  
44          1  
59          1  
54          1  
58          1  
56          1  
41          1  
Name: count, dtype: int64
```

```
[12]: df['City'].nunique()
```

```
[12]: 51
```

```
[13]: df['City'].unique()
```

```
[13]: array(['Delhi', 'Visakhapatnam', 'Bangalore', 'Srinagar', 'Varanasi',  
        'Jaipur', 'Pune', 'Thane', 'Chennai', 'Nagpur', 'Nashik',  
        'Vadodara', 'Kalyan', 'Rajkot', 'Ahmedabad', 'Kolkata', 'Mumbai',  
        'Lucknow', 'Indore', 'Surat', 'Ludhiana', 'Bhopal', 'Meerut',  
        'Agra', 'Ghaziabad', 'Hyderabad', 'Vasai-Virar', 'Kanpur', 'Patna',  
        'Faridabad', 'Saanvi', 'M.Tech', 'Bhavna', 'City', '3',  
        "'Less than 5 Kalyan'", 'Mira', 'Harsha', 'Vaanya', 'Gaurav',  
        'Harsh', 'Reyansh', 'Kibara', 'Rashi', 'ME', 'M.Com', 'Nalyan',  
        'Mihir', 'Nalini', 'Nandini', 'Khaziabad'], dtype=object)
```

```
[14]: df['City'].value_counts()
```

```
[14]: City  
Kalyan                1570  
Srinagar              1372  
Hyderabad             1340  
Vasai-Virar          1290  
Lucknow              1155  
Thane                 1139  
Ludhiana              1111  
Agra                  1094  
Surat                 1078  
Kolkata               1066  
Jaipur                1036  
Patna                 1007  
Visakhapatnam         969  
Pune                  968  
Ahmedabad             951  
Bhopal                934  
Chennai               885  
Meerut                825  
Rajkot                816  
Delhi                 770  
Bangalore             767  
Ghaziabad             745  
Mumbai                699  
Vadodara              694  
Varanasi              685  
Nagpur                651  
Indore                643  
Kanpur                609
```

Nashik	547
Faridabad	461
Harsha	2
Saanvi	2
Bhavna	2
City	2
ME	1
M.Com	1
Nalyan	1
Nandini	1
Mihir	1
Nalini	1
Kibara	1
Rashi	1
'Less than 5 Kalyan'	1
Reyansh	1
Harsh	1
Gaurav	1
Vaanya	1
Mira	1
3	1
M.Tech	1
Khaziabad	1

Name: count, dtype: int64

```
[15]: #incorrect values in the 'City' column which cannot be fixed
unwanted = ['Saarvi', 'M.Tech', 'Bhavna', 'City', '3',
            "'Less than 5 Kalyan'", 'Mira', 'Harsha', 'Vaanya', 'Gaurav',
            'Harsh', 'Reyansh', 'Kibara', 'Rashi', 'ME', 'M.Com', 'Nalyan',
            'Mihir', 'Nalini', 'Nandini']

#drops all the incorrect values which cannot be fixed
df.drop(df[df['City'].isin(unwanted)].index, inplace = True)

#fixes the fixabel incorrect values in 'City' column
df['City'] = df['City'].apply(lambda x : 'Ghaziabad' if x == 'Khaziabad' else x)
```

```
[16]: df['Profession'].nunique()
```

```
[16]: 14
```

```
[17]: df['Profession'].unique()
```

```
[17]: array(['Student', "'Civil Engineer'", 'Architect', "'UX/UI Designer'",
        "'Digital Marketer'", "'Content Writer'",
        "'Educational Consultant'", 'Teacher', 'Manager', 'Chef', 'Doctor',
        'Lawyer', 'Entrepreneur', 'Pharmacist'], dtype=object)
```

```
[18]: df['Profession'].value_counts()
```

```
[18]: Profession
Student                27847
Architect              8
Teacher                6
'Digital Marketer'     3
'Content Writer'       2
Chef                  2
Doctor                2
Pharmacist            2
'Civil Engineer'      1
'UX/UI Designer'      1
'Educational Consultant' 1
Manager              1
Lawyer               1
Entrepreneur         1
Name: count, dtype: int64
```

```
[19]: df['Academic Pressure'].nunique()
```

```
[19]: 6
```

```
[20]: df['Academic Pressure'].unique()
```

```
[20]: array([4, 5, 2, 3, 1, 0])
```

```
[21]: df['Academic Pressure'].value_counts()
```

```
[21]: Academic Pressure
3    7454
5    6293
4    5152
1    4797
2    4173
0         9
Name: count, dtype: int64
```

```
[22]: df['Work Pressure'].nunique()
```

```
[22]: 3
```

```
[23]: df['Work Pressure'].unique()
```

```
[23]: array([0, 5, 2])
```

```
[24]: df['Work Pressure'].value_counts()
```

```
[24]: Work Pressure
0    27875
5         2
2         1
Name: count, dtype: int64
```

```
[25]: df['CGPA'].nunique()
```

```
[25]: 332
```

```
[26]: df['CGPA'].unique()
```

```
[26]: array([ 6.    ,  8.97 ,  5.9   ,  7.03 ,  5.59 ,  8.13 ,  5.7   ,
        9.54 ,  8.04 ,  9.79 ,  8.38 ,  6.1   ,  7.04 ,  8.52 ,
        5.64 ,  8.58 ,  6.51 ,  7.25 ,  7.83 ,  9.93 ,  8.74 ,
        6.73 ,  5.57 ,  8.59 ,  7.1   ,  6.08 ,  5.74 ,  9.86 ,
        6.7   ,  6.21 ,  5.87 ,  6.37 ,  9.72 ,  5.88 ,  9.56 ,
        6.99 ,  5.24 ,  9.21 ,  7.85 ,  6.95 ,  5.86 ,  7.92 ,
        9.66 ,  8.94 ,  9.71 ,  7.87 ,  5.6   ,  7.9   ,  5.46 ,
        6.79 ,  8.7   ,  7.38 ,  8.5   ,  7.09 ,  9.82 ,  8.89 ,
        7.94 ,  9.11 ,  6.75 ,  7.53 ,  9.49 ,  9.01 ,  7.64 ,
        5.27 ,  9.44 ,  5.75 ,  7.51 ,  9.05 ,  6.38 ,  8.95 ,
        9.88 ,  5.32 ,  6.27 ,  7.7   ,  8.1   ,  9.59 ,  8.96 ,
        5.51 ,  7.43 ,  8.79 ,  9.95 ,  5.37 ,  6.86 ,  8.32 ,
        9.74 ,  5.66 ,  7.48 ,  8.23 ,  8.81 ,  6.03 ,  5.56 ,
        5.68 ,  5.14 ,  7.61 ,  6.17 ,  8.17 ,  9.87 ,  8.75 ,
        6.16 ,  9.5   ,  7.99 ,  5.67 ,  8.92 ,  6.19 ,  5.76 ,
        6.25 ,  5.11 ,  5.58 ,  5.65 ,  9.89 ,  8.03 ,  6.61 ,
        9.41 ,  8.64 ,  7.21 ,  8.28 ,  6.04 ,  9.13 ,  8.08 ,
        9.96 ,  5.12 ,  8.35 ,  7.07 ,  9.6   ,  9.24 ,  8.54 ,
        8.78 ,  8.93 ,  8.91 ,  9.04 ,  6.83 ,  5.85 ,  7.74 ,
        6.41 ,  8.9   ,  7.75 ,  7.88 ,  5.42 ,  7.52 ,  7.68 ,
        8.4   ,  9.39 ,  6.84 ,  5.99 ,  8.62 ,  8.53 ,  7.47 ,
        6.78 ,  6.42 ,  9.92 ,  8.39 ,  5.89 ,  7.22 ,  6.81 ,
        9.02 ,  9.97 ,  9.63 ,  9.67 ,  5.41 ,  7.27 ,  6.05 ,
        6.85 ,  9.33 ,  5.81 ,  6.53 ,  5.98 ,  6.02 ,  6.74 ,
        5.26 ,  7.72 ,  7.39 ,  8.43 ,  9.34 ,  5.44 ,  5.82 ,
        5.72 ,  8.19 ,  8.44 ,  8.98 ,  9.37 ,  5.8   ,  7.28 ,
        7.6   ,  7.91 ,  9.17 ,  7.46 ,  9.43 ,  9.91 ,  9.36 ,
        5.16 ,  7.08 ,  9.26 ,  8.83 , 10.    ,  7.8   ,  9.46 ,
        6.63 ,  7.24 ,  6.47 ,  7.77 ,  5.06 ,  7.17 ,  8.24 ,
        6.88 ,  9.03 ,  5.08 ,  5.45 ,  8.46 ,  9.19 ,  6.36 ,
        8.73 ,  7.11 ,  9.12 ,  9.4   ,  8.11 ,  9.98 ,  5.55 ,
        8.61 ,  8.14 ,  6.89 ,  9.84 ,  5.48 ,  8.21 ,  7.82 ,
        8.55 ,  5.79 ,  8.77 ,  8.29 ,  6.92 ,  7.37 ,  9.7   ,
        6.26 ,  7.26 ,  7.5   ,  6.82 ,  7.15 ,  5.77 ,  5.91 ,
        5.1   ,  7.71 ,  9.06 ,  5.71 ,  5.84 ,  9.42 ,  6.23 ,
```



```

6.29 , 5.25 , 9.69 , 9.9 , 6.39 , 8.09 , 5.83 ,
5.47 , 6.56 , 8.71 , 9.94 , 6.69 , 5.52 , 7.3 ,
7.02 , 6.33 , 8.07 , 8.37 , 8. , 7.79 , 8.65 ,
6.28 , 7.35 , 8.69 , 7.12 , 7.32 , 7.13 , 5.97 ,
5.09 , 6.91 , 6.76 , 6.52 , 7.45 , 8.56 , 6.5 ,
8.63 , 8.27 , 8.49 , 6.59 , 9.29 , 5.3 , 7.06 ,
5.38 , 6.65 , 9.16 , 8.01 , 8.25 , 8.02 , 8.47 ,
7.34 , 8.88 , 7.14 , 8.42 , 5.17 , 9.1 , 7.49 ,
9.85 , 7.42 , 9.31 , 6.35 , 7. , 5.39 , 5.61 ,
9.78 , 9.25 , 5.69 , 9.47 , 8.16 , 7.23 , 6.46 ,
0. , 8.26 , 6.32 , 6.77 , 8.85 , 5.03 , 7.65 ,
5.78 , 6.24 , 5.35 , 6.06 , 7.78 , 6.64 , 7.0625,
6.98 , 6.44 , 6.09 ])
```

```
[27]: df['CGPA'].value_counts()
```

```

[27]: CGPA
8.04    821
9.96    425
5.74    410
8.95    370
9.21    342

...
7.65     1
6.77     1
8.26     1
7.23     1
6.09     1
Name: count, Length: 332, dtype: int64
```

```
[28]: df['Study Satisfaction'].nunique()
```

```
[28]: 6
```

```
[29]: df['Study Satisfaction'].unique()
```

```
[29]: array([3, 2, 5, 4, 1, 0])
```

```
[30]: df['Study Satisfaction'].value_counts()
```

```

[30]: Study Satisfaction
4    6356
2    5831
3    5820
1    5442
5    4419
0     10
Name: count, dtype: int64
```

```
[31]: df['Job Satisfaction'].nunique()
```

```
[31]: 5
```

```
[32]: df['Job Satisfaction'].unique()
```

```
[32]: array([0, 3, 4, 2, 1])
```

```
[33]: df['Job Satisfaction'].value_counts()
```

```
[33]: Job Satisfaction
0      27870
2         3
4         2
1         2
3         1
Name: count, dtype: int64
```

```
[34]: df['Sleep Duration'].nunique()
```

```
[34]: 6
```

```
[35]: df['Sleep Duration'].unique()
```

```
[35]: array(['6-7 hours', "'5-6 hours'", "'Less than 5 hours'", "'7-8 hours'",
           "'More than 8 hours'", 'Others'], dtype=object)
```

```
[36]: #drops all the incorrect and unfixable values in 'Sleep Duration' column
df.drop( df[df['Sleep Duration'] == 'Others'].index, inplace=True)

df['Sleep Duration'].value_counts()
```

```
[36]: Sleep Duration
'Less than 5 hours'      8304
'7-8 hours'              7337
'5-6 hours'              6177
'More than 8 hours'      6041
'6-7 hours'               1
Name: count, dtype: int64
```

```
[37]: df['Dietary Habits'].nunique()
```

```
[37]: 4
```

```
[38]: df['Dietary Habits'].unique()
```

```
[38]: array(['Moderate', 'Healthy', 'Unhealthy', 'Others'], dtype=object)
```

```
[39]: df['Dietary Habits'].value_counts()
```

```
[39]: Dietary Habits
Unhealthy    10297
Moderate      9909
Healthy       7642
Others         12
Name: count, dtype: int64
```

```
[40]: df['Degree'].nunique()
```

```
[40]: 28
```

```
[41]: df['Degree'].unique()
```

```
[41]: array(['B.Com', 'B.Pharm', 'BSc', 'BA', 'BCA', 'M.Tech', 'PhD',
        "'Class 12'", 'B.Ed', 'LLB', 'BE', 'M.Ed', 'MSc', 'BHM', 'M.Pharm',
        'MCA', 'MA', 'MD', 'MBA', 'MBBS', 'M.Com', 'B.Arch', 'LLM',
        'B.Tech', 'BBA', 'ME', 'MHM', 'Others'], dtype=object)
```

```
[42]: df['Degree'].value_counts()
```

```
[42]: Degree
'Class 12'    6075
B.Ed          1863
B.Com         1505
B.Arch        1476
BCA           1431
MSc           1187
B.Tech        1152
MCA           1043
M.Tech        1019
BHM           924
BSc           887
M.Ed          818
B.Pharm       810
M.Com         734
MBBS          696
BBA           696
LLB           670
BE            610
BA            595
M.Pharm       582
MD            571
MBA           560
MA            544
PhD           520
LLM           481
```

```
MHM          191
ME           185
Others        35
Name: count, dtype: int64
```

```
[43]: df['Have you ever had suicidal thoughts ?'].nunique()
```

```
[43]: 2
```

```
[44]: df['Have you ever had suicidal thoughts ?'].unique()
```

```
[44]: array(['Yes', 'No'], dtype=object)
```

```
[45]: df['Have you ever had suicidal thoughts ?'].value_counts()
```

```
[45]: Have you ever had suicidal thoughts ?
Yes      17631
No       10229
Name: count, dtype: int64
```

```
[46]: df['Work/Study Hours'].nunique()
```

```
[46]: 13
```

```
[47]: df['Work/Study Hours'].unique()
```

```
[47]: array([ 8,  3,  9,  4,  1,  0, 12,  2, 11, 10,  6,  5,  7])
```

```
[48]: df['Work/Study Hours'].value_counts()
```

```
[48]: Work/Study Hours
10     4227
12     3166
11     2889
8       2506
6       2243
9       2025
7       1999
0       1698
4       1612
2       1585
3       1467
5       1296
1       1147
Name: count, dtype: int64
```

```
[49]: df['Financial Stress'].nunique()
```

```
[49]: 6
```

```
[50]: df['Financial Stress'].unique()
```

```
[50]: array(['4', '1', '2', '5', '3', '?'], dtype=object)
```

```
[51]: df['Financial Stress'].value_counts()
```

```
[51]: Financial Stress
5      6705
4      5773
3      5219
1      5110
2      5050
?         3
Name: count, dtype: int64
```

```
[52]: #drops all the incorrect and unfixable values in 'Financial Stress' column
df.drop(df[df['Financial Stress'] == '?'].index, inplace = True)

#changes the data type of 'Financial Stress' column from 'object' to 'int'
df['Financial Stress'] = df['Financial Stress'].astype(int)
```

```
[53]: df.dtypes['Financial Stress']
```

```
[53]: dtype('int64')
```

```
[54]: df['Family History of Mental Illness'].nunique()
```

```
[54]: 2
```

```
[55]: df['Family History of Mental Illness'].unique()
```

```
[55]: array(['No', 'Yes'], dtype=object)
```

```
[56]: df['Family History of Mental Illness'].value_counts()
```

```
[56]: Family History of Mental Illness
No      14374
Yes     13483
Name: count, dtype: int64
```

```
[57]: df['Depression'].nunique()
```

```
[57]: 2
```

```
[58]: df['Depression'].unique()
```

```
[58]: array([1, 0])
```

```
[59]: df['Depression'].value_counts()
```

```
[59]: Depression
1      16313
0      11544
Name: count, dtype: int64
```

```
[60]: #changes the data type of 'Depression' column from 'int to 'bool'
df['Depression'] = df['Depression'].astype(bool)
```

```
[61]: df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 27857 entries, 0 to 27901
Data columns (total 18 columns):
#   Column                                          Non-Null Count  Dtype
---  -
0   id                                              27857 non-null  int64
1   Gender                                          27857 non-null  object
2   Age                                             27857 non-null  int64
3   City                                           27857 non-null  object
4   Profession                                     27857 non-null  object
5   Academic Pressure                             27857 non-null  int64
6   Work Pressure                                 27857 non-null  int64
7   CGPA                                           27857 non-null  float64
8   Study Satisfaction                           27857 non-null  int64
9   Job Satisfaction                             27857 non-null  int64
10  Sleep Duration                               27857 non-null  object
11  Dietary Habits                               27857 non-null  object
12  Degree                                         27857 non-null  object
13  Have you ever had suicidal thoughts ?        27857 non-null  object
14  Work/Study Hours                             27857 non-null  int64
15  Financial Stress                             27857 non-null  int64
16  Family History of Mental Illness             27857 non-null  object
17  Depression                                    27857 non-null  bool
dtypes: bool(1), float64(1), int64(8), object(8)
memory usage: 3.9+ MB
```

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

```
[62]:
```

	id	Gender	Age	City	Profession	Academic Pressure	\
Serial Number							
0	1	Male	19	Delhi	Student	4	
1	2	Male	33	Visakhapatnam	Student	5	
2	8	Female	24	Bangalore	Student	2	
3	26	Male	31	Srinagar	Student	3	

4	30	Female	28	Varanasi	Student	3
---	----	--------	----	----------	---------	---

Serial Number	Work Pressure	CGPA	Study Satisfaction	Job Satisfaction	\
0	0	6.00	3	0	
1	0	8.97	2	0	
2	0	5.90	5	0	
3	0	7.03	5	0	
4	0	5.59	2	0	

Serial Number	Sleep Duration	Dietary Habits	Degree	\
0	'6-7 hours'	Moderate	B.Com	
1	'5-6 hours'	Healthy	B.Pharm	
2	'5-6 hours'	Moderate	BSc	
3	'Less than 5 hours'	Healthy	BA	
4	'7-8 hours'	Moderate	BCA	

Serial Number	Have you ever had suicidal thoughts ?	Work/Study Hours	\
0	Yes	8	
1	Yes	3	
2	No	3	
3	No	9	
4	Yes	4	

Serial Number	Financial Stress	Family History of Mental Illness	Depression
0	4	No	True
1	1	No	True
2	2	Yes	False
3	1	Yes	False
4	5	Yes	True

```
[ ]: #exports the cleaned database as a csv file with headers and indexes
df.to_csv('cleaned_student_depression_dataset.csv')
```