

# Machine learning models

April 4, 2022

```
[82]: import sys
!{sys.executable} -m pip install -U pandas-profiling[notebook]
!jupyter nbextension enable --py widgetsnbextension
!pip install matplotlib
!pip install graphviz --user
!pip3 install imblearn --trusted-host pypi.org --trusted-host pypi.python.org
↪--trusted-host files.pythonhosted.org --user
```

Requirement already satisfied: pandas-profiling[notebook] in  
c:\programdata\anaconda3\lib\site-packages (3.1.0)  
Requirement already satisfied: missingno>=0.4.2 in  
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Requirement already satisfied: PyYAML>=5.0.0 in  
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Requirement already satisfied: tangled-up-in-unicode==0.1.0 in  
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(1.7.1)  
Requirement already satisfied: matplotlib>=3.2.0 in  
c:\programdata\anaconda3\lib\site-packages (from pandas-profiling[notebook])  
(3.4.3)  
Requirement already satisfied: seaborn>=0.10.1 in  
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Requirement already satisfied: tqdm>=4.48.2 in  
c:\programdata\anaconda3\lib\site-packages (from pandas-profiling[notebook])  
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(1.9.0)  
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(0.1.12)  
Requirement already satisfied: pandas!=1.0.0,!1.0.1,!1.0.2,!1.1.0,>=0.25.3 in  
c:\programdata\anaconda3\lib\site-packages (from pandas-profiling[notebook])  
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Requirement already satisfied: numpy>=1.16.0 in  
c:\programdata\anaconda3\lib\site-packages (from pandas-profiling[notebook])  
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Requirement already satisfied: visions[type\_image\_path]==0.7.4 in  
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c:\programdata\anaconda3\lib\site-packages (from pandas-profiling[notebook])  
(1.7)  
Requirement already satisfied: markupsafe~=2.0.1 in  
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(2.0.1)  
Requirement already satisfied: joblib~=1.0.1 in  
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(1.0.1)  
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(2.26.0)  
Requirement already satisfied: jupyter-client>=6.0.0 in  
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(6.1.12)  
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Requirement already satisfied: ipywidgets>=7.5.1 in  
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Requirement already satisfied: nbformat>=4.2.0 in

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Requirement already satisfied: traitlets>=4.3.1 in  
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Requirement already satisfied: ipython>=4.0.0 in  
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Requirement already satisfied: tornado<7.0,>=4.2 in  
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Requirement already satisfied: prompt-toolkit!=3.0.0,!<3.0.1,<3.1.0,>=2.0.0 in  
c:\programdata\anaconda3\lib\site-packages (from  
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Requirement already satisfied: pygments in c:\programdata\anaconda3\lib\site-packages (from ipython>=4.0.0->ipywidgets>=7.5.1->pandas-profiling[notebook]) (2.10.0)  
Requirement already satisfied: jedi>=0.16 in c:\programdata\anaconda3\lib\site-packages (from ipython>=4.0.0->ipywidgets>=7.5.1->pandas-profiling[notebook]) (0.18.0)  
Requirement already satisfied: backcall in c:\programdata\anaconda3\lib\site-packages (from ipython>=4.0.0->ipywidgets>=7.5.1->pandas-profiling[notebook]) (0.2.0)  
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Requirement already satisfied: colorama in c:\programdata\anaconda3\lib\site-packages (from ipython>=4.0.0->ipywidgets>=7.5.1->pandas-profiling[notebook]) (0.4.4)  
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Requirement already satisfied: pywin32>=1.0 in c:\programdata\anaconda3\lib\site-packages (from jupyter-core>=4.6.3->pandas-profiling[notebook]) (228)

Requirement already satisfied: kiwisolver>=1.0.1 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=3.2.0->pandas-profiling[notebook]) (1.3.1)

Requirement already satisfied: pyparsing>=2.2.1 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=3.2.0->pandas-profiling[notebook]) (3.0.4)

Requirement already satisfied: cyclor>=0.10 in c:\programdata\anaconda3\lib\site-packages (from matplotlib>=3.2.0->pandas-profiling[notebook]) (0.10.0)

Requirement already satisfied: six in c:\programdata\anaconda3\lib\site-packages (from cyclor>=0.10->matplotlib>=3.2.0->pandas-profiling[notebook]) (1.16.0)

Requirement already satisfied: jsonschema!=2.5.0,>=2.4 in c:\programdata\anaconda3\lib\site-packages (from nbformat>=4.2.0->ipywidgets>=7.5.1->pandas-profiling[notebook]) (3.2.0)

Requirement already satisfied: pyrsistent>=0.14.0 in c:\programdata\anaconda3\lib\site-packages (from jsonschema!=2.5.0,>=2.4->nbformat>=4.2.0->ipywidgets>=7.5.1->pandas-profiling[notebook]) (0.18.0)

Requirement already satisfied: pytz>=2017.3 in c:\programdata\anaconda3\lib\site-packages (from pandas!=1.0.0,!1.0.1,!1.0.2,!1.1.0,>=0.25.3->pandas-profiling[notebook]) (2021.3)

Requirement already satisfied: wcwidth in c:\programdata\anaconda3\lib\site-packages (from prompt-toolkit!=3.0.0,!3.0.1,<3.1.0,>=2.0.0->ipython>=4.0.0->ipywidgets>=7.5.1->pandas-profiling[notebook]) (0.2.5)

Requirement already satisfied: typing-extensions>=3.7.4.3 in c:\programdata\anaconda3\lib\site-packages (from pydantic>=1.8.1->pandas-profiling[notebook]) (3.10.0.2)

Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\programdata\anaconda3\lib\site-packages (from requests>=2.24.0->pandas-profiling[notebook]) (1.26.7)

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Requirement already satisfied: idna<4,>=2.5 in  
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Requirement already satisfied: charset-normalizer~=2.0.0 in  
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Requirement already satisfied: notebook>=4.4.1 in  
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widgetsnbextension~=3.5.0->ipywidgets>=7.5.1->pandas-profiling[notebook])  
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Requirement already satisfied: Send2Trash>=1.5.0 in  
c:\programdata\anaconda3\lib\site-packages (from  
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Requirement already satisfied: argon2-cffi in c:\programdata\anaconda3\lib\site-  
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Requirement already satisfied: nbconvert in c:\programdata\anaconda3\lib\site-  
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profiling[notebook]) (6.1.0)

Requirement already satisfied: prometheus-client in  
c:\programdata\anaconda3\lib\site-packages (from  
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profiling[notebook]) (0.11.0)

Requirement already satisfied: terminado>=0.8.3 in  
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Requirement already satisfied: pywinpty>=0.5 in  
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Requirement already satisfied: cffi>=1.0.0 in c:\programdata\anaconda3\lib\site-  
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ets>=7.5.1->pandas-profiling[notebook]) (1.14.6)

Requirement already satisfied: pycparser in c:\programdata\anaconda3\lib\site-  
packages (from cffi>=1.0.0->argon2-cffi->notebook>=4.4.1->widgetsnbextension~=3.  
5.0->ipywidgets>=7.5.1->pandas-profiling[notebook]) (2.20)

Requirement already satisfied: PyWavelets in c:\programdata\anaconda3\lib\site-  
packages (from imagehash->visions[type\_image\_path]==0.7.4->pandas-  
profiling[notebook]) (1.1.1)

Requirement already satisfied: jupyterlab-pygments in  
c:\programdata\anaconda3\lib\site-packages (from nbconvert->notebook>=4.4.1->wid

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getsnbextension~=3.5.0->ipywidgets>=7.5.1->pandas-profiling[notebook]) (0.1.2)
Requirement already satisfied: testpath in c:\programdata\anaconda3\lib\site-
packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets
>=7.5.1->pandas-profiling[notebook]) (0.5.0)
Requirement already satisfied: mistune<2,>=0.8.1 in
c:\programdata\anaconda3\lib\site-packages (from nbconvert->notebook>=4.4.1->wid
getsnbextension~=3.5.0->ipywidgets>=7.5.1->pandas-profiling[notebook]) (0.8.4)
Requirement already satisfied: defusedxml in c:\programdata\anaconda3\lib\site-
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>=7.5.1->pandas-profiling[notebook]) (0.7.1)
Requirement already satisfied: entrypoints>=0.2.2 in
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getsnbextension~=3.5.0->ipywidgets>=7.5.1->pandas-profiling[notebook]) (0.3)
Requirement already satisfied: bleach in c:\programdata\anaconda3\lib\site-
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>=7.5.1->pandas-profiling[notebook]) (4.0.0)
Requirement already satisfied: pandocfilters>=1.4.1 in
c:\programdata\anaconda3\lib\site-packages (from nbconvert->notebook>=4.4.1->wid
getsnbextension~=3.5.0->ipywidgets>=7.5.1->pandas-profiling[notebook]) (1.4.3)
Requirement already satisfied: nbclient<0.6.0,>=0.5.0 in
c:\programdata\anaconda3\lib\site-packages (from nbconvert->notebook>=4.4.1->wid
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Requirement already satisfied: async-generator in
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rt->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.5.1->pandas-
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Requirement already satisfied: nest-asyncio in
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Requirement already satisfied: packaging in c:\programdata\anaconda3\lib\site-
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Requirement already satisfied: webencodings in
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4.1->widgetsnbextension~=3.5.0->ipywidgets>=7.5.1->pandas-profiling[notebook])
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WARNING: Ignoring invalid distribution -ikit-learn
(c:\programdata\anaconda3\lib\site-packages)

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WARNING: Ignoring invalid distribution -ikit-learn
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WARNING: Ignoring invalid distribution -cikit-learn
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Enabling notebook extension jupyter-js-widgets/extension...
    - Validating: ok

Requirement already satisfied: matplotlib in c:\programdata\anaconda3\lib\site-
packages (3.4.3)
Requirement already satisfied: pillow>=6.2.0 in
c:\programdata\anaconda3\lib\site-packages (from matplotlib) (8.4.0)
Requirement already satisfied: cycler>=0.10 in
c:\programdata\anaconda3\lib\site-packages (from matplotlib) (0.10.0)
Requirement already satisfied: pyparsing>=2.2.1 in

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c:\programdata\anaconda3\lib\site-packages (from matplotlib) (3.0.4)  
Requirement already satisfied: numpy>=1.16 in c:\programdata\anaconda3\lib\site-packages (from matplotlib) (1.20.3)  
Requirement already satisfied: python-dateutil>=2.7 in c:\programdata\anaconda3\lib\site-packages (from matplotlib) (2.8.2)  
Requirement already satisfied: kiwisolver>=1.0.1 in c:\programdata\anaconda3\lib\site-packages (from matplotlib) (1.3.1)  
Requirement already satisfied: six in c:\programdata\anaconda3\lib\site-packages (from cycycler>=0.10->matplotlib) (1.16.0)

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Requirement already satisfied: graphviz in c:\programdata\anaconda3\lib\site-
packages (0.19.1)

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Requirement already satisfied: imblearn in
c:\users\zdehg\appdata\roaming\python\python39\site-packages (0.0)
Requirement already satisfied: imbalanced-learn in
c:\users\zdehg\appdata\roaming\python\python39\site-packages (from imblearn)
(0.9.0)
Requirement already satisfied: numpy>=1.14.6 in
c:\programdata\anaconda3\lib\site-packages (from imbalanced-learn->imblearn)
(1.20.3)
Requirement already satisfied: scipy>=1.1.0 in
c:\programdata\anaconda3\lib\site-packages (from imbalanced-learn->imblearn)
(1.7.1)
Requirement already satisfied: scikit-learn>=1.0.1 in
c:\users\zdehg\appdata\roaming\python\python39\site-packages (from imbalanced-
learn->imblearn) (1.0.2)
Requirement already satisfied: joblib>=0.11 in
c:\programdata\anaconda3\lib\site-packages (from imbalanced-learn->imblearn)
(1.0.1)
Requirement already satisfied: threadpoolctl>=2.0.0 in
c:\programdata\anaconda3\lib\site-packages (from imbalanced-learn->imblearn)
(2.2.0)

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(c:\programdata\anaconda3\lib\site-packages)

```

```

[83]: import os
import numpy as np
import pandas as pd
import imblearn

```

```

[84]: df= pd.read_csv(r'C:\Users\zdehg\Downloads\archive\DASS_data_21.02.19\data.
↪csv', error_bad_lines=False, warn_bad_lines=False, sep=r'\t' )

```

```

C:\ProgramData\Anaconda3\lib\site-packages\pandas\util\_decorators.py:311:
ParserWarning: Falling back to the 'python' engine because the 'c' engine does
not support regex separators (separators > 1 char and different from '\s+' are
interpreted as regex); you can avoid this warning by specifying engine='python'.
    return func(*args, **kwargs)

```

```
C:\ProgramData\Anaconda3\lib\site-
packages\IPython\core\interactiveshell.py:3444: FutureWarning: The
error_bad_lines argument has been deprecated and will be removed in a future
version.
```

```
exec(code_obj, self.user_global_ns, self.user_ns)
C:\ProgramData\Anaconda3\lib\site-
packages\IPython\core\interactiveshell.py:3444: FutureWarning: The
warn_bad_lines argument has been deprecated and will be removed in a future
version.
```

```
exec(code_obj, self.user_global_ns, self.user_ns)
```

```
[85]: df.head(10)
```

```
[85]:
```

	Q1A	Q1I	Q1E	Q2A	Q2I	Q2E	Q3A	Q3I	Q3E	Q4A	...	screen size	\
0	4	28	3890	4	25	2122	2	16	1944	4	...	1	
1	4	2	8118	1	36	2890	2	35	4777	3	...	2	
2	3	7	5784	1	33	4373	4	41	3242	1	...	2	
3	2	23	5081	3	11	6837	2	37	5521	1	...	2	
4	2	36	3215	2	13	7731	3	5	4156	4	...	2	
5	1	18	6116	1	28	3193	2	2	12542	1	...	2	
6	1	20	4325	1	34	4009	2	38	3604	3	...	2	
7	1	34	4796	1	9	2618	1	39	5823	1	...	2	
8	4	4	3470	4	14	2139	3	1	11043	4	...	1	
9	3	38	5187	2	28	2600	4	9	2015	1	...	2	

	uniquenetworklocation	hand	religion	orientation	race	voted	married	\	
0		1	1	12		1	10	2	1
1		1	2	7		0	70	2	1
2		1	1	4		3	60	1	1
3		1	2	4		5	70	2	1
4		2	3	10		1	10	2	1
5		1	1	4		1	70	2	1
6		1	1	7		2	60	2	1
7		1	1	2		2	60	1	1
8		1	1	12		2	70	2	1
9		1	1	2		2	60	2	1

	family size	major
0	2	None
1	4	None
2	3	None
3	5	biology
4	4	Psychology

5	4	None
6	4	Mechatronics engeneerieng
7	2	Music
8	4	Psychology
9	3	computer programming

[10 rows x 172 columns]

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

```
[86]:
```

	Q1A	Q1I	Q1E	Q2A	Q2I \
count	39775.000000	39775.000000	3.977500e+04	39775.000000	39775.000000
mean	2.619485	21.555977	6.970591e+03	2.172269	21.248070
std	1.032117	12.133621	8.670513e+04	1.111563	12.125288
min	1.000000	1.000000	1.800000e+02	1.000000	1.000000
25%	2.000000	11.000000	2.664000e+03	1.000000	11.000000
50%	3.000000	22.000000	3.609000e+03	2.000000	21.000000
75%	4.000000	32.000000	5.358000e+03	3.000000	32.000000
max	4.000000	42.000000	1.210228e+07	4.000000	42.000000

	Q2E	Q3A	Q3I	Q3E	Q4A \
count	3.977500e+04	39775.000000	39775.000000	3.977500e+04	39775.000000
mean	5.332376e+03	2.226097	21.583004	7.426446e+03	1.950170
std	2.651361e+04	1.038526	12.115637	1.587024e+05	1.042218
min	1.760000e+02	1.000000	1.000000	-1.081400e+04	1.000000
25%	2.477000e+03	1.000000	11.000000	2.857000e+03	1.000000
50%	3.511000e+03	2.000000	22.000000	3.898000e+03	2.000000
75%	5.216000e+03	3.000000	32.000000	5.766000e+03	3.000000
max	2.161057e+06	4.000000	42.000000	2.858269e+07	4.000000

	...	age	screen size	uniquenetworklocation	hand \
count	...	39775.000000	39775.000000	39775.000000	39775.000000
mean	...	23.612168	1.274519	1.200025	1.13516
std	...	21.581722	0.446277	0.400024	0.40030
min	...	13.000000	1.000000	1.000000	0.00000
25%	...	18.000000	1.000000	1.000000	1.00000
50%	...	21.000000	1.000000	1.000000	1.00000
75%	...	25.000000	2.000000	1.000000	1.00000
max	...	1998.000000	2.000000	2.000000	3.00000

	religion	orientation	race	voted	married \
count	39775.000000	39775.000000	39775.000000	39775.000000	39775.000000
mean	7.555852	1.642992	31.312885	1.705795	1.159547
std	3.554395	1.351362	25.871272	0.473388	0.445882
min	0.000000	0.000000	10.000000	0.000000	0.000000
25%	4.000000	1.000000	10.000000	1.000000	1.000000
50%	10.000000	1.000000	10.000000	2.000000	1.000000

75%	10.000000	2.000000	60.000000	2.000000	1.000000
max	12.000000	5.000000	70.000000	2.000000	3.000000

```

familysize
count  39775.000000
mean    3.510270
std     2.141518
min     0.000000
25%    2.000000
50%    3.000000
75%    4.000000
max    133.000000

```

[8 rows x 170 columns]

```

[87]: df.drop(['Q1I', 'Q1E', 'Q2I', 'Q2E', 'Q3I', 'Q3E', 'Q4I', 'Q4E', 'Q5I',
↳ 'Q5E', 'Q6I', 'Q6E', 'Q7I', 'Q7E', 'Q8I', 'Q8E', 'Q9I', 'Q9E', 'Q10I', 'Q10E',
↳ 'Q11I', 'Q11E', 'Q12I', 'Q12E', 'Q13I', 'Q13E', 'Q14I', 'Q14E', 'Q15I',
↳ 'Q15E', 'Q16I', 'Q16E', 'Q17I', 'Q17E', 'Q18I', 'Q18E', 'Q19I', 'Q19E', 'Q20I',
↳ 'Q20E', 'Q21I', 'Q21E', 'Q22I', 'Q22E', 'Q23I', 'Q23E', 'Q24I', 'Q24E', 'Q25I',
↳ 'Q25E', 'Q26I', 'Q26E', 'Q27I', 'Q27E', 'Q28I', 'Q28E', 'Q29I', 'Q29E', 'Q30I',
↳ 'Q30E', 'Q31I', 'Q31E', 'Q32I', 'Q32E', 'Q33I', 'Q33E', 'Q34I', 'Q34E', 'Q35I',
↳ 'Q35E', 'Q36I', 'Q36E', 'Q37I', 'Q37E', 'Q38I', 'Q38E', 'Q39I', 'Q39E', 'Q40I',
↳ 'Q40E', 'Q41I', 'Q41E', 'Q42I', 'Q42E', 'source', 'introelapse',
↳ 'testelapse', 'surveyelapse'], axis=1)

```

```

[87]:
   Q1A  Q2A  Q3A  Q4A  Q5A  Q6A  Q7A  Q8A  Q9A  Q10A  ...  screensize  \
0      4    4    2    4    4    4    4    4    2    1  ...           1
1      4    1    2    3    4    4    3    4    3    2  ...           2
2      3    1    4    1    4    3    1    3    2    4  ...           2
3      2    3    2    1    3    3    4    2    3    3  ...           2
4      2    2    3    4    4    2    4    4    4    3  ...           2
...  ...  ...  ...  ...  ...  ...  ...  ...  ...  ...  ...
39770  2    1    3    2    3    2    1    3    1    4  ...           2
39771  3    4    3    4    3    4    4    4    3    4  ...           1
39772  2    1    2    1    1    1    1    1    2    1  ...           2
39773  3    1    2    2    3    3    3    4    3    1  ...           2
39774  2    1    2    1    4    2    1    1    1    1  ...           1

```

```

   uniquenetworklocation  hand  religion  orientation  race  voted  \
0                        1      1        12           1    10      2
1                        1      2         7           0    70      2
2                        1      1         4           3    60      1
3                        1      2         4           5    70      2
4                        2      3        10           1    10      2
...
39770                    1      1         2           4    60      2

```

39771	1	1	10	0	10	2
39772	1	1	7	1	30	1
39773	1	1	6	1	60	1
39774	1	1	10	1	10	1

	married	familysize	major
0	1	2	None
1	1	4	None
2	1	3	None
3	1	5	biology
4	1	4	Psychology
...	...	...	...
39770	1	2	None
39771	1	4	Mathematic
39772	2	3	Computer Science
39773	1	2	History
39774	1	4	Cognitive Science

[39775 rows x 84 columns]

```
[88]: df = df[df['VCL6']==0]
df = df[df['VCL9']==0]
df = df[df['VCL12']==0]
df
```

```
[88]:
```

	Q1A	Q1I	Q1E	Q2A	Q2I	Q2E	Q3A	Q3I	Q3E	Q4A	...	screensize	\
0	4	28	3890	4	25	2122	2	16	1944	4	...	1	
1	4	2	8118	1	36	2890	2	35	4777	3	...	2	
2	3	7	5784	1	33	4373	4	41	3242	1	...	2	
3	2	23	5081	3	11	6837	2	37	5521	1	...	2	
4	2	36	3215	2	13	7731	3	5	4156	4	...	2	
...	...	...	...	...	...	...	...	...	...	...	...	...	...
39769	3	32	28897	4	4	3025	2	30	3248	2	...	2	
39770	2	31	3287	1	5	2216	3	29	3895	2	...	2	
39772	2	1	25147	1	4	4555	2	14	3388	1	...	2	
39773	3	36	4286	1	34	2736	2	10	5968	2	...	2	
39774	2	28	32251	1	22	3317	2	4	11734	1	...	1	

	uniquenetworklocation	hand	religion	orientation	race	voted	\
0		1	1	12	1	10	2
1		1	2	7	0	70	2
2		1	1	4	3	60	1
3		1	2	4	5	70	2
4		2	3	10	1	10	2
...	...	...	...	...	...	...	...
39769		1	1	1	1	70	2
39770		1	1	2	4	60	2

39772	1	1	7	1	30	1
39773	1	1	6	1	60	1
39774	1	1	10	1	10	1

	married	familysize	major
0	1	2	None
1	1	4	None
2	1	3	None
3	1	5	biology
4	1	4	Psychology
...	...	...	...
39769	1	3	None
39770	1	2	None
39772	2	3	Computer Science
39773	1	2	History
39774	1	4	Cognitive Science

[34583 rows x 172 columns]

```
[89]: DASS_keys = {'Depression': [3, 5, 10, 13, 16, 17, 21, 24, 26, 31, 34, 37, 38, 42],
                'Anxiety': [2, 4, 7, 9, 15, 19, 20, 23, 25, 28, 30, 36, 40, 41],
                'Stress': [1, 6, 8, 11, 12, 14, 18, 22, 27, 29, 32, 33, 35, 39]}

DASS_bins = {'Depression': [(0, 10), (10, 14), (14, 21), (21, 28)],
             'Anxiety': [(0, 8), (8, 10), (10, 15), (15, 20)],
             'Stress': [(0, 15), (15, 19), (19, 26), (26, 34)]}

for name, keys in DASS_keys.items():
    # Subtract one to match definition of DASS score in source
    df[name] = (df.filter(regex='Q(%)A' % '|'.join(map(str, keys))) - 1).
    sum(axis=1)

    bins = DASS_bins[name]
    bins.append( (DASS_bins[name][-1][-1], df[name].max() + 1) )
    bins = pd.IntervalIndex.from_tuples(bins, closed='left')
    df[name + '_cat'] = np.arange(len(bins))[pd.cut(df[name], bins=bins).cat.
    codes]

dass = df[DASS_keys.keys()]
dass_cat = df[[k + '_cat' for k in DASS_keys.keys()]]
```

```
[90]: # Add personality types to data
personality_types = ['Extraversion', 'Agreeableness', 'Conscientiousness',
                    'EmotionalStability', 'Openness']
```



```

# Invert some entries
tipi = df.filter(regex='TIPI\d+').copy()
tipi_inv = tipi.filter(regex='TIPI(2|4|6|8|10)').apply(lambda d: 7 - d)
tipi[tipi.columns.intersection(tipi_inv.columns)] = tipi_inv

# Calculate scores
for idx, pt in enumerate( personality_types ):
    df[pt] = tipi[['TIPI{}'.format(idx + 1), 'TIPI{}'.format(6 + idx)]]
    ↪mean(axis=1)

personalities = df[personality_types]
personalities[['Extraversion', 'Agreeableness', 'Conscientiousness',
    ↪'EmotionalStability', 'Openness']].describe()

```

```

[90]:      Extraversion  Agreeableness  Conscientiousness  EmotionalStability \
count    34583.000000    34583.000000    34583.000000    34583.000000
mean         2.971764         4.052237         3.716335         2.733973
std          1.538398         1.213524         1.482219         1.514738
min           0.000000         0.000000         0.000000         0.000000
25%           2.000000         3.500000         2.500000         1.500000
50%           3.000000         4.000000         3.500000         2.500000
75%           4.000000         5.000000         5.000000         3.500000
max           7.000000         7.000000         7.000000         7.000000

      Openness
count    34583.000000
mean         4.057225
std          1.322600
min           0.000000
25%           3.500000
50%           4.000000
75%           5.000000
max           7.000000

```

```

[91]: #extracting the questions of DASS out of dataset
only_q = df.filter(regex='Q\d{1,2}A')
only_q.head(10)

```

```

[91]:      Q1A  Q2A  Q3A  Q4A  Q5A  Q6A  Q7A  Q8A  Q9A  Q10A  ...  Q33A  Q34A  Q35A  \
0         4    4    2    4    4    4    4    4    2    1  ...    2    3    4
1         4    1    2    3    4    4    3    4    3    2  ...    3    2    2
2         3    1    4    1    4    3    1    3    2    4  ...    1    4    3
3         2    3    2    1    3    3    4    2    3    3  ...    2    4    1
4         2    2    3    4    4    2    4    4    4    3  ...    4    4    3
5         1    1    2    1    3    1    1    3    3    2  ...    4    1    3
6         1    1    2    3    4    1    3    3    3    4  ...    4    3    2
9         3    2    4    1    4    4    3    4    4    4  ...    4    4    3

```

10	3	1	2	1	3	3	1	3	1	1	...	1	2	3
11	3	3	2	2	4	3	1	3	4	3	...	4	3	2

	Q36A	Q37A	Q38A	Q39A	Q40A	Q41A	Q42A
0	4	1	2	4	3	4	4
1	3	4	2	2	1	2	2
2	4	4	4	2	2	1	4
3	1	2	1	3	4	4	2
4	4	3	3	3	4	4	3
5	2	2	2	1	1	1	2
6	2	4	4	4	2	2	3
9	4	4	4	4	4	3	4
10	1	1	2	3	1	1	2
11	3	1	2	4	3	1	2

[10 rows x 42 columns]

[92]: `only_q.info()`

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 34583 entries, 0 to 39774
Data columns (total 42 columns):
#   Column   Non-Null Count  Dtype
---  -
0   Q1A      34583 non-null  int64
1   Q2A      34583 non-null  int64
2   Q3A      34583 non-null  int64
3   Q4A      34583 non-null  int64
4   Q5A      34583 non-null  int64
5   Q6A      34583 non-null  int64
6   Q7A      34583 non-null  int64
7   Q8A      34583 non-null  int64
8   Q9A      34583 non-null  int64
9   Q10A     34583 non-null  int64
10  Q11A     34583 non-null  int64
11  Q12A     34583 non-null  int64
12  Q13A     34583 non-null  int64
13  Q14A     34583 non-null  int64
14  Q15A     34583 non-null  int64
15  Q16A     34583 non-null  int64
16  Q17A     34583 non-null  int64
17  Q18A     34583 non-null  int64
18  Q19A     34583 non-null  int64
19  Q20A     34583 non-null  int64
20  Q21A     34583 non-null  int64
21  Q22A     34583 non-null  int64
22  Q23A     34583 non-null  int64
23  Q24A     34583 non-null  int64
```

```

24 Q25A      34583 non-null int64
25 Q26A      34583 non-null int64
26 Q27A      34583 non-null int64
27 Q28A      34583 non-null int64
28 Q29A      34583 non-null int64
29 Q30A      34583 non-null int64
30 Q31A      34583 non-null int64
31 Q32A      34583 non-null int64
32 Q33A      34583 non-null int64
33 Q34A      34583 non-null int64
34 Q35A      34583 non-null int64
35 Q36A      34583 non-null int64
36 Q37A      34583 non-null int64
37 Q38A      34583 non-null int64
38 Q39A      34583 non-null int64
39 Q40A      34583 non-null int64
40 Q41A      34583 non-null int64
41 Q42A      34583 non-null int64
dtypes: int64(42)
memory usage: 11.3 MB

```

```
[93]: only_q.isnull().sum()
```

```

[93]: Q1A      0
      Q2A      0
      Q3A      0
      Q4A      0
      Q5A      0
      Q6A      0
      Q7A      0
      Q8A      0
      Q9A      0
      Q10A     0
      Q11A     0
      Q12A     0
      Q13A     0
      Q14A     0
      Q15A     0
      Q16A     0
      Q17A     0
      Q18A     0
      Q19A     0
      Q20A     0
      Q21A     0
      Q22A     0
      Q23A     0
      Q24A     0

```

```

Q25A    0
Q26A    0
Q27A    0
Q28A    0
Q29A    0
Q30A    0
Q31A    0
Q32A    0
Q33A    0
Q34A    0
Q35A    0
Q36A    0
Q37A    0
Q38A    0
Q39A    0
Q40A    0
Q41A    0
Q42A    0
dtype: int64

```

```
[94]: only_t = df.filter(regex='TIPI\d+')
      only_t
```

```
[94]:
```

	TIPI1	TIPI2	TIPI3	TIPI4	TIPI5	TIPI6	TIPI7	TIPI8	TIPI9	TIPI10
0	1	5	7	7	7	7	7	5	1	1
1	6	5	4	7	5	4	7	7	1	5
2	2	5	2	2	5	6	5	5	3	2
3	1	1	7	4	6	4	6	1	6	1
4	2	5	3	6	5	5	5	6	3	3
...	...	...	...	...	...	...	...	...	...	...
39769	6	5	4	5	6	3	5	2	5	7
39770	2	2	3	5	6	5	5	3	3	6
39772	6	6	7	5	6	3	6	1	5	4
39773	1	6	5	7	3	5	3	5	3	4
39774	6	2	3	5	6	3	5	5	1	2

```
[34583 rows x 10 columns]
```

```
[95]: only_t.info()
```

```

<class 'pandas.core.frame.DataFrame'>
Int64Index: 34583 entries, 0 to 39774
Data columns (total 10 columns):
 #   Column  Non-Null Count  Dtype
---  -
 0   TIPI1   34583 non-null  int64
 1   TIPI2   34583 non-null  int64
 2   TIPI3   34583 non-null  int64

```

```

3  TIPI4    34583 non-null  int64
4  TIPI5    34583 non-null  int64
5  TIPI6    34583 non-null  int64
6  TIPI7    34583 non-null  int64
7  TIPI8    34583 non-null  int64
8  TIPI9    34583 non-null  int64
9  TIPI10   34583 non-null  int64
dtypes: int64(10)
memory usage: 2.9 MB

```

```
[96]: only_t.isnull().sum()
```

```

[96]: TIPI1    0
      TIPI2    0
      TIPI3    0
      TIPI4    0
      TIPI5    0
      TIPI6    0
      TIPI7    0
      TIPI8    0
      TIPI9    0
      TIPI10   0
      dtype: int64

```

```
[97]: import matplotlib.pyplot as plt
```

```

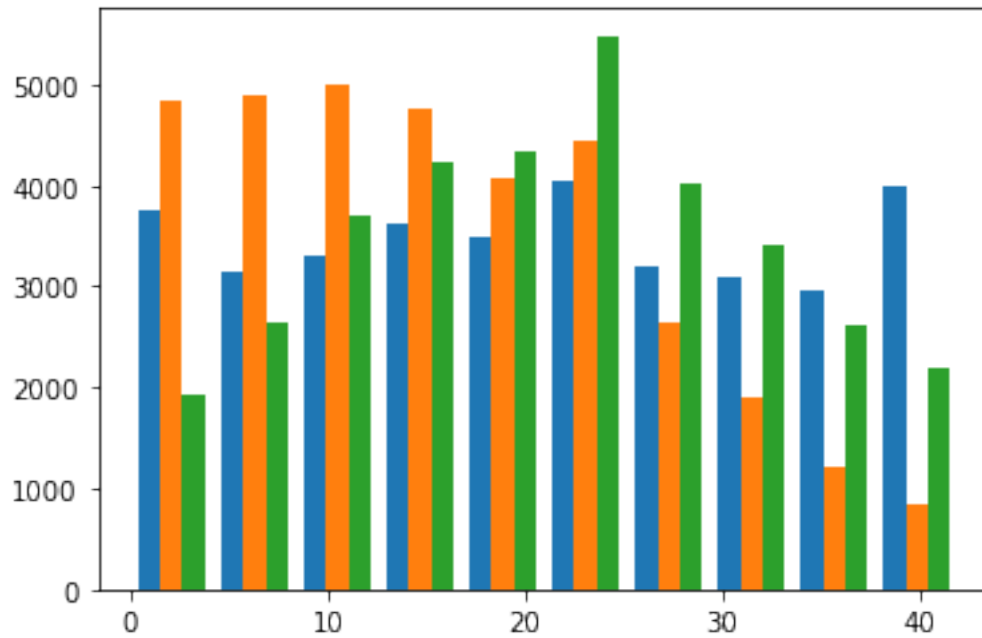
[98]: plt.hist(dass)
      #It can be sen that this class variable is not imbalanced toward a certain
      ↪result

```

```

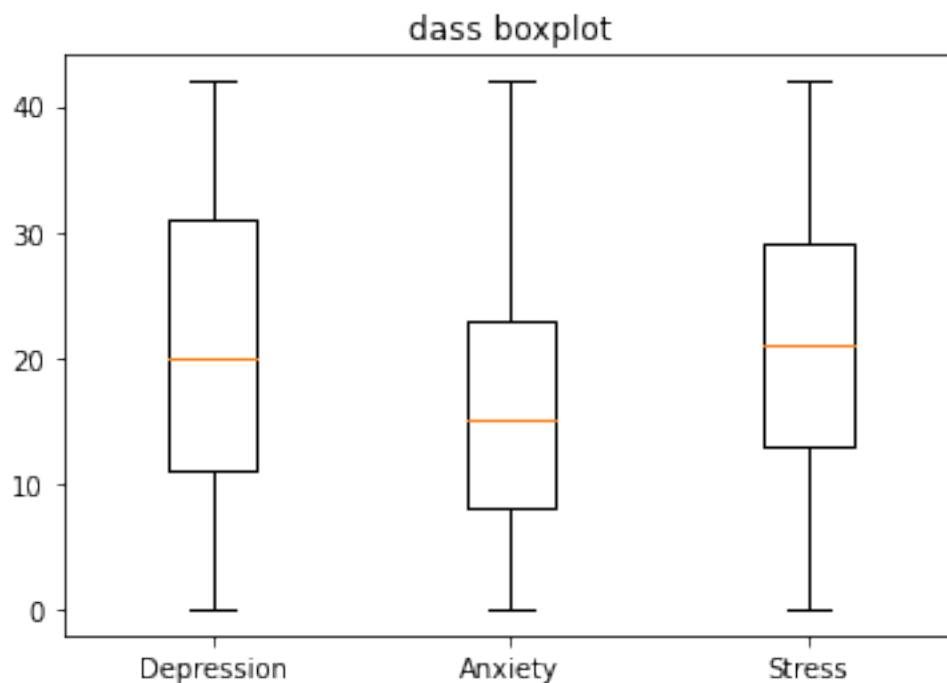
[98]: (array([[3741., 3152., 3300., 3629., 3490., 4057., 3189., 3091., 2950.,
              3984.],
              [4835., 4887., 4999., 4748., 4069., 4452., 2648., 1891., 1221.,
              833.],
              [1929., 2652., 3692., 4237., 4337., 5482., 4031., 3416., 2605.,
              2202.]]),
      array([ 0. ,  4.2,  8.4, 12.6, 16.8, 21. , 25.2, 29.4, 33.6, 37.8, 42. ]),
      <a list of 3 BarContainer objects>)

```



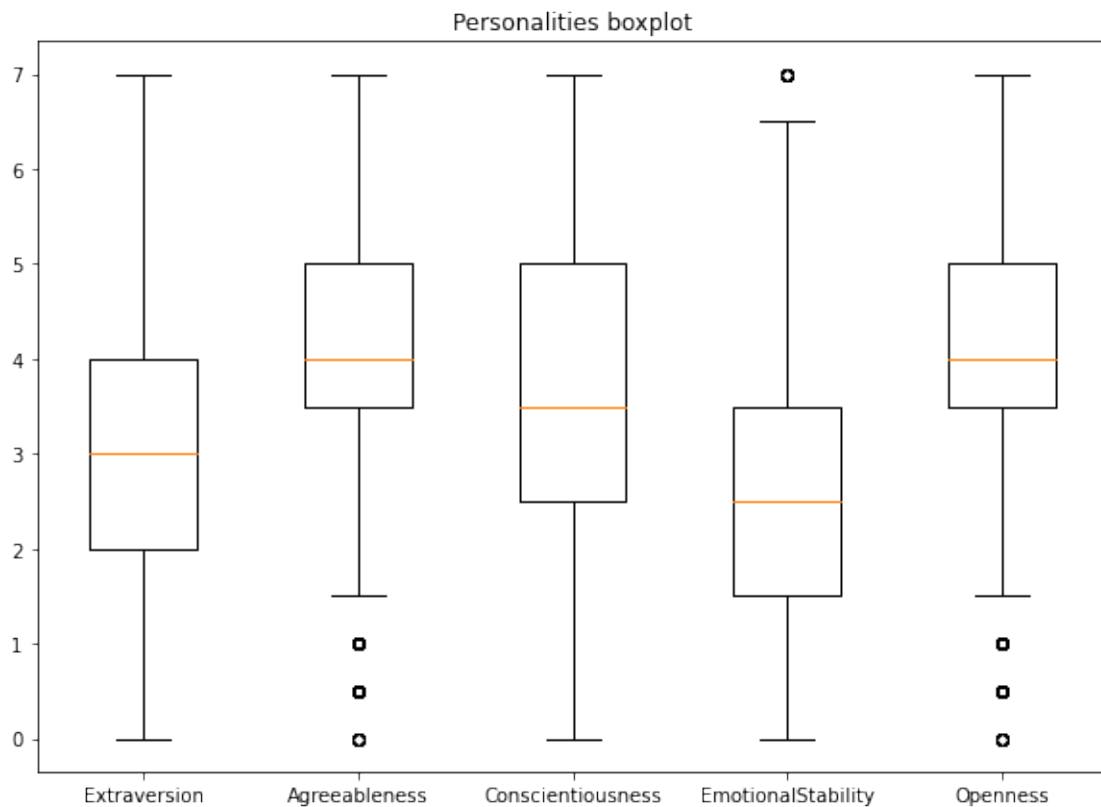
```
[99]: fig, axs = plt.subplots()
      axs.boxplot(dass, labels = ['Depression', 'Anxiety', 'Stress'], )
      axs.set_title('dass boxplot')
```

```
[99]: Text(0.5, 1.0, 'dass boxplot')
```



```
[100]: fig = plt.figure(figsize=(10, 7))
        axs = fig.add_subplot(111)
        axs.boxplot(personalities, labels= ['Extraversion', 'Agreeableness', 'Conscientiousness', 'EmotionalStability', 'Openness'])
        axs.set_title('Personalities boxplot')
```

```
[100]: Text(0.5, 1.0, 'Personalities boxplot')
```



```
[101]: def plot_correlation(df, cmap='RdBu_r'):
        size = len(df.columns)
        fig, ax = plt.subplots(figsize=(2 * size, 2 * size))
        corr = df.corr()

        im = ax.matshow(corr, cmap=cmap)

        for (i, j), z in np.ndenumerate(corr):
            ax.text(j, i, '{:0.1f}'.format(z), ha='center', va='center',
                    bbox=dict(boxstyle='round', facecolor='white', edgecolor='0.5'))
```

```

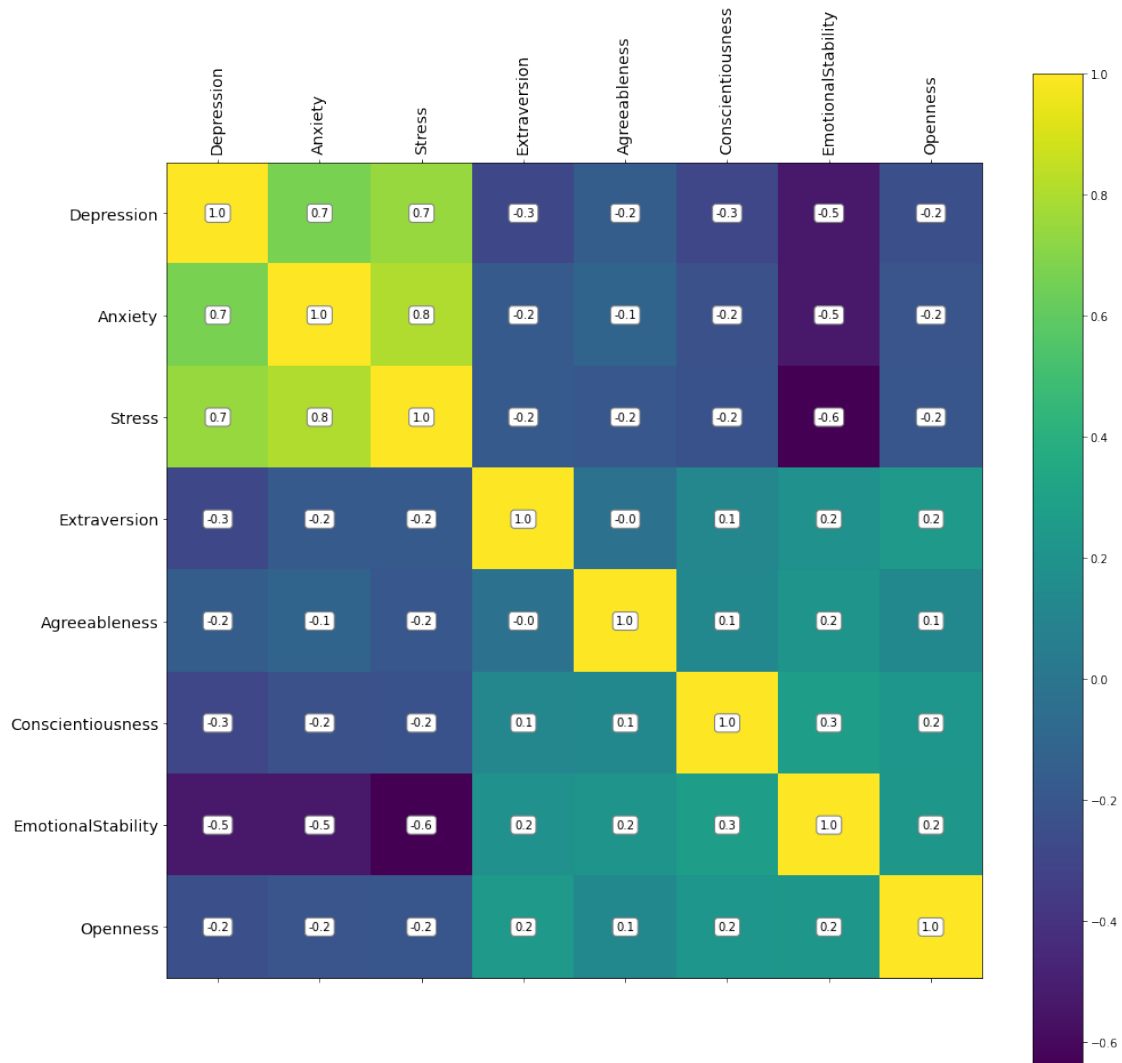
plt.xticks(range(df.select_dtypes(['number']).shape[1]), df.
↪select_dtypes(['number']).columns, fontsize=14, rotation=90)
plt.yticks(range(df.select_dtypes(['number']).shape[1]), df.
↪select_dtypes(['number']).columns, fontsize=14)
cb = plt.colorbar(im)
ax.tick_params(labelsize=14)
plt.show()

```

```

[102]: character = pd.concat([dass, personalities], axis=1)
plot_correlation(character, cmap='viridis')

```



```

[103]: def clasVar(df):
        conditions = [

```



```

(df['Depression'] >= 14) ,
(df['Anxiety'] >= 10) ,
(df['Stress'] >= 19),
((df['Depression'] < 14) & (df['Anxiety'] < 10) & (df['Stress'] < 19)),
]
values = ['Depressed', 'anxious', 'Stressed', 'Normal']
df['diagnosis Category'] = np.select(conditions, values)
return df

```

```

[104]: dfNew = clasVar(df)
dfNew.head(10)

```

```

[104]:
   Q1A  Q1I  Q1E  Q2A  Q2I  Q2E  Q3A  Q3I  Q3E  Q4A  ...  Anxiety  \
0     4    28  3890    4   25  2122    2   16  1944    4  ...     34
1     4     2  8118    1   36  2890    2   35  4777    3  ...     17
2     3     7  5784    1   33  4373    4   41  3242    1  ...     12
3     2    23  5081    3   11  6837    2   37  5521    1  ...     17
4     2    36  3215    2   13  7731    3    5  4156    4  ...     40
5     1    18  6116    1   28  3193    2    2  12542    1  ...      6
6     1    20  4325    1   34  4009    2   38  3604    3  ...     19
9     3    38  5187    2   28  2600    4    9  2015    1  ...     28
10    3    38  3352    1   16  4322    2   28  3083    1  ...      2
11    3    37  4024    3   35  2116    2   18  3408    2  ...     20

```

```

   Anxiety_cat  Stress  Stress_cat  Extraversion  Agreeableness  \
0              4      40           4             0.5            4.5
1              3      27           3             4.5            4.5
2              2      17           1             1.5            3.5
3              3      16           1             2.0            6.0
4              4      29           3             2.0            3.5
5              0      12           0             1.0            6.5
6              3      14           0             3.5            4.0
9              4      34           4             0.5            0.5
10             0      24           2             4.0            4.0
11             4      27           3             5.5            3.5

```

```

   Conscientiousness  EmotionalStability  Openness  diagnosis Category
0                  4.5                  0.5      6.5      Depressed
1                  2.0                  0.5      3.5      Depressed
2                  2.0                  4.0      5.0      Depressed
3                  6.5                  4.5      6.0      Depressed
4                  2.0                  2.0      4.5      Depressed
5                  5.5                  6.0      3.5      Normal
6                  5.0                  3.5      2.5      Depressed
9                  5.0                  0.5      2.5      Depressed
10                 3.0                  3.0      1.5      Depressed
11                 5.0                  2.0      5.0      Depressed

```

[10 rows x 184 columns]

```
[105]: dfNew = dfNew.loc[:, ['Extraversion', 'Agreeableness', 'Conscientiousness',  
    ↳ 'EmotionalStability', 'Openness', 'diagnosis Category']]  
dfNew
```

```
[105]:
```

	Extraversion	Agreeableness	Conscientiousness	EmotionalStability	\
0	0.5	4.5	4.5	0.5	
1	4.5	4.5	2.0	0.5	
2	1.5	3.5	2.0	4.0	
3	2.0	6.0	6.5	4.5	
4	2.0	3.5	2.0	2.0	
...	...	...	...	...	
39769	5.0	3.5	4.5	3.5	
39770	2.0	5.0	3.5	2.5	
39772	5.0	3.5	6.5	3.5	
39773	1.5	2.0	3.5	1.5	
39774	5.0	5.0	2.5	1.5	

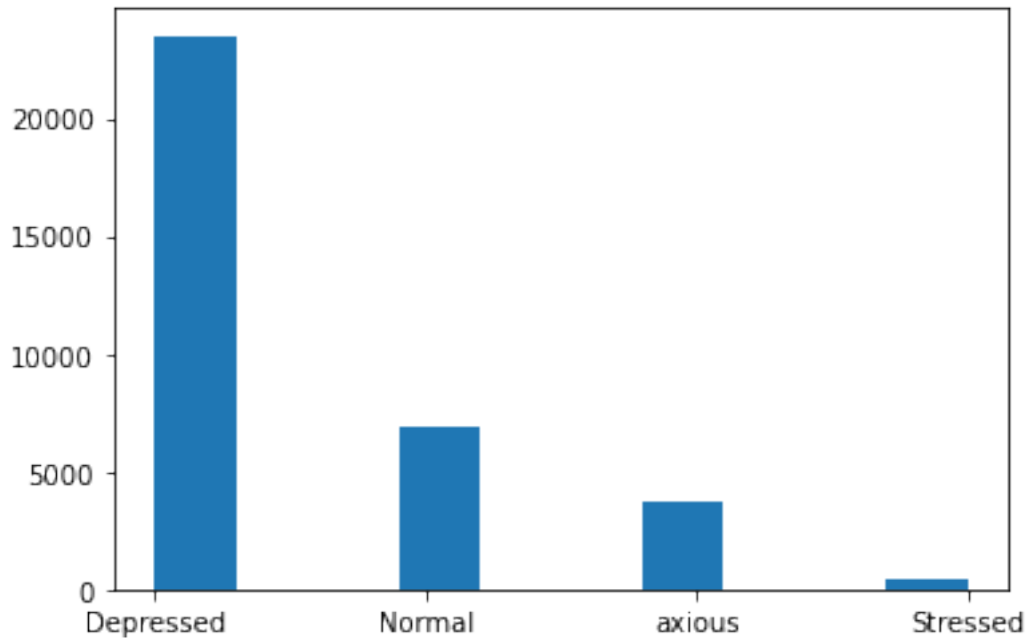
  

	Openness	diagnosis Category
0	6.5	Depressed
1	3.5	Depressed
2	5.0	Depressed
3	6.0	Depressed
4	4.5	Depressed
...	...	...
39769	3.0	Depressed
39770	3.5	Depressed
39772	4.5	Normal
39773	3.0	Depressed
39774	5.5	Depressed

[34583 rows x 6 columns]

```
[106]: plt.hist(dfNew['diagnosis Category'])
```

```
[106]: (array([23503.,    0.,    0., 6879.,    0.,    0., 3754.,    0.,  
    0., 447.]),  
array([0. , 0.3, 0.6, 0.9, 1.2, 1.5, 1.8, 2.1, 2.4, 2.7, 3. ]),  
<BarContainer object of 10 artists>)
```



```
[107]: dfNew.describe()
```

```
[107]:
```

	Extraversion	Agreeableness	Conscientiousness	EmotionalStability \
count	34583.000000	34583.000000	34583.000000	34583.000000
mean	2.971764	4.052237	3.716335	2.733973
std	1.538398	1.213524	1.482219	1.514738
min	0.000000	0.000000	0.000000	0.000000
25%	2.000000	3.500000	2.500000	1.500000
50%	3.000000	4.000000	3.500000	2.500000
75%	4.000000	5.000000	5.000000	3.500000
max	7.000000	7.000000	7.000000	7.000000

	Openness
count	34583.000000
mean	4.057225
std	1.322600
min	0.000000
25%	3.500000
50%	4.000000
75%	5.000000
max	7.000000

```
[108]: from collections import Counter
from sklearn.datasets import make_classification
from matplotlib import pyplot
from numpy import where
```

```
[109]: y = dfNew['diagnosis Category']
        counter = Counter(y)
        print(counter)
```

```
Counter({'Depressed': 23503, 'Normal': 6879, 'anxious': 3754, 'Stressed': 447})
```

```
[110]: from imblearn.over_sampling import SMOTENC
        sm = SMOTENC(random_state=42, categorical_features=[5])
        dfNew_res, y_res = sm.fit_resample(dfNew, y)
        print(f'Resampled dataset samples per class {Counter(y_res)}')
```

```
Resampled dataset samples per class Counter({'Depressed': 23503, 'Normal':
23503, 'anxious': 23503, 'Stressed': 23503})
```

```
[111]: from sklearn.model_selection import KFold
        kf = KFold(n_splits=5, shuffle=False)
        X=dfNew.columns[dfNew.columns != class_col_name]
        for train_index, test_index in kf.split(X):
            print("Train:", train_index, "Validation:", test_index)
            X_train, X_test = X[train_index], X[test_index]
            y_train, y_test = y[train_index], y[test_index]
```

```
Train: [1 2 3 4] Validation: [0]
Train: [0 2 3 4] Validation: [1]
Train: [0 1 3 4] Validation: [2]
Train: [0 1 2 4] Validation: [3]
Train: [0 1 2 3] Validation: [4]
```

```
[112]: from sklearn.model_selection import train_test_split

        # Split dataset into training set and test set
        # class column is Creditability here and everything else will be used as
        # → features
        class_col_name='diagnosis Category'

        feature_names=dfNew_res.columns[dfNew.columns != class_col_name ]
        # 70% training and 30% test
        X_train, X_test, y_train, y_test = train_test_split(dfNew_res.loc[:,
        # → feature_names], dfNew_res[class_col_name], test_size=0.25, random_state=1)
        print(X_train.shape, y_train.shape, X_test.shape, y_test.shape)
```

```
(70509, 5) (70509,) (23503, 5) (23503,)
```

```
[113]: from sklearn.tree import DecisionTreeClassifier
        from sklearn.model_selection import cross_val_score
        import numpy as np
        import matplotlib.pyplot as plt
        X = dfNew_res
        y = y_res
```

```

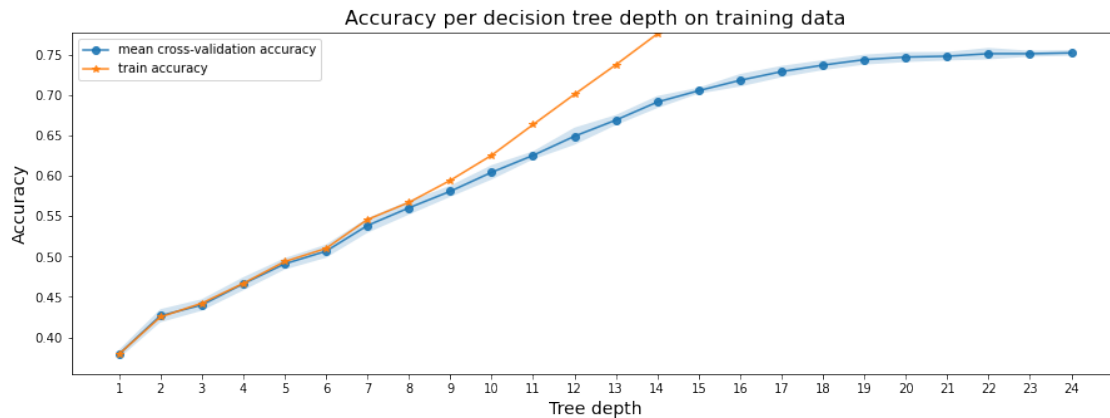
# function for fitting trees of various depths on the training data using
↳ cross-validation
def run_cross_validation_on_trees(X, y, tree_depths, cv=5, scoring='accuracy'):
    cv_scores_list = []
    cv_scores_std = []
    cv_scores_mean = []
    accuracy_scores = []
    for depth in tree_depths:
        tree_model = DecisionTreeClassifier(max_depth=depth)
        cv_scores = cross_val_score(tree_model, X, y, cv=cv, scoring=scoring)
        cv_scores_list.append(cv_scores)
        cv_scores_mean.append(cv_scores.mean())
        cv_scores_std.append(cv_scores.std())
        accuracy_scores.append(tree_model.fit(X, y).score(X, y))
    cv_scores_mean = np.array(cv_scores_mean)
    cv_scores_std = np.array(cv_scores_std)
    accuracy_scores = np.array(accuracy_scores)
    return cv_scores_mean, cv_scores_std, accuracy_scores

# function for plotting cross-validation results
def plot_cross_validation_on_trees(depths, cv_scores_mean, cv_scores_std,
↳ accuracy_scores, title):
    fig, ax = plt.subplots(1,1, figsize=(15,5))
    ax.plot(depths, cv_scores_mean, '-o', label='mean cross-validation
↳ accuracy', alpha=0.9)
    ax.fill_between(depths, cv_scores_mean-2*cv_scores_std,
↳ cv_scores_mean+2*cv_scores_std, alpha=0.2)
    ylim = plt.ylim()
    ax.plot(depths, accuracy_scores, '-*', label='train accuracy', alpha=0.9)
    ax.set_title(title, fontsize=16)
    ax.set_xlabel('Tree depth', fontsize=14)
    ax.set_ylabel('Accuracy', fontsize=14)
    ax.set_ylim(ylim)
    ax.set_xticks(depths)
    ax.legend()

# fitting trees of depth 1 to 24
sm_tree_depths = range(1,25)
sm_cv_scores_mean, sm_cv_scores_std, sm_accuracy_scores =
↳ run_cross_validation_on_trees(X_train, y_train, sm_tree_depths)

# plotting accuracy
plot_cross_validation_on_trees(sm_tree_depths, sm_cv_scores_mean,
↳ sm_cv_scores_std, sm_accuracy_scores,
                                'Accuracy per decision tree depth on training
↳ data')

```



```
[114]: idx_max = sm_cv_scores_mean.argmax()
sm_best_tree_depth = sm_tree_depths[idx_max]
sm_best_tree_cv_score = sm_cv_scores_mean[idx_max]
sm_best_tree_cv_score_std = sm_cv_scores_std[idx_max]
print('The depth-{} tree achieves the best mean cross-validation accuracy {} +/-
-> {}% on training dataset'.format(
    sm_best_tree_depth, round(sm_best_tree_cv_score*100,5),
    round(sm_best_tree_cv_score_std*100, 5)))
```

The depth-24 tree achieves the best mean cross-validation accuracy 75.20316 +/- 0.17681% on training dataset

```
[115]: # function for training and evaluating a tree
def run_single_tree(X_train, y_train, X_test, y_test, depth):
    model = DecisionTreeClassifier(max_depth=depth).fit(X_train, y_train)
    accuracy_train = model.score(X_train, y_train)
    accuracy_test = model.score(X_test, y_test)
    print('Single tree depth: ', depth)
    print('Accuracy, Training Set: ', round(accuracy_train*100,5), '%')
    print('Accuracy, Test Set: ', round(accuracy_test*100,5), '%')
    return accuracy_train, accuracy_test

# train and evaluate a 24-depth tree
sm_best_tree_accuracy_train, sm_best_tree_accuracy_test =
    run_single_tree(X_train, y_train,
                    X_test, y_test,
                    sm_best_tree_depth)
```

Single tree depth: 24  
Accuracy, Training Set: 96.86848 %

Accuracy, Test Set: 76.37323 %

```
[116]: clf = DecisionTreeClassifier()

# Train Decision Tree Classifier
clf = clf.fit(X_train,y_train)

#Predict the response for test dataset
y_pred = clf.predict(X_test)
```

```
[121]: from sklearn.tree import DecisionTreeClassifier
from sklearn.tree import export_text
clf = DecisionTreeClassifier(random_state=0 , max_depth=24)
decision_tree = clf.fit(X_train, y_train)
r = export_text(decision_tree, feature_names= ('Extraversion', 'Agreeableness', 'Conscientiousness', 'EmotionalStability', 'Openness'))
print(r)
```

```
|--- EmotionalStability <= 3.50
|   |--- EmotionalStability <= 1.00
|   |   |--- EmotionalStability <= 0.50
|   |   |   |--- Openness <= 6.00
|   |   |   |   |--- Conscientiousness <= 3.52
|   |   |   |   |   |--- Extraversion <= 4.01
|   |   |   |   |   |   |--- Agreeableness <= 1.99
|   |   |   |   |   |   |   |--- Agreeableness <= 1.50
|   |   |   |   |   |   |   |   |--- Extraversion <= 2.75
|   |   |   |   |   |   |   |   |   |--- Conscientiousness <= 1.63
|   |   |   |   |   |   |   |   |   |   |--- class: Depressed
|   |   |   |   |   |   |   |   |   |   |--- Conscientiousness > 1.63
|   |   |   |   |   |   |   |   |   |   |   |--- Conscientiousness <= 1.99
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: Normal
|   |   |   |   |   |   |   |   |   |   |   |   |--- Conscientiousness > 1.99
|   |   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 6
|   |   |   |   |   |   |   |   |   |   |   |   |   |--- Extraversion > 2.75
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |--- Extraversion <= 3.25
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |--- Conscientiousness <= 1.75
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 3
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |--- Conscientiousness > 1.75
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 3
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |--- Extraversion > 3.25
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |--- Extraversion <= 3.75
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |--- class: Depressed
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |--- Extraversion > 3.75
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 3
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |--- Agreeableness > 1.50
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |--- Extraversion <= 3.28
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |--- class: Stressed
```

[illegible]



```
| | | | | | |-- class: anxious  
| | | | | | |--- Openness > 1.00  
| | | | | | |   |-- Extraversion <= 4.47  
| | | | | | |     |-- Conscientiousness <= 1.52  
| | | | | | |       |-- class: anxious  
| | | | | | |         |-- Conscientiousness > 1.52  
| | | | | | |           |-- class: Normal  
| | | | | | |             |-- Extraversion > 4.47  
| | | | | | |               |-- Agreeableness <= 3.48  
| | | | | | |                 |-- Agreeableness <= 3.01  
| | | | | | |                   |-- Extraversion <= 6.10  
| | | | | | |                     |-- truncated branch of depth 9  
| | | | | | |                       |-- Extraversion > 6.10  
| | | | | | |                         |-- class: anxious  
| | | | | | |                           |-- Agreeableness > 3.01  
| | | | | | |                             |-- class: anxious  
| | | | | | |                               |-- Agreeableness > 3.48  
| | | | | | |                                 |-- Openness <= 1.25  
| | | | | | |                                   |-- Extraversion <= 4.75  
| | | | | | |                                     |-- class: anxious  
| | | | | | |                                       |-- Extraversion > 4.75  
| | | | | | |                                         |-- truncated branch of depth 3  
| | | | | | |                                           |-- Openness > 1.25  
| | | | | | |                                             |-- Agreeableness <= 4.75  
| | | | | | |                                               |-- truncated branch of depth 7  
| | | | | | |                                                 |-- Agreeableness > 4.75  
| | | | | | |                                                   |-- truncated branch of depth 6  
| | | | | |-- Conscientiousness > 3.52  
| | | | | | --- Conscientiousness <= 4.00  
| | | | | | | --- Agreeableness <= 6.25  
| | | | | | | | --- Openness <= 1.63  
| | | | | | | |   |-- class: Normal  
| | | | | | | |     |-- Openness > 1.63  
| | | | | | | |       |-- class: anxious  
| | | | | | | |         |-- Agreeableness > 6.25  
| | | | | | | |           |-- class: Normal  
| | | | | |-- Conscientiousness > 4.00  
| | | | | | --- Openness <= 3.69  
| | | | | | | --- Agreeableness <= 5.54  
| | | | | | | | --- Extraversion <= 5.12  
| | | | | | | |   |-- Agreeableness <= 1.41  
| | | | | | | |     |-- Openness <= 0.75  
| | | | | | | |       |-- class: Normal  
| | | | | | | |         |-- Openness > 0.75  
| | | | | | | |           |-- truncated branch of depth 5  
| | | | | | | |             |-- Agreeableness > 1.41  
| | | | | | | |               |-- Conscientiousness <= 5.75  
| | | | | | | |                 |-- truncated branch of depth 10
```

[illegible]

```
| | | | | | | | | | --- Openness > 5.51
| | | | | | | | | | |--- Extraversion <= 4.75
| | | | | | | | | | | |--- Extraversion <= 0.91
| | | | | | | | | | | | |--- truncated branch of depth 5
| | | | | | | | | | | | |--- Extraversion > 0.91
| | | | | | | | | | | | |--- truncated branch of depth 8
| | | | | | | | | | | |--- Extraversion > 4.75
| | | | | | | | | | | |--- Extraversion <= 5.96
| | | | | | | | | | | | |--- truncated branch of depth 4
| | | | | | | | | | | |--- Extraversion > 5.96
| | | | | | | | | | | |--- class: Depressed
| | | | | | | | | | |--- Openness > 6.00
| | | | | | | | | | | |--- Conscientiousness <= 5.50
| | | | | | | | | | | | |--- Openness <= 6.45
| | | | | | | | | | | | |--- class: anxious
| | | | | | | | | | | | |--- Openness > 6.45
| | | | | | | | | | | | |--- Conscientiousness <= 5.21
| | | | | | | | | | | | |--- Openness <= 6.48
| | | | | | | | | | | | |--- class: Normal
| | | | | | | | | | | | |--- Openness > 6.48
| | | | | | | | | | | | |--- Agreeableness <= 3.75
| | | | | | | | | | | | |--- Extraversion <= 1.25
| | | | | | | | | | | | | |--- Conscientiousness <= 3.25
| | | | | | | | | | | | | |--- class: Depressed
| | | | | | | | | | | | | |--- Conscientiousness > 3.25
| | | | | | | | | | | | | |--- truncated branch of depth 2
| | | | | | | | | | | | |--- Extraversion > 1.25
| | | | | | | | | | | | |--- class: Depressed
| | | | | | | | | | | | |--- Agreeableness > 3.75
| | | | | | | | | | | | |--- Agreeableness <= 4.25
| | | | | | | | | | | | | |--- Conscientiousness <= 3.04
| | | | | | | | | | | | | |--- truncated branch of depth 3
| | | | | | | | | | | | | |--- Conscientiousness > 3.04
| | | | | | | | | | | | | |--- truncated branch of depth 2
| | | | | | | | | | | | |--- Agreeableness > 4.25
| | | | | | | | | | | | |--- Agreeableness <= 6.25
| | | | | | | | | | | | | |--- truncated branch of depth 5
| | | | | | | | | | | | | |--- Agreeableness > 6.25
| | | | | | | | | | | | | |--- truncated branch of depth 4
| | | | | | | | | | | | |--- Conscientiousness > 5.21
| | | | | | | | | | | | |--- Agreeableness <= 3.25
| | | | | | | | | | | | |--- class: Depressed
| | | | | | | | | | | | |--- Agreeableness > 3.25
| | | | | | | | | | | | |--- class: anxious
| | | | | | | | | | |--- Conscientiousness > 5.50
| | | | | | | | | | | |--- Conscientiousness <= 6.25
| | | | | | | | | | | |--- Extraversion <= 4.48
| | | | | | | | | | | |--- Agreeableness <= 4.50
```

```
| | | | | | | |--- class: Stressed  
| | | | | | | |--- Agreeableness > 4.50  
| | | | | | | |--- class: Depressed  
| | | | | | | --- Extraversion > 4.48  
| | | | | | | |--- Extraversion <= 6.00  
| | | | | | | |--- EmotionalStability <= 0.25  
| | | | | | | |--- class: Depressed  
| | | | | | | |--- EmotionalStability > 0.25  
| | | | | | | |--- Agreeableness <= 3.75  
| | | | | | | |--- class: Depressed  
| | | | | | | |--- Agreeableness > 3.75  
| | | | | | | |--- class: Stressed  
| | | | | | | --- Extraversion > 6.00  
| | | | | | | |--- class: anxious  
| | | | | | | --- Conscientiousness > 6.25  
| | | | | | | |--- Extraversion <= 5.00  
| | | | | | | |--- class: Depressed  
| | | | | | | --- Extraversion > 5.00  
| | | | | | | |--- Agreeableness <= 1.75  
| | | | | | | |--- class: Depressed  
| | | | | | | |--- Agreeableness > 1.75  
| | | | | | | |--- class: Normal  
| | | | | | | --- EmotionalStability > 0.50  
| | | | | | | |--- EmotionalStability <= 1.00  
| | | | | | | |--- Agreeableness <= 4.49  
| | | | | | | |--- Openness <= 3.50  
| | | | | | | |--- Conscientiousness <= 2.63  
| | | | | | | |--- Conscientiousness <= 1.46  
| | | | | | | |--- Extraversion <= 1.48  
| | | | | | | |--- class: Normal  
| | | | | | | |--- Extraversion > 1.48  
| | | | | | | |--- class: anxious  
| | | | | | | --- Conscientiousness > 1.46  
| | | | | | | |--- Openness <= 2.46  
| | | | | | | |--- Extraversion <= 2.05  
| | | | | | | |--- class: Normal  
| | | | | | | |--- Extraversion > 2.05  
| | | | | | | |--- class: anxious  
| | | | | | | --- Openness > 2.46  
| | | | | | | |--- Conscientiousness <= 1.89  
| | | | | | | |--- Extraversion <= 2.57  
| | | | | | | |--- class: Normal  
| | | | | | | |--- Extraversion > 2.57  
| | | | | | | |--- class: Stressed  
| | | | | | | |--- Conscientiousness > 1.89  
| | | | | | | |--- class: Stressed  
| | | | | | | --- Conscientiousness > 2.63  
| | | | | | | |--- Extraversion <= 5.97
```

```
| | | | | | | | --- Openness <= 0.98  
| | | | | | | | |--- class: Normal  
| | | | | | | | |--- Openness > 0.98  
| | | | | | | | |   |-- Extraversion <= 0.29  
| | | | | | | | |     |--- class: Normal  
| | | | | | | | |     |-- Extraversion > 0.29  
| | | | | | | | |       |-- EmotionalStability <= 0.53  
| | | | | | | | |         |--- class: Normal  
| | | | | | | | |         |-- EmotionalStability > 0.53  
| | | | | | | | |           |-- truncated branch of depth 5  
| | | | | | | | |             |-- Extraversion > 5.97  
| | | | | | | | |               |-- EmotionalStability <= 0.83  
| | | | | | | | |                 |-- class: anxious  
| | | | | | | | |                   |-- EmotionalStability > 0.83  
| | | | | | | | |                     |-- class: Stressed  
| | | | | | | | |--- Openness > 3.50  
| | | | | | | | |   |-- Agreeableness <= 3.98  
| | | | | | | | |     |-- Openness <= 5.50  
| | | | | | | | |       |-- Extraversion <= 2.93  
| | | | | | | | |         |-- Openness <= 4.97  
| | | | | | | | |           |-- Agreeableness <= 3.72  
| | | | | | | | |             |-- class: anxious  
| | | | | | | | |               |-- Agreeableness > 3.72  
| | | | | | | | |                 |-- truncated branch of depth 2  
| | | | | | | | |                   |-- Openness > 4.97  
| | | | | | | | |                     |-- class: Stressed  
| | | | | | | | |--- Extraversion > 2.93  
| | | | | | | | |   |-- Agreeableness <= 2.50  
| | | | | | | | |     |-- Extraversion <= 5.73  
| | | | | | | | |       |-- truncated branch of depth 4  
| | | | | | | | |         |-- Extraversion > 5.73  
| | | | | | | | |           |-- class: anxious  
| | | | | | | | |             |-- Agreeableness > 2.50  
| | | | | | | | |               |-- Openness <= 4.50  
| | | | | | | | |                 |-- truncated branch of depth 8  
| | | | | | | | |                   |-- Openness > 4.50  
| | | | | | | | |                     |-- truncated branch of depth 4  
| | | | | | | | |--- Openness > 5.50  
| | | | | | | | |   |-- Conscientiousness <= 6.24  
| | | | | | | | |     |-- Openness <= 6.08  
| | | | | | | | |       |-- Conscientiousness <= 5.46  
| | | | | | | | |         |-- class: Stressed  
| | | | | | | | |           |-- Conscientiousness > 5.46  
| | | | | | | | |             |-- truncated branch of depth 2  
| | | | | | | | |               |-- Openness > 6.08  
| | | | | | | | |                 |-- Conscientiousness <= 4.03  
| | | | | | | | |                   |-- class: anxious  
| | | | | | | | |                     |-- Conscientiousness > 4.03
```

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```
| | | | | | | | --- Extraversion > 0.69
| | | | | | | | |--- Conscientiousness <= 5.07
| | | | | | | | |   |--- class: anxious
| | | | | | | | |   |--- Conscientiousness > 5.07
| | | | | | | | |     |--- Agreeableness <= 6.05
| | | | | | | | |     |   |--- class: anxious
| | | | | | | | |     |   |--- Agreeableness > 6.05
| | | | | | | | |       |--- class: Normal
| | | | | | | | |--- Extraversion > 3.02
| | | | | | | | |   |--- Conscientiousness <= 3.69
| | | | | | | | |     |--- Conscientiousness <= 2.63
| | | | | | | | |       |--- Extraversion <= 5.37
| | | | | | | | |         |--- class: anxious
| | | | | | | | |         |--- Extraversion > 5.37
| | | | | | | | |           |--- class: Normal
| | | | | | | | |     |--- Conscientiousness > 2.63
| | | | | | | | |     |--- Agreeableness <= 5.61
| | | | | | | | |       |--- Conscientiousness <= 3.55
| | | | | | | | |         |--- Extraversion <= 4.19
| | | | | | | | |           |--- truncated branch of depth 4
| | | | | | | | |           |--- Extraversion > 4.19
| | | | | | | | |             |--- class: Stressed
| | | | | | | | |             |--- Conscientiousness > 3.55
| | | | | | | | |               |--- Agreeableness <= 5.02
| | | | | | | | |                 |--- truncated branch of depth 2
| | | | | | | | |                 |--- Agreeableness > 5.02
| | | | | | | | |                   |--- class: Stressed
| | | | | | | | |             |--- Agreeableness > 5.61
| | | | | | | | |               |--- Extraversion <= 3.55
| | | | | | | | |                 |--- class: Stressed
| | | | | | | | |                 |--- Extraversion > 3.55
| | | | | | | | |                   |--- class: anxious
| | | | | | | | |--- Conscientiousness > 3.69
| | | | | | | | |   |--- Openness <= 6.49
| | | | | | | | |     |--- class: anxious
| | | | | | | | |     |--- Openness > 6.49
| | | | | | | | |       |--- Agreeableness <= 5.41
| | | | | | | | |         |--- class: Stressed
| | | | | | | | |         |--- Agreeableness > 5.41
| | | | | | | | |           |--- class: anxious
| | | | | | | | |--- EmotionalStability > 1.00
| | | | | | | | |   |--- Extraversion <= 4.50
| | | | | | | | |     |--- Conscientiousness <= 4.01
| | | | | | | | |       |--- Openness <= 2.51
| | | | | | | | |         |--- Conscientiousness <= 2.25
| | | | | | | | |           |--- Agreeableness <= 1.75
| | | | | | | | |             |--- Agreeableness <= 1.25
| | | | | | | | |               |--- class: Depressed
```

```
| | | | | | | | |--- Agreeableness > 1.25
| | | | | | | | |--- Conscientiousness <= 1.25
| | | | | | | | |--- truncated branch of depth 3
| | | | | | | | |--- Conscientiousness > 1.25
| | | | | | | | |--- class: Depressed
| | | | | | | |--- Agreeableness > 1.75
| | | | | | | |--- Agreeableness <= 5.25
| | | | | | | |--- Extraversion <= 3.25
| | | | | | | |--- class: Depressed
| | | | | | | |--- Extraversion > 3.25
| | | | | | | |--- truncated branch of depth 5
| | | | | | | |--- Agreeableness > 5.25
| | | | | | | |--- Extraversion <= 0.75
| | | | | | | |--- truncated branch of depth 3
| | | | | | | |--- Extraversion > 0.75
| | | | | | | |--- class: Depressed
| | | | | |--- Conscientiousness > 2.25
| | | | | |--- Conscientiousness <= 2.82
| | | | | |--- Conscientiousness <= 2.57
| | | | | |--- Openness <= 2.25
| | | | | |--- truncated branch of depth 6
| | | | | |--- Openness > 2.25
| | | | | |--- truncated branch of depth 4
| | | | | |--- Conscientiousness > 2.57
| | | | | |--- class: anxious
| | | | | |--- Conscientiousness > 2.82
| | | | | |--- Extraversion <= 4.25
| | | | | |--- Openness <= 0.75
| | | | | |--- truncated branch of depth 3
| | | | | |--- Openness > 0.75
| | | | | |--- truncated branch of depth 12
| | | | | |--- Extraversion > 4.25
| | | | | |--- Conscientiousness <= 3.75
| | | | | |--- class: Depressed
| | | | | |--- Conscientiousness > 3.75
| | | | | |--- truncated branch of depth 2
| | | | |--- Openness > 2.51
| | | | |--- Openness <= 2.99
| | | | |--- Agreeableness <= 3.51
| | | | |--- class: anxious
| | | | |--- Agreeableness > 3.51
| | | | |--- Agreeableness <= 4.33
| | | | |--- class: Stressed
| | | | |--- Agreeableness > 4.33
| | | | |--- class: anxious
| | | |--- Openness > 2.99
| | | |--- Extraversion <= 3.00
| | | |--- Agreeableness <= 4.52
```



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```
| | | | | | | | | | --- Agreeableness <= 3.25  
| | | | | | | | | | |--- class: Normal  
| | | | | | | | | | |--- Agreeableness > 3.25  
| | | | | | | | | | |--- class: Depressed  
  
| | | | | | | | | | --- Extraversion > 4.50  
| | | | | | | | | | |--- Agreeableness <= 3.99  
| | | | | | | | | | |--- Openness <= 2.50  
| | | | | | | | | | |--- Conscientiousness <= 4.12  
| | | | | | | | | | |--- Extraversion <= 5.75  
| | | | | | | | | | |--- class: Depressed  
| | | | | | | | | | |--- Extraversion > 5.75  
| | | | | | | | | | |--- Openness <= 1.25  
| | | | | | | | | | |--- class: Depressed  
| | | | | | | | | | |--- Openness > 1.25  
| | | | | | | | | | |--- Extraversion <= 6.25  
| | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | |--- Extraversion > 6.25  
| | | | | | | | | | |--- class: anxious  
  
| | | | | | | | | | |--- Conscientiousness > 4.12  
| | | | | | | | | | |--- Openness <= 2.35  
| | | | | | | | | | |--- class: anxious  
| | | | | | | | | | |--- Openness > 2.35  
| | | | | | | | | | |--- Agreeableness <= 2.75  
| | | | | | | | | | |--- class: Depressed  
| | | | | | | | | | |--- Agreeableness > 2.75  
| | | | | | | | | | |--- class: anxious  
  
| | | | | | | | | | |--- Openness > 2.50  
| | | | | | | | | | |--- Conscientiousness <= 5.07  
| | | | | | | | | | |--- Conscientiousness <= 1.09  
| | | | | | | | | | |--- class: Depressed  
| | | | | | | | | | |--- Conscientiousness > 1.09  
| | | | | | | | | | |--- Openness <= 4.51  
| | | | | | | | | | |--- Extraversion <= 5.00  
| | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | |--- Extraversion > 5.00  
| | | | | | | | | | |--- truncated branch of depth 8  
| | | | | | | | | | |--- Openness > 4.51  
| | | | | | | | | | |--- Agreeableness <= 3.52  
| | | | | | | | | | |--- truncated branch of depth 10  
| | | | | | | | | | |--- Agreeableness > 3.52  
| | | | | | | | | | |--- class: Normal  
  
| | | | | | | | | | |--- Conscientiousness > 5.07  
| | | | | | | | | | |--- Extraversion <= 6.00  
| | | | | | | | | | |--- Openness <= 3.93  
| | | | | | | | | | |--- Conscientiousness <= 5.75  
| | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | |--- Conscientiousness > 5.75  
| | | | | | | | | | |--- class: Depressed
```



```

| | | | | |--- Openness <= 4.00
| | | | | | |--- Conscientiousness <= 3.00
| | | | | | | |--- EmotionalStability <= 1.49
| | | | | | | | |--- Openness <= 2.51
| | | | | | | | | |--- Conscientiousness <= 0.77
| | | | | | | | | |--- class: Normal
| | | | | | | | | |--- Conscientiousness > 0.77
| | | | | | | | | |--- class: anxious
| | | | | | | | |--- Openness > 2.51
| | | | | | | | |--- Extraversion <= 1.66
| | | | | | | | | |--- Agreeableness <= 3.15
| | | | | | | | | |--- class: anxious
| | | | | | | | | |--- Agreeableness > 3.15
| | | | | | | | | |--- Conscientiousness <= 2.85
| | | | | | | | | |--- class: Stressed
| | | | | | | | | |--- Conscientiousness > 2.85
| | | | | | | | | |--- truncated branch of depth 2
| | | | | | | | |--- Extraversion > 1.66
| | | | | | | | | |--- Agreeableness <= 2.05
| | | | | | | | | |--- Openness <= 3.06
| | | | | | | | | | |--- class: Normal
| | | | | | | | | | |--- Openness > 3.06
| | | | | | | | | | |--- class: Stressed
| | | | | | | | | |--- Agreeableness > 2.05
| | | | | | | | | |--- Extraversion <= 6.20
| | | | | | | | | | |--- truncated branch of depth 3
| | | | | | | | | | |--- Extraversion > 6.20
| | | | | | | | | | |--- class: Normal
| | | | | | | |--- EmotionalStability > 1.49
| | | | | | | | |--- EmotionalStability <= 1.50
| | | | | | | | |--- Agreeableness <= 3.03
| | | | | | | | |--- Extraversion <= 4.75
| | | | | | | | | |--- Agreeableness <= 0.75
| | | | | | | | | | |--- truncated branch of depth 2
| | | | | | | | | | |--- Agreeableness > 0.75
| | | | | | | | | | |--- truncated branch of depth 11
| | | | | | | | | |--- Extraversion > 4.75
| | | | | | | | | |--- Agreeableness <= 2.49
| | | | | | | | | | |--- truncated branch of depth 3
| | | | | | | | | | |--- Agreeableness > 2.49
| | | | | | | | | | |--- truncated branch of depth 6
| | | | | | | | |--- Agreeableness > 3.03
| | | | | | | | |--- Agreeableness <= 3.43
| | | | | | | | | |--- Conscientiousness <= 0.95
| | | | | | | | | |--- class: Normal
| | | | | | | | | |--- Conscientiousness > 0.95
| | | | | | | | | |--- class: anxious
| | | | | | | | |--- Agreeableness > 3.43

```

```
| | | | | | | | | |--- Conscientiousness <= 0.75  
| | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | |--- Conscientiousness > 0.75  
| | | | | | | | | |--- truncated branch of depth 10  
| | | | | | | | |--- EmotionalStability > 1.50  
| | | | | | | | |--- EmotionalStability <= 2.00  
| | | | | | | | |--- Openness <= 3.98  
| | | | | | | | |--- Openness <= 2.39  
| | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | |--- Openness > 2.39  
| | | | | | | | |--- truncated branch of depth 8  
| | | | | | | | |--- Openness > 3.98  
| | | | | | | | |--- Conscientiousness <= 1.89  
| | | | | | | | |--- class: Normal  
| | | | | | | | |--- Conscientiousness > 1.89  
| | | | | | | | |--- class: anxious  
| | | | | | | | |--- EmotionalStability > 2.00  
| | | | | | | | |--- Extraversion <= 3.51  
| | | | | | | | |--- Agreeableness <= 3.49  
| | | | | | | | |--- truncated branch of depth 14  
| | | | | | | | |--- Agreeableness > 3.49  
| | | | | | | | |--- truncated branch of depth 14  
| | | | | | | | |--- Extraversion > 3.51  
| | | | | | | | |--- Extraversion <= 4.00  
| | | | | | | | |--- truncated branch of depth 6  
| | | | | | | | |--- Extraversion > 4.00  
| | | | | | | | |--- truncated branch of depth 14  
| | | | | | | |--- Conscientiousness > 3.00  
| | | | | | | |--- Extraversion <= 2.50  
| | | | | | | |--- Extraversion <= 1.00  
| | | | | | | |--- EmotionalStability <= 1.50  
| | | | | | | |--- Agreeableness <= 2.57  
| | | | | | | |--- Conscientiousness <= 4.49  
| | | | | | | |--- class: anxious  
| | | | | | | |--- Conscientiousness > 4.49  
| | | | | | | |--- class: Stressed  
| | | | | | | |--- Agreeableness > 2.57  
| | | | | | | |--- class: anxious  
| | | | | | | |--- EmotionalStability > 1.50  
| | | | | | | |--- Extraversion <= 0.51  
| | | | | | | |--- Agreeableness <= 3.07  
| | | | | | | |--- truncated branch of depth 11  
| | | | | | | |--- Agreeableness > 3.07  
| | | | | | | |--- truncated branch of depth 8  
| | | | | | | |--- Extraversion > 0.51  
| | | | | | | |--- Extraversion <= 0.99  
| | | | | | | |--- truncated branch of depth 5  
| | | | | | | |--- Extraversion > 0.99
```

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```
| | | | | | | | | | | --- EmotionalStability > 3.21  
| | | | | | | | | | | | --- class: Normal  
| | | | | | | | | | | | --- Extraversion > 3.16  
| | | | | | | | | | | | | --- EmotionalStability <= 1.51  
| | | | | | | | | | | | | | --- truncated branch of depth 6  
| | | | | | | | | | | | | | --- EmotionalStability > 1.51  
| | | | | | | | | | | | | | | --- truncated branch of depth 10  
| | | | | | | | | | | | | --- Agreeableness > 3.00  
| | | | | | | | | | | | | | --- Openness <= 6.01  
| | | | | | | | | | | | | | | --- EmotionalStability <= 3.01  
| | | | | | | | | | | | | | | | --- truncated branch of depth 11  
| | | | | | | | | | | | | | | --- EmotionalStability > 3.01  
| | | | | | | | | | | | | | | | --- class: Stressed  
| | | | | | | | | | | | | | --- Openness > 6.01  
| | | | | | | | | | | | | | | --- Conscientiousness <= 1.51  
| | | | | | | | | | | | | | | | --- truncated branch of depth 3  
| | | | | | | | | | | | | | | --- Conscientiousness > 1.51  
| | | | | | | | | | | | | | | | --- truncated branch of depth 2  
| | | | | | | | | | | --- Conscientiousness > 2.00  
| | | | | | | | | | | | --- Openness <= 5.00  
| | | | | | | | | | | | | --- Openness <= 4.50  
| | | | | | | | | | | | | | --- Extraversion <= 3.00  
| | | | | | | | | | | | | | | --- Conscientiousness <= 2.93  
| | | | | | | | | | | | | | | | --- truncated branch of depth 4  
| | | | | | | | | | | | | | | --- Conscientiousness > 2.93  
| | | | | | | | | | | | | | | | --- truncated branch of depth 12  
| | | | | | | | | | | | | | --- Extraversion > 3.00  
| | | | | | | | | | | | | | | --- EmotionalStability <= 1.67  
| | | | | | | | | | | | | | | | --- truncated branch of depth 4  
| | | | | | | | | | | | | | | --- EmotionalStability > 1.67  
| | | | | | | | | | | | | | | | --- truncated branch of depth 11  
| | | | | | | | | | | | | | --- Openness > 4.50  
| | | | | | | | | | | | | | | --- Openness <= 4.50  
| | | | | | | | | | | | | | | | --- EmotionalStability <= 2.51  
| | | | | | | | | | | | | | | | | --- truncated branch of depth 14  
| | | | | | | | | | | | | | | --- EmotionalStability > 2.51  
| | | | | | | | | | | | | | | | --- truncated branch of depth 14  
| | | | | | | | | | | | | | --- Openness > 4.50  
| | | | | | | | | | | | | | | --- Openness <= 5.00  
| | | | | | | | | | | | | | | | --- truncated branch of depth 14  
| | | | | | | | | | | | | | | --- Openness > 5.00  
| | | | | | | | | | | | | | | | --- truncated branch of depth 14  
| | | | | | | | | | | | | | --- Openness > 5.00  
| | | | | | | | | | | | | | | --- EmotionalStability <= 2.50  
| | | | | | | | | | | | | | | --- EmotionalStability <= 1.50  
| | | | | | | | | | | | | | | --- EmotionalStability <= 1.50  
| | | | | | | | | | | | | | | | --- truncated branch of depth 11  
| | | | | | | | | | | | | | | --- EmotionalStability > 1.50
```

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```
| | | | | | | --- Conscientiousness > 6.50  
| | | | | | | |--- class: anxious  
| | | | | | |--- Openness > 5.52  
| | | | | | | |--- Conscientiousness <= 3.79  
| | | | | | | |--- Conscientiousness <= 3.40  
| | | | | | | |--- Extraversion <= 3.98  
| | | | | | | | |--- Conscientiousness <= 2.69  
| | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | |--- Conscientiousness > 2.69  
| | | | | | | | |--- truncated branch of depth 3  
| | | | | | | |--- Extraversion > 3.98  
| | | | | | | |--- Extraversion <= 5.93  
| | | | | | | | |--- class: anxious  
| | | | | | | | |--- Extraversion > 5.93  
| | | | | | | | |--- truncated branch of depth 2  
| | | | | | | |--- Conscientiousness > 3.40  
| | | | | | | |--- Openness <= 5.74  
| | | | | | | | |--- Conscientiousness <= 3.54  
| | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | |--- Conscientiousness > 3.54  
| | | | | | | | |--- class: Stressed  
| | | | | | | |--- Openness > 5.74  
| | | | | | | | |--- class: anxious  
| | | | | | |--- Conscientiousness > 3.79  
| | | | | | | |--- Extraversion <= 1.27  
| | | | | | | |--- class: anxious  
| | | | | | |--- Extraversion > 1.27  
| | | | | | | |--- Agreeableness <= 3.83  
| | | | | | | |--- Openness <= 5.60  
| | | | | | | | |--- class: Normal  
| | | | | | | |--- Openness > 5.60  
| | | | | | | | |--- truncated branch of depth 5  
| | | | | | | |--- Agreeableness > 3.83  
| | | | | | | |--- Agreeableness <= 3.84  
| | | | | | | | |--- truncated branch of depth 2  
| | | | | | | |--- Agreeableness > 3.84  
| | | | | | | | |--- truncated branch of depth 7  
| | | | | | |--- EmotionalStability > 2.48  
| | | | | | | |--- Conscientiousness <= 4.01  
| | | | | | | |--- Extraversion <= 3.50  
| | | | | | | |--- Extraversion <= 3.01  
| | | | | | | |--- Openness <= 5.74  
| | | | | | | |--- Openness <= 2.60  
| | | | | | | | |--- Openness <= 2.13  
| | | | | | | | |--- truncated branch of depth 4  
| | | | | | | | |--- Openness > 2.13  
| | | | | | | | |--- truncated branch of depth 4  
| | | | | | | |--- Openness > 2.60
```



```
| | | | | | | | | | | --- Extraversion > 4.02  
| | | | | | | | | | | | --- Openness <= 3.94  
| | | | | | | | | | | | | --- class: Normal  
| | | | | | | | | | | | | --- Openness > 3.94  
| | | | | | | | | | | | | | --- truncated branch of depth 8  
| | | | | | | | | | | | | --- Conscientiousness > 3.63  
| | | | | | | | | | | | | | --- Extraversion <= 5.57  
| | | | | | | | | | | | | | --- Extraversion <= 5.41  
| | | | | | | | | | | | | | | --- Extraversion <= 3.64  
| | | | | | | | | | | | | | | | --- class: anxious  
| | | | | | | | | | | | | | | --- Extraversion > 3.64  
| | | | | | | | | | | | | | | | | --- truncated branch of depth 4  
| | | | | | | | | | | | | | | --- Extraversion > 5.41  
| | | | | | | | | | | | | | | | --- class: anxious  
| | | | | | | | | | | | | | --- Extraversion > 5.57  
| | | | | | | | | | | | | | --- Extraversion <= 6.05  
| | | | | | | | | | | | | | | --- Openness <= 3.30  
| | | | | | | | | | | | | | | | --- class: anxious  
| | | | | | | | | | | | | | | --- Openness > 3.30  
| | | | | | | | | | | | | | | | --- truncated branch of depth 2  
| | | | | | | | | | | | | | | --- Extraversion > 6.05  
| | | | | | | | | | | | | | | | --- class: Normal  
| | | | | | | | | | | | | | --- Conscientiousness > 4.01  
| | | | | | | | | | | | | | --- Extraversion <= 3.02  
| | | | | | | | | | | | | | --- Openness <= 4.35  
| | | | | | | | | | | | | | | --- Conscientiousness <= 5.15  
| | | | | | | | | | | | | | | --- Extraversion <= 2.43  
| | | | | | | | | | | | | | | | --- Conscientiousness <= 5.04  
| | | | | | | | | | | | | | | | | --- truncated branch of depth 6  
| | | | | | | | | | | | | | | | --- Conscientiousness > 5.04  
| | | | | | | | | | | | | | | | | --- class: anxious  
| | | | | | | | | | | | | | | | --- Extraversion > 2.43  
| | | | | | | | | | | | | | | | --- class: anxious  
| | | | | | | | | | | | | | | --- Conscientiousness > 5.15  
| | | | | | | | | | | | | | | --- Conscientiousness <= 5.99  
| | | | | | | | | | | | | | | | --- Extraversion <= 2.50  
| | | | | | | | | | | | | | | | | --- truncated branch of depth 4  
| | | | | | | | | | | | | | | | --- Extraversion > 2.50  
| | | | | | | | | | | | | | | | | --- class: anxious  
| | | | | | | | | | | | | | | --- Conscientiousness > 5.99  
| | | | | | | | | | | | | | | | --- EmotionalStability <= 2.83  
| | | | | | | | | | | | | | | | | --- truncated branch of depth 2  
| | | | | | | | | | | | | | | | --- EmotionalStability > 2.83  
| | | | | | | | | | | | | | | | | --- truncated branch of depth 3  
| | | | | | | | | | | | | | | --- Openness > 4.35  
| | | | | | | | | | | | | | | | --- Conscientiousness <= 6.08  
| | | | | | | | | | | | | | | | --- EmotionalStability <= 2.50  
| | | | | | | | | | | | | | | | --- class: Normal
```





```
| | | | | |---- Openness <= 4.31  
| | | | | |--- Openness <= 2.18  
| | | | | |   |-- EmotionalStability <= 1.41  
| | | | | |     |-- EmotionalStability <= 1.12  
| | | | | |       |-- class: Normal  
| | | | | |     |-- EmotionalStability > 1.12  
| | | | | |       |-- Conscientiousness <= 1.72  
| | | | | |         |-- Extraversion <= 1.27  
| | | | | |           |-- class: Normal  
| | | | | |         |-- Extraversion > 1.27  
| | | | | |           |-- class: anxious  
| | | | | |         |-- Conscientiousness > 1.72  
| | | | | |           |-- class: anxious  
| | | | | |     |-- EmotionalStability > 1.41  
| | | | | |       |-- Conscientiousness <= 5.20  
| | | | | |         |-- class: Normal  
| | | | | |       |-- Conscientiousness > 5.20  
| | | | | |         |-- class: anxious  
| | | | | |--- Openness > 2.18  
| | | | | |   |-- Conscientiousness <= 5.51  
| | | | | |     |-- Conscientiousness <= 5.50  
| | | | | |       |-- Openness <= 3.49  
| | | | | |         |-- Agreeableness <= 5.95  
| | | | | |           |-- truncated branch of depth 8  
| | | | | |             |-- Agreeableness > 5.95  
| | | | | |               |-- class: anxious  
| | | | | |         |-- Openness > 3.49  
| | | | | |           |-- Agreeableness <= 4.99  
| | | | | |             |-- truncated branch of depth 9  
| | | | | |               |-- Agreeableness > 4.99  
| | | | | |                 |-- truncated branch of depth 4  
| | | | | |                   |-- Conscientiousness > 5.50  
| | | | | |                     |-- class: anxious  
| | | | | |   |-- Conscientiousness > 5.51  
| | | | | |     |-- Agreeableness <= 5.73  
| | | | | |       |-- Openness <= 2.82  
| | | | | |         |-- class: Normal  
| | | | | |       |-- Openness > 2.82  
| | | | | |         |-- Extraversion <= 1.01  
| | | | | |           |-- class: Normal  
| | | | | |         |-- Extraversion > 1.01  
| | | | | |           |-- truncated branch of depth 5  
| | | | | |             |-- Agreeableness > 5.73  
| | | | | |               |-- class: anxious  
| | | | | |--- Openness > 4.31  
| | | | | |   |-- Openness <= 5.00  
| | | | | |     |-- Extraversion <= 0.64  
| | | | | |       |-- Openness <= 4.84
```

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```
| | | | | | | | | | --- Agreeableness > 4.37  
| | | | | | | | | | |--- truncated branch of depth 8  
| | | | | | | | | | |--- Openness > 5.51  
| | | | | | | | | | |--- Openness <= 5.99  
| | | | | | | | | | |--- Extraversion <= 0.91  
| | | | | | | | | | |--- class: Normal  
| | | | | | | | | | |--- Extraversion > 0.91  
| | | | | | | | | | |--- Conscientiousness <= 1.24  
| | | | | | | | | | |--- Conscientiousness <= 0.82  
| | | | | | | | | | |--- class: anxious  
| | | | | | | | | | |--- Conscientiousness > 0.82  
| | | | | | | | | | |--- class: Normal  
| | | | | | | | | | |--- Conscientiousness > 1.24  
| | | | | | | | | | |--- Extraversion <= 1.44  
| | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | |--- Extraversion > 1.44  
| | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | |--- Openness > 5.99  
| | | | | | | | | | |--- Conscientiousness <= 5.43  
| | | | | | | | | | |--- Conscientiousness <= 3.05  
| | | | | | | | | | |--- Conscientiousness <= 0.76  
| | | | | | | | | | |--- class: anxious  
| | | | | | | | | | |--- Conscientiousness > 0.76  
| | | | | | | | | | |--- truncated branch of depth 11  
| | | | | | | | | | |--- Conscientiousness > 3.05  
| | | | | | | | | | |--- Extraversion <= 2.50  
| | | | | | | | | | |--- truncated branch of depth 7  
| | | | | | | | | | |--- Extraversion > 2.50  
| | | | | | | | | | |--- truncated branch of depth 11  
| | | | | | | | | | |--- Conscientiousness > 5.43  
| | | | | | | | | | |--- Extraversion <= 3.75  
| | | | | | | | | | |--- Openness <= 6.25  
| | | | | | | | | | |--- class: Depressed  
| | | | | | | | | | |--- Openness > 6.25  
| | | | | | | | | | |--- truncated branch of depth 4  
| | | | | | | | | | |--- Extraversion > 3.75  
| | | | | | | | | | |--- Openness <= 6.31  
| | | | | | | | | | |--- truncated branch of depth 5  
| | | | | | | | | | |--- Openness > 6.31  
| | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | |--- EmotionalStability > 1.50  
| | | | | | | | | | |--- EmotionalStability <= 2.00  
| | | | | | | | | | |--- Conscientiousness <= 3.50  
| | | | | | | | | | |--- Openness <= 2.99  
| | | | | | | | | | |--- Agreeableness <= 4.99  
| | | | | | | | | | |--- Conscientiousness <= 1.50  
| | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | |--- Conscientiousness > 1.50
```

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```
| | | | | | | | | | | --- Openness > 1.49  
| | | | | | | | | | | | |--- truncated branch of depth 4  
| | | | | | | | | | | | |--- Extraversion > 3.09  
| | | | | | | | | | | | |   |-- Agreeableness <= 4.00  
| | | | | | | | | | | | |     |-- class: anxious  
| | | | | | | | | | | | |   |-- Agreeableness > 4.00  
| | | | | | | | | | | | |     |-- class: Normal  
| | | | | | | | | | | | |--- Openness > 2.72  
| | | | | | | | | | | | |   |-- Openness <= 3.50  
| | | | | | | | | | | | |     |-- Extraversion <= 1.87  
| | | | | | | | | | | | |       |-- truncated branch of depth 2  
| | | | | | | | | | | | |       |-- Extraversion > 1.87  
| | | | | | | | | | | | |         |-- truncated branch of depth 3  
| | | | | | | | | | | | |   |-- Openness > 3.50  
| | | | | | | | | | | | |     |-- Openness <= 6.13  
| | | | | | | | | | | | |       |-- truncated branch of depth 9  
| | | | | | | | | | | | |       |-- Openness > 6.13  
| | | | | | | | | | | | |         |-- class: Stressed  
| | | | | | | | | | | | |--- Agreeableness > 4.48  
| | | | | | | | | | | | |   |-- Openness <= 4.57  
| | | | | | | | | | | | |     |-- Extraversion <= 1.62  
| | | | | | | | | | | | |       |-- Conscientiousness <= 4.39  
| | | | | | | | | | | | |         |-- truncated branch of depth 9  
| | | | | | | | | | | | |         |-- Conscientiousness > 4.39  
| | | | | | | | | | | | |           |-- truncated branch of depth 5  
| | | | | | | | | | | | |   |-- Extraversion > 1.62  
| | | | | | | | | | | | |     |-- Agreeableness <= 4.99  
| | | | | | | | | | | | |       |-- truncated branch of depth 9  
| | | | | | | | | | | | |       |-- Agreeableness > 4.99  
| | | | | | | | | | | | |         |-- truncated branch of depth 9  
| | | | | | | | | | | | |   |-- Openness > 4.57  
| | | | | | | | | | | | |     |-- Openness <= 5.96  
| | | | | | | | | | | | |       |-- Agreeableness <= 5.50  
| | | | | | | | | | | | |         |-- truncated branch of depth 9  
| | | | | | | | | | | | |         |-- Agreeableness > 5.50  
| | | | | | | | | | | | |           |-- truncated branch of depth 6  
| | | | | | | | | | | | |   |-- Openness > 5.96  
| | | | | | | | | | | | |     |-- Agreeableness <= 6.13  
| | | | | | | | | | | | |       |-- truncated branch of depth 5  
| | | | | | | | | | | | |       |-- Agreeableness > 6.13  
| | | | | | | | | | | | |         |-- class: anxious  
| | | | | | | | | | | | |--- EmotionalStability > 2.50  
| | | | | | | | | | | | |   |-- EmotionalStability <= 2.50  
| | | | | | | | | | | | |     |-- Conscientiousness <= 2.00  
| | | | | | | | | | | | |       |-- Openness <= 2.54  
| | | | | | | | | | | | |         |-- Openness <= 2.25  
| | | | | | | | | | | | |           |-- class: Depressed  
| | | | | | | | | | | | |       |-- Openness > 2.25
```

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```
| | | | | | | | | | | --- Agreeableness <= 6.25  
| | | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | | |--- Agreeableness > 6.25  
| | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | | |--- Extraversion > 3.00  
| | | | | | | | | | | |--- Conscientiousness <= 5.00  
| | | | | | | | | | | |--- Openness <= 2.76  
| | | | | | | | | | | |--- EmotionalStability <= 3.23  
| | | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | | |--- EmotionalStability > 3.23  
| | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | | |--- Openness > 2.76  
| | | | | | | | | | | |--- Extraversion <= 3.40  
| | | | | | | | | | | |--- truncated branch of depth 12  
| | | | | | | | | | | |--- Extraversion > 3.40  
| | | | | | | | | | | |--- truncated branch of depth 11  
| | | | | | | | | | | |--- Conscientiousness > 5.00  
| | | | | | | | | | | |--- Openness <= 5.47  
| | | | | | | | | | | |--- Conscientiousness <= 6.49  
| | | | | | | | | | | |--- truncated branch of depth 8  
| | | | | | | | | | | |--- Conscientiousness > 6.49  
| | | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | | |--- Openness > 5.47  
| | | | | | | | | | | |--- Agreeableness <= 5.75  
| | | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | | |--- Agreeableness > 5.75  
| | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | |--- Extraversion > 3.50  
| | | | | | | | | | |--- Conscientiousness <= 5.00  
| | | | | | | | | | |--- Extraversion <= 4.00  
| | | | | | | | | | |--- Agreeableness <= 5.00  
| | | | | | | | | | |--- Agreeableness <= 4.00  
| | | | | | | | | | |--- Openness <= 4.25  
| | | | | | | | | | | |--- Conscientiousness <= 2.95  
| | | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | | |--- Conscientiousness > 2.95  
| | | | | | | | | | | |--- truncated branch of depth 7  
| | | | | | | | | | | |--- Openness > 4.25  
| | | | | | | | | | | |--- EmotionalStability <= 2.97  
| | | | | | | | | | | |--- truncated branch of depth 5  
| | | | | | | | | | | |--- EmotionalStability > 2.97  
| | | | | | | | | | | |--- truncated branch of depth 4  
| | | | | | | | | | | |--- Agreeableness > 4.00  
| | | | | | | | | | | |--- Conscientiousness <= 2.00  
| | | | | | | | | | | |--- Openness <= 4.55  
| | | | | | | | | | | |--- class: anxious  
| | | | | | | | | | | |--- Openness > 4.55  
| | | | | | | | | | | |--- class: Normal
```

```
| | | | | | | | | | --- Conscientiousness > 2.00  
| | | | | | | | | | |--- EmotionalStability <= 3.00  
| | | | | | | | | | |   |-- truncated branch of depth 8  
| | | | | | | | | | |--- EmotionalStability > 3.00  
| | | | | | | | | | |   |-- truncated branch of depth 6  
| | | | | | | | | | |--- Agreeableness > 5.00  
| | | | | | | | | | |   |-- Conscientiousness <= 1.99  
| | | | | | | | | | |     |-- class: Normal  
| | | | | | | | | | |   |-- Conscientiousness > 1.99  
| | | | | | | | | | |     |-- Conscientiousness <= 4.15  
| | | | | | | | | | |       |-- Conscientiousness <= 2.49  
| | | | | | | | | | |         |-- truncated branch of depth 3  
| | | | | | | | | | |         |-- Conscientiousness > 2.49  
| | | | | | | | | | |           |-- truncated branch of depth 7  
| | | | | | | | | | |         |-- Conscientiousness > 4.15  
| | | | | | | | | | |           |-- EmotionalStability <= 2.47  
| | | | | | | | | | |             |-- truncated branch of depth 3  
| | | | | | | | | | |             |-- EmotionalStability > 2.47  
| | | | | | | | | | |               |-- truncated branch of depth 3  
| | | | | | | | | | |--- Extraversion > 4.00  
| | | | | | | | | | |   |-- EmotionalStability <= 3.00  
| | | | | | | | | | |     |-- Extraversion <= 4.48  
| | | | | | | | | | |       |-- Agreeableness <= 4.00  
| | | | | | | | | | |         |-- Extraversion <= 4.03  
| | | | | | | | | | |           |-- truncated branch of depth 14  
| | | | | | | | | | |         |-- Extraversion > 4.03  
| | | | | | | | | | |           |-- truncated branch of depth 4  
| | | | | | | | | | |       |-- Agreeableness > 4.00  
| | | | | | | | | | |         |-- Agreeableness <= 5.00  
| | | | | | | | | | |           |-- truncated branch of depth 14  
| | | | | | | | | | |         |-- Agreeableness > 5.00  
| | | | | | | | | | |           |-- truncated branch of depth 11  
| | | | | | | | | | |   |-- Extraversion > 4.48  
| | | | | | | | | | |     |-- Extraversion <= 6.13  
| | | | | | | | | | |       |-- EmotionalStability <= 2.50  
| | | | | | | | | | |         |-- truncated branch of depth 14  
| | | | | | | | | | |         |-- EmotionalStability > 2.50  
| | | | | | | | | | |           |-- truncated branch of depth 10  
| | | | | | | | | | |       |-- Extraversion > 6.13  
| | | | | | | | | | |         |-- Agreeableness <= 5.32  
| | | | | | | | | | |           |-- truncated branch of depth 9  
| | | | | | | | | | |         |-- Agreeableness > 5.32  
| | | | | | | | | | |           |-- truncated branch of depth 2  
| | | | | | | | | | |--- EmotionalStability > 3.00  
| | | | | | | | | | |   |-- EmotionalStability <= 3.00  
| | | | | | | | | | |     |-- Conscientiousness <= 3.01  
| | | | | | | | | | |       |-- Extraversion <= 4.05  
| | | | | | | | | | |         |-- truncated branch of depth 12
```

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```
| | | | | | | | | | | --- Agreeableness > 2.50  
| | | | | | | | | | | | truncated branch of depth 12  
| | | | | | | | | | | |--- EmotionalStability > 3.50  
| | | | | | | | | | | |--- Extraversion <= 1.96  
| | | | | | | | | | | | truncated branch of depth 9  
| | | | | | | | | | | |--- Extraversion > 1.96  
| | | | | | | | | | | | truncated branch of depth 12  
| | | | | | | | | | | |--- EmotionalStability > 4.00  
| | | | | | | | | | | |--- Extraversion <= 2.06  
| | | | | | | | | | | |--- Conscientiousness <= 6.22  
| | | | | | | | | | | | truncated branch of depth 11  
| | | | | | | | | | | |--- Conscientiousness > 6.22  
| | | | | | | | | | | | truncated branch of depth 2  
| | | | | | | | | | | |--- Extraversion > 2.06  
| | | | | | | | | | | |--- Extraversion <= 3.00  
| | | | | | | | | | | | truncated branch of depth 8  
| | | | | | | | | | | |--- Extraversion > 3.00  
| | | | | | | | | | | | truncated branch of depth 10  
| | | | | | | | | | |--- Agreeableness > 3.00  
| | | | | | | | | | |--- Openness <= 3.47  
| | | | | | | | | | | |--- EmotionalStability <= 3.99  
| | | | | | | | | | | |--- EmotionalStability <= 3.50  
| | | | | | | | | | | |--- Conscientiousness <= 5.06  
| | | | | | | | | | | |--- Agreeableness <= 3.22  
| | | | | | | | | | | | truncated branch of depth 2  
| | | | | | | | | | | |--- Agreeableness > 3.22  
| | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | | |--- Conscientiousness > 5.06  
| | | | | | | | | | | |--- class: anxious  
| | | | | | | | | | | |--- EmotionalStability > 3.50  
| | | | | | | | | | | |--- Extraversion <= 2.40  
| | | | | | | | | | | |--- Conscientiousness <= 3.03  
| | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | | |--- Conscientiousness > 3.03  
| | | | | | | | | | | |--- class: Stressed  
| | | | | | | | | | | |--- Extraversion > 2.40  
| | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | | |--- EmotionalStability > 3.99  
| | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | |--- Openness > 3.47  
| | | | | | | | | | | |--- Extraversion <= 3.04  
| | | | | | | | | | | |--- Conscientiousness <= 2.72  
| | | | | | | | | | | |--- class: anxious  
| | | | | | | | | | | |--- Conscientiousness > 2.72  
| | | | | | | | | | | |--- Extraversion <= 2.48  
| | | | | | | | | | | |--- Openness <= 4.49  
| | | | | | | | | | | | truncated branch of depth 3  
| | | | | | | | | | | |--- Openness > 4.49
```

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```
| | | | | | | | | |--- Openness > 2.45  
| | | | | | | | | |--- truncated branch of depth 5  
| | | | | | | | | |--- EmotionalStability > 3.62  
| | | | | | | | | |--- Extraversion <= 5.58  
| | | | | | | | | |--- class: Stressed  
| | | | | | | | | |--- Extraversion > 5.58  
| | | | | | | | | |--- class: Normal  
| | | | | | | |--- Openness > 2.50  
| | | | | | | |--- Extraversion <= 6.18  
| | | | | | | |--- Conscientiousness <= 2.54  
| | | | | | | |--- Extraversion <= 5.00  
| | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | |--- Extraversion > 5.00  
| | | | | | | | |--- truncated branch of depth 3  
| | | | | | | |--- Conscientiousness > 2.54  
| | | | | | | |--- Conscientiousness <= 3.50  
| | | | | | | | |--- truncated branch of depth 4  
| | | | | | | |--- Conscientiousness > 3.50  
| | | | | | | | |--- truncated branch of depth 7  
| | | | | | | |--- Extraversion > 6.18  
| | | | | | | |--- class: anxious  
| | | | | | |--- EmotionalStability > 3.99  
| | | | | | |--- Conscientiousness <= 3.61  
| | | | | | |--- Conscientiousness <= 2.66  
| | | | | | |--- class: Depressed  
| | | | | | |--- Conscientiousness > 2.66  
| | | | | | |--- Agreeableness <= 2.84  
| | | | | | | |--- class: anxious  
| | | | | | |--- Agreeableness > 2.84  
| | | | | | | |--- class: Depressed  
| | | | | | |--- Conscientiousness > 3.61  
| | | | | | |--- Extraversion <= 4.75  
| | | | | | |--- Conscientiousness <= 4.95  
| | | | | | | |--- class: Normal  
| | | | | | |--- Conscientiousness > 4.95  
| | | | | | | |--- Conscientiousness <= 5.75  
| | | | | | | |--- truncated branch of depth 3  
| | | | | | | |--- Conscientiousness > 5.75  
| | | | | | | |--- class: Normal  
| | | | | | |--- Extraversion > 4.75  
| | | | | | |--- class: Depressed  
| | | | | |--- Openness > 3.50  
| | | | | |--- Extraversion <= 5.47  
| | | | | |--- Openness <= 5.49  
| | | | | |--- Extraversion <= 3.97  
| | | | | |--- EmotionalStability <= 3.94  
| | | | | |--- Agreeableness <= 2.75  
| | | | | | |--- truncated branch of depth 3
```

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```
| | | | | | | | | |--- Agreeableness > 3.00  
| | | | | | | | | |--- Agreeableness <= 3.02  
| | | | | | | | | |--- class: Normal  
| | | | | | | | | |--- Agreeableness > 3.02  
| | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | |--- Extraversion > 5.42  
| | | | | | | | |--- Agreeableness <= 2.94  
| | | | | | | | |--- Openness <= 5.47  
| | | | | | | | |--- EmotionalStability <= 4.31  
| | | | | | | | |--- class: Stressed  
| | | | | | | | |--- EmotionalStability > 4.31  
| | | | | | | | |--- class: anxious  
| | | | | | | | |--- Openness > 5.47  
| | | | | | | | |--- class: Normal  
| | | | | | | | |--- Agreeableness > 2.94  
| | | | | | | | |--- Extraversion <= 6.47  
| | | | | | | | |--- Extraversion <= 5.59  
| | | | | | | | |--- class: anxious  
| | | | | | | | |--- Extraversion > 5.59  
| | | | | | | | |--- Extraversion <= 5.87  
| | | | | | | | |--- class: Normal  
| | | | | | | | |--- Extraversion > 5.87  
| | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | |--- Extraversion > 6.47  
| | | | | | | | |--- class: Normal  
| | | | | | | |--- EmotionalStability > 4.48  
| | | | | | | |--- EmotionalStability <= 4.50  
| | | | | | | |--- Extraversion <= 1.51  
| | | | | | | |--- Extraversion <= 0.53  
| | | | | | | |--- Openness <= 5.75  
| | | | | | | |--- Agreeableness <= 2.25  
| | | | | | | |--- Openness <= 3.25  
| | | | | | | |--- truncated branch of depth 4  
| | | | | | | |--- Openness > 3.25  
| | | | | | | |--- truncated branch of depth 2  
| | | | | | | |--- Agreeableness > 2.25  
| | | | | | | |--- class: Depressed  
| | | | | | | |--- Openness > 5.75  
| | | | | | | |--- Conscientiousness <= 3.25  
| | | | | | | |--- class: Depressed  
| | | | | | | |--- Conscientiousness > 3.25  
| | | | | | | |--- class: Normal  
| | | | | | | |--- Extraversion > 0.53  
| | | | | | | |--- Openness <= 3.47  
| | | | | | | |--- Conscientiousness <= 6.00  
| | | | | | | |--- Agreeableness <= 2.31  
| | | | | | | |--- truncated branch of depth 2  
| | | | | | | |--- Agreeableness > 2.31
```

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```
| | | | | | | | | | --- Agreeableness <= 4.47  
| | | | | | | | | | |--- Extraversion <= 0.96  
| | | | | | | | | | | |--- truncated branch of depth 6  
| | | | | | | | | | |--- Extraversion > 0.96  
| | | | | | | | | | | |--- truncated branch of depth 10  
| | | | | | | | | | |--- Agreeableness > 4.47  
| | | | | | | | | | |--- Openness <= 3.97  
| | | | | | | | | | | |--- truncated branch of depth 8  
| | | | | | | | | | |--- Openness > 3.97  
| | | | | | | | | | | |--- truncated branch of depth 8  
| | | | | | | | | | |--- Openness > 4.97  
| | | | | | | | | | |--- Agreeableness <= 5.25  
| | | | | | | | | | |--- Extraversion <= 1.25  
| | | | | | | | | | | |--- truncated branch of depth 5  
| | | | | | | | | | |--- Extraversion > 1.25  
| | | | | | | | | | | |--- class: Depressed  
| | | | | | | | | | |--- Agreeableness > 5.25  
| | | | | | | | | | |--- Openness <= 5.25  
| | | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | |--- Openness > 5.25  
| | | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | |--- Conscientiousness > 3.01  
| | | | | | | | | | |--- Openness <= 3.18  
| | | | | | | | | | |--- Extraversion <= 1.89  
| | | | | | | | | | |--- Agreeableness <= 5.00  
| | | | | | | | | | | |--- truncated branch of depth 4  
| | | | | | | | | | |--- Agreeableness > 5.00  
| | | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | |--- Extraversion > 1.89  
| | | | | | | | | | | |--- class: Depressed  
| | | | | | | | | | |--- Openness > 3.18  
| | | | | | | | | | |--- Conscientiousness <= 3.49  
| | | | | | | | | | |--- Extraversion <= 1.55  
| | | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | |--- Extraversion > 1.55  
| | | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | |--- Conscientiousness > 3.49  
| | | | | | | | | | |--- Openness <= 4.86  
| | | | | | | | | | | |--- truncated branch of depth 8  
| | | | | | | | | | |--- Openness > 4.86  
| | | | | | | | | | | |--- truncated branch of depth 9  
| | | | | | | | | | |--- Extraversion > 2.01  
| | | | | | | | | | |--- Agreeableness <= 3.52  
| | | | | | | | | | |--- Conscientiousness <= 3.00  
| | | | | | | | | | |--- Openness <= 5.03  
| | | | | | | | | | |--- Agreeableness <= 3.50  
| | | | | | | | | | | |--- truncated branch of depth 14  
| | | | | | | | | | |--- Agreeableness > 3.50
```

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```
| | | | | | | | | | --- EmotionalStability <= 3.80  
| | | | | | | | | | |--- truncated branch of depth 14  
| | | | | | | | | | |--- EmotionalStability > 3.80  
| | | | | | | | | | |--- truncated branch of depth 8  
| | | | | | | | | | |--- Extraversion > 6.03  
| | | | | | | | | | |--- Openness <= 3.47  
| | | | | | | | | | |--- class: Stressed  
| | | | | | | | | | |--- Openness > 3.47  
| | | | | | | | | | |--- Openness <= 4.29  
| | | | | | | | | | |--- class: Normal  
| | | | | | | | | | |--- Openness > 4.29  
| | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | |--- Openness > 5.55  
| | | | | | | | | | |--- Extraversion <= 5.77  
| | | | | | | | | | |--- Agreeableness <= 4.03  
| | | | | | | | | | |--- Conscientiousness <= 3.48  
| | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | |--- Conscientiousness > 3.48  
| | | | | | | | | | |--- truncated branch of depth 4  
| | | | | | | | | | |--- Agreeableness > 4.03  
| | | | | | | | | | |--- Conscientiousness <= 2.21  
| | | | | | | | | | |--- class: Normal  
| | | | | | | | | | |--- Conscientiousness > 2.21  
| | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | |--- Extraversion > 5.77  
| | | | | | | | | | |--- Agreeableness <= 4.25  
| | | | | | | | | | |--- class: anxious  
| | | | | | | | | | |--- Agreeableness > 4.25  
| | | | | | | | | | |--- class: Normal  
| | | | | | | | | | |--- Agreeableness > 4.51  
| | | | | | | | | | |--- Extraversion <= 2.94  
| | | | | | | | | | |--- Openness <= 4.00  
| | | | | | | | | | |--- Extraversion <= 0.73  
| | | | | | | | | | |--- class: anxious  
| | | | | | | | | | |--- Extraversion > 0.73  
| | | | | | | | | | |--- Extraversion <= 2.59  
| | | | | | | | | | |--- truncated branch of depth 4  
| | | | | | | | | | |--- Extraversion > 2.59  
| | | | | | | | | | |--- class: Stressed  
| | | | | | | | | | |--- Openness > 4.00  
| | | | | | | | | | |--- Openness <= 4.49  
| | | | | | | | | | |--- class: Stressed  
| | | | | | | | | | |--- Openness > 4.49  
| | | | | | | | | | |--- Conscientiousness <= 3.47  
| | | | | | | | | | |--- truncated branch of depth 5  
| | | | | | | | | | |--- Conscientiousness > 3.47  
| | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | |--- Extraversion > 2.94
```

```
|--- Openness <= 1.90  
|--- Openness <= 1.49  
|    |--- class: anxious  
|--- Openness > 1.49  
|    |--- Conscientiousness <= 2.00  
|        |--- class: anxious  
|        |--- Conscientiousness > 2.00  
|            |--- class: Stressed  
|--- Openness > 1.90  
|    |--- Openness <= 5.81  
|        |--- Agreeableness <= 6.30  
|            |--- truncated branch of depth 7  
|            |--- Agreeableness > 6.30  
|                |--- truncated branch of depth 2  
|--- Openness > 5.81  
|    |--- Extraversion <= 4.49  
|        |--- class: Normal  
|        |--- Extraversion > 4.49  
|            |--- truncated branch of depth 3  
|--- EmotionalStability > 4.00  
|    |--- Extraversion <= 2.79  
|        |--- EmotionalStability <= 4.50  
|            |--- Conscientiousness <= 2.51  
|                |--- Openness <= 2.61  
|                    |--- Agreeableness <= 3.75  
|                        |--- truncated branch of depth 3  
|                            |--- Agreeableness > 3.75  
|                                |--- truncated branch of depth 6  
|--- Openness > 2.61  
|    |--- Extraversion <= 0.51  
|        |--- truncated branch of depth 5  
|        |--- Extraversion > 0.51  
|            |--- truncated branch of depth 14  
|--- Conscientiousness > 2.51  
|    |--- Extraversion <= 1.51  
|        |--- Extraversion <= 0.51  
|            |--- truncated branch of depth 11  
|            |--- Extraversion > 0.51  
|                |--- truncated branch of depth 12  
|--- Extraversion > 1.51  
|    |--- Extraversion <= 1.98  
|        |--- truncated branch of depth 6  
|        |--- Extraversion > 1.98  
|            |--- truncated branch of depth 14  
|--- EmotionalStability > 4.50  
|    |--- Extraversion <= 1.50  
|        |--- Openness <= 4.91  
|            |--- Conscientiousness <= 2.51
```

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```
| | | | | | | | | | --- Conscientiousness <= 3.44  
| | | | | | | | | | |--- truncated branch of depth 7  
| | | | | | | | | | |--- Conscientiousness > 3.44  
| | | | | | | | | | |--- truncated branch of depth 11  
| | | | | | | | | | |--- Extraversion > 6.13  
| | | | | | | | | | |--- Agreeableness <= 4.02  
| | | | | | | | | | |--- class: Stressed  
| | | | | | | | | | |--- Agreeableness > 4.02  
| | | | | | | | | | |--- Agreeableness <= 5.76  
| | | | | | | | | | |--- class: Normal  
| | | | | | | | | | |--- Agreeableness > 5.76  
| | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | |--- Conscientiousness > 3.50  
| | | | | | | | | | |--- EmotionalStability <= 4.00  
| | | | | | | | | | |--- EmotionalStability <= 3.50  
| | | | | | | | | | |--- Conscientiousness <= 6.00  
| | | | | | | | | | |--- Extraversion <= 3.00  
| | | | | | | | | | |--- Conscientiousness <= 4.50  
| | | | | | | | | | |--- Extraversion <= 2.55  
| | | | | | | | | | |--- Openness <= 3.00  
| | | | | | | | | | |--- truncated branch of depth 11  
| | | | | | | | | | |--- Openness > 3.00  
| | | | | | | | | | |--- truncated branch of depth 14  
| | | | | | | | | | |--- Extraversion > 2.55  
| | | | | | | | | | |--- Conscientiousness <= 4.06  
| | | | | | | | | | |--- truncated branch of depth 6  
| | | | | | | | | | |--- Conscientiousness > 4.06  
| | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | |--- Conscientiousness > 4.50  
| | | | | | | | | | |--- Agreeableness <= 4.00  
| | | | | | | | | | |--- Extraversion <= 2.02  
| | | | | | | | | | |--- truncated branch of depth 9  
| | | | | | | | | | |--- Extraversion > 2.02  
| | | | | | | | | | |--- truncated branch of depth 11  
| | | | | | | | | | |--- Agreeableness > 4.00  
| | | | | | | | | | |--- Openness <= 4.00  
| | | | | | | | | | |--- truncated branch of depth 7  
| | | | | | | | | | |--- Openness > 4.00  
| | | | | | | | | | |--- truncated branch of depth 12  
| | | | | | | | | | |--- Extraversion > 3.00  
| | | | | | | | | | |--- Conscientiousness <= 5.50  
| | | | | | | | | | |--- Openness <= 2.24  
| | | | | | | | | | |--- Extraversion <= 3.26  
| | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | |--- Extraversion > 3.26  
| | | | | | | | | | |--- class: Depressed  
| | | | | | | | | | |--- Openness > 2.24  
| | | | | | | | | | |--- Openness <= 6.08
```

```
| | | | | | | | | |--- truncated branch of depth 14  
| | | | | | | | | |--- Openness > 6.08  
| | | | | | | | | |--- truncated branch of depth 9  
| | | | | | | |---- Conscientiousness > 5.50  
| | | | | | | |--- Agreeableness <= 4.50  
| | | | | | | |--- Agreeableness <= 4.00  
| | | | | | | |--- truncated branch of depth 12  
| | | | | | | |--- Agreeableness > 4.00  
| | | | | | | |--- truncated branch of depth 4  
| | | | | | | |--- Agreeableness > 4.50  
| | | | | | | |--- Extraversion <= 4.25  
| | | | | | | |--- truncated branch of depth 10  
| | | | | | | |--- Extraversion > 4.25  
| | | | | | | |--- truncated branch of depth 9  
| | | | | |---- Conscientiousness > 6.00  
| | | | | |--- Extraversion <= 2.32  
| | | | | |--- Conscientiousness <= 6.48  
| | | | | |--- Extraversion <= 2.03  
| | | | | |--- Agreeableness <= 5.00  
| | | | | |--- class: Normal  
| | | | | |--- Agreeableness > 5.00  
| | | | | |--- class: anxious  
| | | | | |--- Extraversion > 2.03  
| | | | | |--- class: anxious  
| | | | | |--- Conscientiousness > 6.48  
| | | | | |--- Openness <= 6.25  
| | | | | |--- Openness <= 4.38  
| | | | | |--- truncated branch of depth 8  
| | | | | |--- Openness > 4.38  
| | | | | |--- truncated branch of depth 5  
| | | | | |--- Openness > 6.25  
| | | | | |--- Agreeableness <= 4.98  
| | | | | |--- class: anxious  
| | | | | |--- Agreeableness > 4.98  
| | | | | |--- class: Normal  
| | | | | |--- Extraversion > 2.32  
| | | | | |--- Agreeableness <= 3.50  
| | | | | |--- Openness <= 4.75  
| | | | | |--- Openness <= 3.54  
| | | | | |--- truncated branch of depth 4  
| | | | | |--- Openness > 3.54  
| | | | | |--- truncated branch of depth 3  
| | | | | |--- Openness > 4.75  
| | | | | |--- Openness <= 6.25  
| | | | | |--- truncated branch of depth 6  
| | | | | |--- Openness > 6.25  
| | | | | |--- truncated branch of depth 3  
| | | | | |--- Agreeableness > 3.50
```



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```
| | | | | | | | | | | --- Extraversion <= 6.44  
| | | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | | |--- Extraversion > 6.44  
| | | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | | |--- Conscientiousness > 5.82  
| | | | | | | | | | | |--- Agreeableness <= 3.57  
| | | | | | | | | | | |--- class: Depressed  
| | | | | | | | | | | |--- Agreeableness > 3.57  
| | | | | | | | | | | |--- Openness <= 5.00  
| | | | | | | | | | | |--- class: Depressed  
| | | | | | | | | | | |--- Openness > 5.00  
| | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | |--- Agreeableness > 4.50  
| | | | | | | | | | |--- Agreeableness <= 5.71  
| | | | | | | | | | |--- Openness <= 5.39  
| | | | | | | | | | |--- Conscientiousness <= 4.14  
| | | | | | | | | | | |--- Agreeableness <= 4.62  
| | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | | |--- Agreeableness > 4.62  
| | | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | | |--- Conscientiousness > 4.14  
| | | | | | | | | | | |--- Conscientiousness <= 5.34  
| | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | | |--- Conscientiousness > 5.34  
| | | | | | | | | | | |--- truncated branch of depth 5  
| | | | | | | | | | |--- Openness > 5.39  
| | | | | | | | | | |--- Conscientiousness <= 4.81  
| | | | | | | | | | | |--- Openness <= 5.99  
| | | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | | |--- Openness > 5.99  
| | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | |--- Conscientiousness > 4.81  
| | | | | | | | | | |--- Openness <= 5.61  
| | | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | | |--- Openness > 5.61  
| | | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | |--- Agreeableness > 5.71  
| | | | | | | | | | |--- class: Normal  
| | | | | | | | | |--- EmotionalStability > 5.00  
| | | | | | | | | |--- EmotionalStability <= 5.99  
| | | | | | | | | |--- Extraversion <= 1.50  
| | | | | | | | | |--- EmotionalStability <= 5.00  
| | | | | | | | | |--- Conscientiousness <= 2.52  
| | | | | | | | | |--- Extraversion <= 0.25  
| | | | | | | | | |--- class: Normal  
| | | | | | | | | |--- Extraversion > 0.25  
| | | | | | | | | |--- Openness <= 3.75  
| | | | | | | | | |--- Conscientiousness <= 0.75
```

```
| | | | | | | | | |--- Openness <= 2.25  
| | | | | | | | | |--- class: Normal  
| | | | | | | | | |--- Openness > 2.25  
| | | | | | | | | |   |--- class: Depressed  
| | | | | | | | | |--- Conscientiousness > 0.75  
| | | | | | | | | |   |--- class: Depressed  
| | | | | | | |--- Openness > 3.75  
| | | | | | | |   |--- Extraversion <= 1.25  
| | | | | | | |     |--- Conscientiousness <= 2.25  
| | | | | | | |       |--- Agreeableness <= 5.25  
| | | | | | | |         |--- class: Depressed  
| | | | | | | |         |--- Agreeableness > 5.25  
| | | | | | | |           |--- truncated branch of depth 2  
| | | | | | | |             |--- Conscientiousness > 2.25  
| | | | | | | |               |--- Agreeableness <= 3.75  
| | | | | | | |                 |--- class: Depressed  
| | | | | | | |                 |--- Agreeableness > 3.75  
| | | | | | | |                   |--- class: Normal  
| | | | | | | |             |--- Extraversion > 1.25  
| | | | | | | |               |--- Agreeableness <= 5.57  
| | | | | | | |                 |--- class: Depressed  
| | | | | | | |                 |--- Agreeableness > 5.57  
| | | | | | | |                   |--- Openness <= 4.72  
| | | | | | | |                     |--- class: Depressed  
| | | | | | | |                     |--- Openness > 4.72  
| | | | | | | |                       |--- truncated branch of depth 2  
| | | | | | | |----- Conscientiousness > 2.52  
| | | | | | | |       |--- Extraversion <= 0.50  
| | | | | | | |         |--- Openness <= 3.00  
| | | | | | | |           |--- class: Depressed  
| | | | | | | |         |--- Openness > 3.00  
| | | | | | | |           |--- Openness <= 4.75  
| | | | | | | |             |--- Agreeableness <= 5.25  
| | | | | | | |               |--- Conscientiousness <= 5.25  
| | | | | | | |                 |--- truncated branch of depth 6  
| | | | | | | |                   |--- Conscientiousness > 5.25  
| | | | | | | |                     |--- truncated branch of depth 2  
| | | | | | | |                       |--- Agreeableness > 5.25  
| | | | | | | |                         |--- Conscientiousness <= 5.25  
| | | | | | | |                           |--- class: Depressed  
| | | | | | | |                             |--- Conscientiousness > 5.25  
| | | | | | | |                               |--- truncated branch of depth 2  
| | | | | | | |----- Openness > 4.75  
| | | | | | | |       |--- Agreeableness <= 5.00  
| | | | | | | |         |--- Openness <= 6.25  
| | | | | | | |           |--- class: Depressed  
| | | | | | | |         |--- Openness > 6.25  
| | | | | | | |           |--- truncated branch of depth 3
```

```
| | | | | | | | | | --- Agreeableness > 5.00  
| | | | | | | | | | |--- class: anxious  
| | | | | | | | | | |--- Extraversion > 0.50  
| | | | | | | | | | |   |--- Conscientiousness <= 4.07  
| | | | | | | | | | |     |--- Conscientiousness <= 3.60  
| | | | | | | | | | |       |--- Conscientiousness <= 3.48  
| | | | | | | | | | |         |--- Openness <= 4.51  
| | | | | | | | | | |           |--- truncated branch of depth 4  
| | | | | | | | | | |             |--- Openness > 4.51  
| | | | | | | | | | |               |--- class: Normal  
| | | | | | | | | | |                 |--- Conscientiousness > 3.48  
| | | | | | | | | | |                   |--- Agreeableness <= 5.09  
| | | | | | | | | | |                     |--- truncated branch of depth 7  
| | | | | | | | | | |                       |--- Agreeableness > 5.09  
| | | | | | | | | | |                         |--- truncated branch of depth 4  
| | | | | | | | | | |                           |--- Conscientiousness > 3.60  
| | | | | | | | | | |                             |--- Agreeableness <= 2.25  
| | | | | | | | | | |                               |--- class: Depressed  
| | | | | | | | | | |                                 |--- Agreeableness > 2.25  
| | | | | | | | | | |                                   |--- Openness <= 6.26  
| | | | | | | | | | |                                     |--- truncated branch of depth 8  
| | | | | | | | | | |                                       |--- Openness > 6.26  
| | | | | | | | | | |                                           |--- class: Depressed  
| | | | | | | | | | |                                             |--- Conscientiousness > 4.07  
| | | | | | | | | | |                                                 |--- Agreeableness <= 4.88  
| | | | | | | | | | |                                                     |--- Openness <= 3.54  
| | | | | | | | | | |                                                         |--- Openness <= 3.39  
| | | | | | | | | | |                                                             |--- truncated branch of depth 2  
| | | | | | | | | | |                                                                 |--- Openness > 3.39  
| | | | | | | | | | |                                                                     |--- class: Normal  
| | | | | | | | | | |                                                                         |--- Openness > 3.54  
| | | | | | | | | | |                                                                             |--- Agreeableness <= 4.04  
| | | | | | | | | | |                                                                                 |--- truncated branch of depth 6  
| | | | | | | | | | |                                                                                                         |--- Agreeableness > 4.04  
| | | | | | | | | | |                                                                                                             |--- class: anxious  
| | | | | | | | | | |                                                                       |--- Agreeableness > 4.88  
| | | | | | | | | | |                                                                           |--- Extraversion <= 0.95  
| | | | | | | | | | |                                                                               |--- class: Normal  
| | | | | | | | | | |                                                                                   |--- Extraversion > 0.95  
| | | | | | | | | | |                                                                                       |--- Openness <= 5.75  
| | | | | | | | | | |                                                                                           |--- truncated branch of depth 9  
| | | | | | | | | | |                                                                                               |--- Openness > 5.75  
| | | | | | | | | | |                                                                                                   |--- class: Normal  
| | | | | | | | | | |----- EmotionalStability > 5.00  
| | | | | | | | | | |   |--- Agreeableness <= 5.51  
| | | | | | | | | | |     |--- EmotionalStability <= 5.49  
| | | | | | | | | | |       |--- Openness <= 5.96  
| | | | | | | | | | |         |--- Extraversion <= 0.97
```

[illegible]



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```
| | | | | | | | | | --- Openness > 4.44  
| | | | | | | | | | |--- Extraversion <= 1.98  
| | | | | | | | | | | |--- Agreeableness <= 5.04  
| | | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | | | |--- Agreeableness > 5.04  
| | | | | | | | | | | | |--- class: anxious  
| | | | | | | | | | |--- Extraversion > 1.98  
| | | | | | | | | | | |--- Extraversion <= 4.27  
| | | | | | | | | | | | |--- truncated branch of depth 14  
| | | | | | | | | | | | |--- Extraversion > 4.27  
| | | | | | | | | | | | |--- truncated branch of depth 9  
| | | | | | | | | | |--- Conscientiousness > 3.00  
| | | | | | | | | | |--- Openness <= 4.50  
| | | | | | | | | | | |--- Openness <= 3.50  
| | | | | | | | | | | | |--- Extraversion <= 2.18  
| | | | | | | | | | | | |--- Openness <= 2.13  
| | | | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | | | |--- Openness > 2.13  
| | | | | | | | | | | | | |--- class: Stressed  
| | | | | | | | | | | |--- Extraversion > 2.18  
| | | | | | | | | | | | |--- Agreeableness <= 5.40  
| | | | | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | | | |--- Agreeableness > 5.40  
| | | | | | | | | | | | | |--- class: anxious  
| | | | | | | | | | |--- Openness > 3.50  
| | | | | | | | | | | |--- Extraversion <= 3.58  
| | | | | | | | | | | | |--- Openness <= 4.24  
| | | | | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | | | |--- Openness > 4.24  
| | | | | | | | | | | | | |--- class: Stressed  
| | | | | | | | | | | |--- Extraversion > 3.58  
| | | | | | | | | | | | |--- Openness <= 4.25  
| | | | | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | | | |--- Openness > 4.25  
| | | | | | | | | | | | | |--- class: Normal  
| | | | | | | | | | |--- Openness > 4.50  
| | | | | | | | | | | |--- EmotionalStability <= 5.36  
| | | | | | | | | | | |--- Openness <= 6.50  
| | | | | | | | | | | | |--- Conscientiousness <= 3.49  
| | | | | | | | | | | | | |--- truncated branch of depth 4  
| | | | | | | | | | | | |--- Conscientiousness > 3.49  
| | | | | | | | | | | | | |--- class: anxious  
| | | | | | | | | | | |--- Openness > 6.50  
| | | | | | | | | | | | |--- class: anxious  
| | | | | | | | | | |--- EmotionalStability > 5.36  
| | | | | | | | | | | |--- Conscientiousness <= 3.14  
| | | | | | | | | | | | |--- class: anxious  
| | | | | | | | | | | |--- Conscientiousness > 3.14
```

```
| | | | | | | | | | --- Extraversion <= 3.99  
| | | | | | | | | | |--- class: anxious  
| | | | | | | | | | |--- Extraversion > 3.99  
| | | | | | | | | | |--- class: Normal  
| | | | | | | | | |--- Conscientiousness > 3.50  
| | | | | | | | | | |--- EmotionalStability <= 5.50  
| | | | | | | | | | |--- EmotionalStability <= 5.00  
| | | | | | | | | | |--- Extraversion <= 5.50  
| | | | | | | | | | |--- Extraversion <= 2.51  
| | | | | | | | | | |--- Openness <= 5.48  
| | | | | | | | | | |--- truncated branch of depth 14  
| | | | | | | | | | |--- Openness > 5.48  
| | | | | | | | | | |--- truncated branch of depth 10  
| | | | | | | | | | |--- Extraversion > 2.51  
| | | | | | | | | | |--- Openness <= 4.92  
| | | | | | | | | | |--- truncated branch of depth 14  
| | | | | | | | | | |--- Openness > 4.92  
| | | | | | | | | | |--- truncated branch of depth 12  
| | | | | | | | | | |--- Extraversion > 5.50  
| | | | | | | | | | |--- Conscientiousness <= 4.63  
| | | | | | | | | | |--- Conscientiousness <= 4.38  
| | | | | | | | | | |--- truncated branch of depth 7  
| | | | | | | | | | |--- Conscientiousness > 4.38  
| | | | | | | | | | |--- truncated branch of depth 5  
| | | | | | | | | | |--- Conscientiousness > 4.63  
| | | | | | | | | | |--- Openness <= 5.51  
| | | | | | | | | | |--- truncated branch of depth 7  
| | | | | | | | | | |--- Openness > 5.51  
| | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | |--- EmotionalStability > 5.00  
| | | | | | | | | | |--- Agreeableness <= 3.50  
| | | | | | | | | | |--- Extraversion <= 2.30  
| | | | | | | | | | |--- Openness <= 5.26  
| | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | |--- Openness > 5.26  
| | | | | | | | | | |--- truncated branch of depth 2  
| | | | | | | | | | |--- Extraversion > 2.30  
| | | | | | | | | | |--- Openness <= 3.25  
| | | | | | | | | | |--- truncated branch of depth 4  
| | | | | | | | | | |--- Openness > 3.25  
| | | | | | | | | | |--- truncated branch of depth 9  
| | | | | | | | | | |--- Agreeableness > 3.50  
| | | | | | | | | | |--- Extraversion <= 5.51  
| | | | | | | | | | |--- Conscientiousness <= 4.50  
| | | | | | | | | | |--- truncated branch of depth 13  
| | | | | | | | | | |--- Conscientiousness > 4.50  
| | | | | | | | | | |--- truncated branch of depth 12  
| | | | | | | | | | |--- Extraversion > 5.51
```

```
| | | | | | | | | | --- Conscientiousness <= 4.28  
| | | | | | | | | | |--- truncated branch of depth 4  
| | | | | | | | | | |--- Conscientiousness > 4.28  
| | | | | | | | | | |--- truncated branch of depth 8  
| | | | | | | | | | |--- EmotionalStability > 5.50  
| | | | | | | | | | |--- Agreeableness <= 4.03  
| | | | | | | | | | |--- Openness <= 4.01  
| | | | | | | | | | |--- Extraversion <= 4.13  
| | | | | | | | | | |--- Extraversion <= 2.48  
| | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | |--- Extraversion > 2.48  
| | | | | | | | | | |--- truncated branch of depth 9  
| | | | | | | | | | |--- Extraversion > 4.13  
| | | | | | | | | | |--- Extraversion <= 5.40  
| | | | | | | | | | |--- truncated branch of depth 5  
| | | | | | | | | | |--- Extraversion > 5.40  
| | | | | | | | | | |--- truncated branch of depth 7  
| | | | | | | | | | |--- Openness > 4.01  
| | | | | | | | | | |--- Conscientiousness <= 6.06  
| | | | | | | | | | |--- Openness <= 6.44  
| | | | | | | | | | |--- truncated branch of depth 12  
| | | | | | | | | | |--- Openness > 6.44  
| | | | | | | | | | |--- truncated branch of depth 7  
| | | | | | | | | | |--- Conscientiousness > 6.06  
| | | | | | | | | | |--- Openness <= 5.49  
| | | | | | | | | | |--- truncated branch of depth 5  
| | | | | | | | | | |--- Openness > 5.49  
| | | | | | | | | | |--- truncated branch of depth 7  
| | | | | | | | | | |--- Agreeableness > 4.03  
| | | | | | | | | | |--- Openness <= 4.03  
| | | | | | | | | | |--- Conscientiousness <= 3.99  
| | | | | | | | | | |--- Openness <= 3.46  
| | | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | | |--- Openness > 3.46  
| | | | | | | | | | |--- truncated branch of depth 5  
| | | | | | | | | | |--- Conscientiousness > 3.99  
| | | | | | | | | | |--- Conscientiousness <= 6.46  
| | | | | | | | | | |--- truncated branch of depth 13  
| | | | | | | | | | |--- Conscientiousness > 6.46  
| | | | | | | | | | |--- truncated branch of depth 4  
| | | | | | | | | | |--- Openness > 4.03  
| | | | | | | | | | |--- Extraversion <= 2.94  
| | | | | | | | | | |--- Openness <= 5.07  
| | | | | | | | | | |--- truncated branch of depth 8  
| | | | | | | | | | |--- Openness > 5.07  
| | | | | | | | | | |--- truncated branch of depth 10  
| | | | | | | | | | |--- Extraversion > 2.94  
| | | | | | | | | | |--- Agreeableness <= 5.38
```

```
| | | | | | | | | |--- truncated branch of depth 14  
| | | | | | | | | |--- Agreeableness > 5.38  
| | | | | | | | | |--- truncated branch of depth 12  
| | | | | | | | | |--- EmotionalStability > 5.50  
| | | | | | | | | |--- Extraversion <= 5.50  
| | | | | | | | | |--- Extraversion <= 5.01  
| | | | | | | | | |--- Conscientiousness <= 4.33  
| | | | | | | | | |--- Agreeableness <= 4.01  
| | | | | | | | | |--- Openness <= 6.26  
| | | | | | | | | |--- Extraversion <= 4.01  
| | | | | | | | | |--- truncated branch of depth 5  
| | | | | | | | | |--- Extraversion > 4.01  
| | | | | | | | | |--- truncated branch of depth 5  
| | | | | | | | | |--- Openness > 6.26  
| | | | | | | | | |--- class: anxious  
| | | | | | | | | |--- Agreeableness > 4.01  
| | | | | | | | | |--- Openness <= 5.30  
| | | | | | | | | |--- Agreeableness <= 4.84  
| | | | | | | | | |--- truncated branch of depth 6  
| | | | | | | | | |--- Agreeableness > 4.84  
| | | | | | | | | |--- truncated branch of depth 10  
| | | | | | | | | |--- Openness > 5.30  
| | | | | | | | | |--- Conscientiousness <= 3.42  
| | | | | | | | | |--- truncated branch of depth 3  
| | | | | | | | | |--- Conscientiousness > 3.42  
| | | | | | | | | |--- truncated branch of depth 5  
| | | | | | | | | |--- Conscientiousness > 4.33  
| | | | | | | | | |--- Extraversion <= 3.50  
| | | | | | | | | |--- Conscientiousness <= 5.95  
| | | | | | | | | |--- Extraversion <= 2.54  
| | | | | | | | | |--- truncated branch of depth 6  
| | | | | | | | | |--- Extraversion > 2.54  
| | | | | | | | | |--- truncated branch of depth 9  
| | | | | | | | | |--- Conscientiousness > 5.95  
| | | | | | | | | |--- Openness <= 6.01  
| | | | | | | | | |--- truncated branch of depth 6  
| | | | | | | | | |--- Openness > 6.01  
| | | | | | | | | |--- truncated branch of depth 4  
| | | | | | | | | |--- Extraversion > 3.50  
| | | | | | | | | |--- Agreeableness <= 4.56  
| | | | | | | | | |--- Extraversion <= 4.92  
| | | | | | | | | |--- truncated branch of depth 7  
| | | | | | | | | |--- Extraversion > 4.92  
| | | | | | | | | |--- truncated branch of depth 4  
| | | | | | | | | |--- Agreeableness > 4.56  
| | | | | | | | | |--- Agreeableness <= 5.94  
| | | | | | | | | |--- truncated branch of depth 9  
| | | | | | | | | |--- Agreeableness > 5.94
```

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```
| | | | | | | | |--- Agreeableness > 5.51  
| | | | | | | | |--- Extraversion <= 0.91  
| | | | | | | | |   |--- Openness <= 3.75  
| | | | | | | | |     |--- class: anxious  
| | | | | | | | |     |--- Openness > 3.75  
| | | | | | | | |       |--- class: Depressed  
| | | | | | | | |--- Extraversion > 0.91  
| | | | | | | | |   |--- Conscientiousness <= 2.19  
| | | | | | | | |     |--- Extraversion <= 2.76  
| | | | | | | | |       |--- class: Normal  
| | | | | | | | |       |--- Extraversion > 2.76  
| | | | | | | | |         |--- class: anxious  
| | | | | | | | |   |--- Conscientiousness > 2.19  
| | | | | | | | |     |--- class: anxious  
| | | | | | | | |--- Conscientiousness > 2.26  
| | | | | | | | |   |--- Extraversion <= 1.10  
| | | | | | | | |   |--- Openness <= 4.50  
| | | | | | | | |     |--- Extraversion <= 0.25  
| | | | | | | | |       |--- class: Normal  
| | | | | | | | |       |--- Extraversion > 0.25  
| | | | | | | | |         |--- Conscientiousness <= 4.25  
| | | | | | | | |           |--- class: Depressed  
| | | | | | | | |           |--- Conscientiousness > 4.25  
| | | | | | | | |             |--- truncated branch of depth 2  
| | | | | | | | |--- Openness > 4.50  
| | | | | | | | |   |--- Agreeableness <= 2.75  
| | | | | | | | |     |--- class: Depressed  
| | | | | | | | |     |--- Agreeableness > 2.75  
| | | | | | | | |       |--- Conscientiousness <= 4.09  
| | | | | | | | |         |--- truncated branch of depth 3  
| | | | | | | | |           |--- Conscientiousness > 4.09  
| | | | | | | | |             |--- class: Normal  
| | | | | | | | |--- Extraversion > 1.10  
| | | | | | | | |   |--- Openness <= 6.46  
| | | | | | | | |   |--- Openness <= 3.51  
| | | | | | | | |     |--- Extraversion <= 1.99  
| | | | | | | | |       |--- truncated branch of depth 2  
| | | | | | | | |       |--- Extraversion > 1.99  
| | | | | | | | |         |--- truncated branch of depth 9  
| | | | | | | | |   |--- Openness > 3.51  
| | | | | | | | |     |--- Agreeableness <= 0.75  
| | | | | | | | |       |--- class: Depressed  
| | | | | | | | |       |--- Agreeableness > 0.75  
| | | | | | | | |         |--- truncated branch of depth 8  
| | | | | | | | |--- Openness > 6.46  
| | | | | | | | |   |--- Agreeableness <= 5.50  
| | | | | | | | |     |--- class: Depressed  
| | | | | | | | |     |--- Agreeableness > 5.50
```

[illegible]

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```
| | | | | | | | |--- Extraversion <= 2.38  
| | | | | | | | |   |-- EmotionalStability <= 6.36  
| | | | | | | | |     |-- truncated branch of depth 8  
| | | | | | | | |       |-- EmotionalStability > 6.36  
| | | | | | | | |         |-- truncated branch of depth 12  
| | | | | | | | |           |-- Extraversion > 2.38  
| | | | | | | | |             |-- Conscientiousness <= 4.47  
| | | | | | | | |               |-- truncated branch of depth 12  
| | | | | | | | |                 |-- Conscientiousness > 4.47  
| | | | | | | | |                   |-- class: Stressed  
| | | | | | | | |                     |-- Conscientiousness > 4.49  
| | | | | | | | |                       |-- Agreeableness <= 4.50  
| | | | | | | | |                         |-- Conscientiousness <= 5.89  
| | | | | | | | |                           |-- truncated branch of depth 5  
| | | | | | | | |                             |-- Conscientiousness > 5.89  
| | | | | | | | |                               |-- truncated branch of depth 6  
| | | | | | | | |                                 |-- Agreeableness > 4.50  
| | | | | | | | |                                   |-- Extraversion <= 2.00  
| | | | | | | | |                                     |-- truncated branch of depth 6  
| | | | | | | | |                                       |-- Extraversion > 2.00  
| | | | | | | | |                                         |-- class: Normal  
| | | | | | | | |                                           |-- EmotionalStability > 6.52  
| | | | | | | | |                                             |-- Agreeableness <= 3.96  
| | | | | | | | |                                               |-- Extraversion <= 0.82  
| | | | | | | | |                                                 |-- class: Normal  
| | | | | | | | |                                                   |-- Extraversion > 0.82  
| | | | | | | | |                                                     |-- class: anxious  
| | | | | | | | |                                                       |-- Agreeableness > 3.96  
| | | | | | | | |                                                         |-- Conscientiousness <= 3.69  
| | | | | | | | |                                                           |-- class: Depressed  
| | | | | | | | |                                                             |-- Conscientiousness > 3.69  
| | | | | | | | |                                                               |-- class: Stressed  
| | | | | | | | |----- Extraversion > 3.45  
| | | | | | | | |   |-- Agreeableness <= 0.99  
| | | | | | | | |     |-- Openness <= 6.23  
| | | | | | | | |       |-- Extraversion <= 5.85  
| | | | | | | | |         |-- class: Depressed  
| | | | | | | | |           |-- Extraversion > 5.85  
| | | | | | | | |             |-- class: Normal  
| | | | | | | | |               |-- Openness > 6.23  
| | | | | | | | |                 |-- Conscientiousness <= 2.16  
| | | | | | | | |                   |-- class: Stressed  
| | | | | | | | |                     |-- Conscientiousness > 2.16  
| | | | | | | | |                       |-- class: Normal  
| | | | | | | | |----- Agreeableness > 0.99  
| | | | | | | | |   |-- Conscientiousness <= 4.14  
| | | | | | | | |     |-- Openness <= 5.00  
| | | | | | | | |       |-- Extraversion <= 4.09
```

```
| | | | | | | | |--- Conscientiousness <= 1.50  
| | | | | | | | |--- class: Depressed  
| | | | | | | | |--- Conscientiousness > 1.50  
| | | | | | | | |--- Agreeableness <= 3.00  
| | | | | | | | |   |--- Extraversion <= 3.99  
| | | | | | | | |     |--- truncated branch of depth 2  
| | | | | | | | |     |--- Extraversion > 3.99  
| | | | | | | | |       |--- class: Normal  
| | | | | | | | |   |--- Agreeableness > 3.00  
| | | | | | | | |     |--- EmotionalStability <= 6.01  
| | | | | | | | |     |   |--- truncated branch of depth 7  
| | | | | | | | |     |   |--- EmotionalStability > 6.01  
| | | | | | | | |       |--- truncated branch of depth 7  
| | | | | | | | |--- Extraversion > 4.09  
| | | | | | | | |--- Extraversion <= 4.98  
| | | | | | | | |   |--- Conscientiousness <= 3.95  
| | | | | | | | |     |--- Openness <= 3.56  
| | | | | | | | |       |--- truncated branch of depth 3  
| | | | | | | | |       |--- Openness > 3.56  
| | | | | | | | |         |--- truncated branch of depth 4  
| | | | | | | | |   |--- Conscientiousness > 3.95  
| | | | | | | | |     |--- Openness <= 4.04  
| | | | | | | | |       |--- truncated branch of depth 3  
| | | | | | | | |       |--- Openness > 4.04  
| | | | | | | | |         |--- truncated branch of depth 3  
| | | | | | | | |--- Extraversion > 4.98  
| | | | | | | | |   |--- Conscientiousness <= 3.99  
| | | | | | | | |     |--- Agreeableness <= 6.45  
| | | | | | | | |       |--- truncated branch of depth 8  
| | | | | | | | |       |--- Agreeableness > 6.45  
| | | | | | | | |         |--- truncated branch of depth 3  
| | | | | | | | |   |--- Conscientiousness > 3.99  
| | | | | | | | |     |--- Extraversion <= 5.34  
| | | | | | | | |       |--- truncated branch of depth 5  
| | | | | | | | |       |--- Extraversion > 5.34  
| | | | | | | | |         |--- truncated branch of depth 4  
| | | | | | | | |--- Openness > 5.00  
| | | | | | | | |--- Agreeableness <= 2.25  
| | | | | | | | |--- Openness <= 6.40  
| | | | | | | | |   |--- Agreeableness <= 1.17  
| | | | | | | | |     |--- Openness <= 6.15  
| | | | | | | | |       |--- class: Normal  
| | | | | | | | |       |--- Openness > 6.15  
| | | | | | | | |         |--- class: Stressed  
| | | | | | | | |   |--- Agreeableness > 1.17  
| | | | | | | | |     |--- class: Stressed  
| | | | | | | | |--- Openness > 6.40  
| | | | | | | | |--- class: Depressed
```

[illegible]

```
| | | | | | | | |--- Agreeableness > 3.99  
| | | | | | | | |--- Agreeableness <= 4.02  
| | | | | | | | |   |--- Extraversion <= 6.00  
| | | | | | | | |     |--- class: Normal  
| | | | | | | | |     |--- Extraversion > 6.00  
| | | | | | | | |       |--- truncated branch of depth 4  
| | | | | | | | |--- Agreeableness > 4.02  
| | | | | | | | |   |--- Openness <= 3.51  
| | | | | | | | |     |--- truncated branch of depth 3  
| | | | | | | | |     |--- Openness > 3.51  
| | | | | | | | |       |--- truncated branch of depth 8  
| | | | | | | | |--- Agreeableness > 6.01  
| | | | | | | | |   |--- EmotionalStability <= 6.50  
| | | | | | | | |   |--- Openness <= 6.05  
| | | | | | | | |     |--- Conscientiousness <= 5.64  
| | | | | | | | |     |   |--- Conscientiousness <= 5.01  
| | | | | | | | |     |     |--- truncated branch of depth 4  
| | | | | | | | |     |     |--- Conscientiousness > 5.01  
| | | | | | | | |     |       |--- truncated branch of depth 6  
| | | | | | | | |     |--- Conscientiousness > 5.64  
| | | | | | | | |     |   |--- Extraversion <= 6.42  
| | | | | | | | |     |     |--- truncated branch of depth 3  
| | | | | | | | |     |     |--- Extraversion > 6.42  
| | | | | | | | |     |       |--- truncated branch of depth 2  
| | | | | | | | |   |--- Openness > 6.05  
| | | | | | | | |     |--- Extraversion <= 4.52  
| | | | | | | | |     |   |--- class: Normal  
| | | | | | | | |     |--- Extraversion > 4.52  
| | | | | | | | |     |   |--- EmotionalStability <= 6.00  
| | | | | | | | |     |     |--- truncated branch of depth 5  
| | | | | | | | |     |     |--- EmotionalStability > 6.00  
| | | | | | | | |     |       |--- truncated branch of depth 5  
| | | | | | | | |   |--- EmotionalStability > 6.50  
| | | | | | | | |   |--- Conscientiousness <= 4.41  
| | | | | | | | |   |   |--- class: anxious  
| | | | | | | | |   |--- Conscientiousness > 4.41  
| | | | | | | | |   |--- Extraversion <= 6.29  
| | | | | | | | |   |   |--- Openness <= 6.47  
| | | | | | | | |   |     |--- class: Normal  
| | | | | | | | |   |     |--- Openness > 6.47  
| | | | | | | | |     |       |--- truncated branch of depth 2  
| | | | | | | | |   |--- Extraversion > 6.29  
| | | | | | | | |   |   |--- Conscientiousness <= 5.50  
| | | | | | | | |   |     |--- class: anxious  
| | | | | | | | |   |--- Conscientiousness > 5.50  
| | | | | | | | |     |--- truncated branch of depth 5
```

```
[117]: from sklearn.metrics import classification_report, confusion_matrix
print(confusion_matrix(y_test, y_pred))
print(classification_report(y_test, y_pred))
```

```
[[4450  816   95  574]
 [ 884 4047  175  763]
 [ 101  183 5446  156]
 [ 771  781  232 4029]]

              precision    recall  f1-score   support

   Depressed         0.72        0.75        0.73        5935
     Normal         0.69        0.69        0.69        5869
    Stressed         0.92        0.93        0.92        5886
      anxious         0.73        0.69        0.71        5813

 accuracy                   0.76        23503
 macro avg         0.76        0.76        0.76        23503
weighted avg         0.76        0.76        0.76        23503
```

```
[124]: from sklearn.naive_bayes import GaussianNB
from sklearn.metrics import plot_confusion_matrix
from sklearn.metrics import f1_score
model_d = GaussianNB()
model_d.fit(X_train,y_train)
plot_confusion_matrix(model_d, X_test, y_test)
predictions = model_d.predict(X_test)
print(f1_score(y_test,predictions, average = 'micro'))
print(classification_report(y_test,predictions))
```

C:\Users\zdehg\AppData\Roaming\Python\Python39\site-packages\sklearn\utils\deprecation.py:87: FutureWarning: Function plot\_confusion\_matrix is deprecated; Function `plot\_confusion\_matrix` is deprecated in 1.0 and will be removed in 1.2. Use one of the class methods: ConfusionMatrixDisplay.from\_predictions or ConfusionMatrixDisplay.from\_estimator.  
warnings.warn(msg, category=FutureWarning)

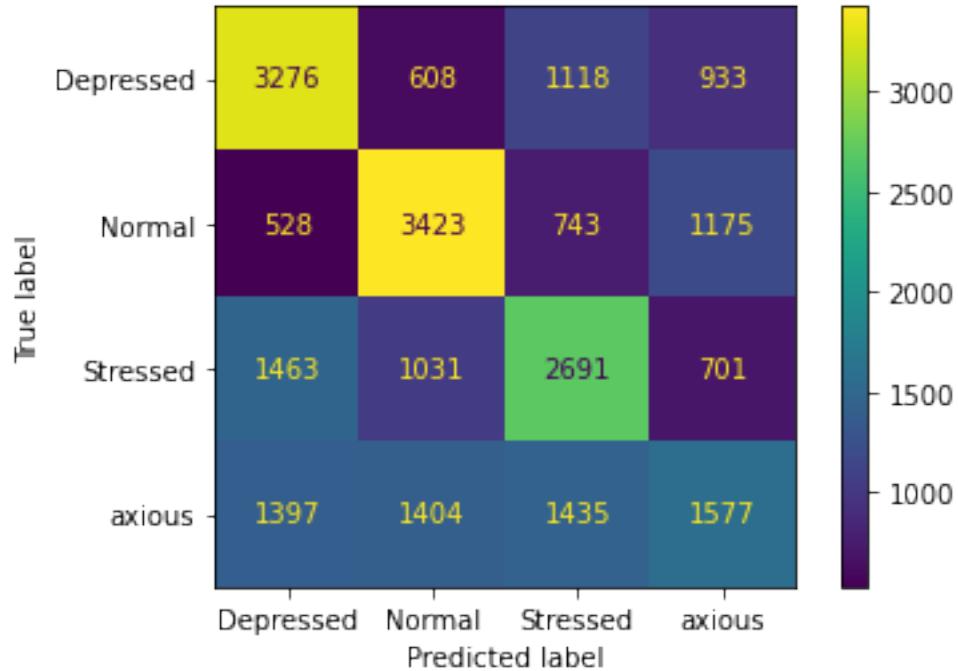
```
0.46662128238948225

              precision    recall  f1-score   support

   Depressed         0.49        0.55        0.52        5935
     Normal         0.53        0.58        0.56        5869
    Stressed         0.45        0.46        0.45        5886
      anxious         0.36        0.27        0.31        5813

 accuracy                   0.47        23503
 macro avg         0.46        0.47        0.46        23503
weighted avg         0.46        0.47        0.46        23503
```





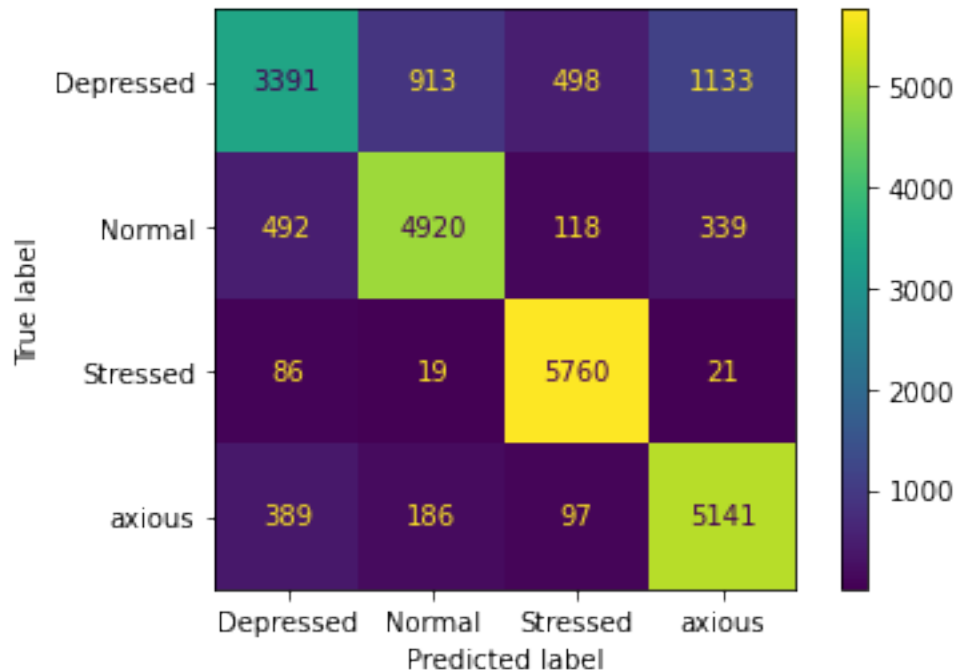
```
[125]: from sklearn.neighbors import KNeighborsClassifier
model2 = KNeighborsClassifier(n_neighbors=3)
model2.fit(X_train,y_train)
plot_confusion_matrix(model2, X_test, y_test)
predictions = model2.predict(X_test)
print(f1_score(y_test,predictions, average = 'micro'))
print(classification_report(y_test,predictions))
```

C:\Users\zdehg\AppData\Roaming\Python\Python39\site-packages\sklearn\utils\deprecation.py:87: FutureWarning: Function plot\_confusion\_matrix is deprecated; Function `plot\_confusion\_matrix` is deprecated in 1.0 and will be removed in 1.2. Use one of the class methods: ConfusionMatrixDisplay.from\_predictions or ConfusionMatrixDisplay.from\_estimator.  
warnings.warn(msg, category=FutureWarning)

0.8174275624388376

	precision	recall	f1-score	support
Depressed	0.78	0.57	0.66	5935
Normal	0.81	0.84	0.83	5869
Stressed	0.89	0.98	0.93	5886
anxious	0.77	0.88	0.83	5813

accuracy			0.82	23503
macro avg	0.81	0.82	0.81	23503
weighted avg	0.81	0.82	0.81	23503



```
[126]: from sklearn.ensemble import RandomForestClassifier
model1 = RandomForestClassifier(random_state=0)
model1.fit(X_train,y_train)
plot_confusion_matrix(model1, X_test, y_test)
predictions = model1.predict(X_test)
print(f1_score(y_test,predictions, average = 'micro'))
print(classification_report(y_test,predictions))
```

C:\Users\zdehg\AppData\Roaming\Python\Python39\site-packages\sklearn\utils\deprecation.py:87: FutureWarning: Function plot\_confusion\_matrix is deprecated; Function `plot\_confusion\_matrix` is deprecated in 1.0 and will be removed in 1.2. Use one of the class methods: ConfusionMatrixDisplay.from\_predictions or ConfusionMatrixDisplay.from\_estimator.  
warnings.warn(msg, category=FutureWarning)

0.8479343062587755

	precision	recall	f1-score	support
Depressed	0.79	0.82	0.81	5935
Normal	0.79	0.80	0.80	5869

Stressed	0.95	0.97	0.96	5886
anxious	0.85	0.80	0.82	5813
accuracy			0.85	23503
macro avg	0.85	0.85	0.85	23503
weighted avg	0.85	0.85	0.85	23503

