Great Expectations Task

1. Install Great Expectations Library

```
In [51]:  %pip install great_expectations==0.17.14
```

Requirement already satisfied: great_expectations==0.17.14 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (0.17.14)
Requirement already satisfied: altair<5.0.0,>=4.2.1 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (4.2.2)
Requirement already satisfied: Click!=8.1.4,>=7.1.2 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (8.1.8)
Requirement already satisfied: colorama>=0.4.3 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (0.4.6)
Requirement already satisfied: cryptography>=3.2 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (44.0.2)
Requirement already satisfied: Ipython>=7.16.3 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (9.0.2)
Requirement already satisfied: ipywidgets>=7.5.1 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (8.1.5)
Requirement already satisfied: jinja2>=2.10 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (3.1.6)
Requirement already satisfied: jsonpatch>=1.22 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (1.33)
Requirement already satisfied: jsonschema>=2.5.1 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (4.23.0)
Requirement already satisfied: makefun<2,>=1.7.0 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (1.15.6)
Requirement already satisfied: marshmallow<4.0.0,>=3.7.1 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (3.26.1)
Requirement already satisfied: mistune>=0.8.4 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (3.1.3)
Requirement already satisfied: nbformat>=5.0 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (5.10.4)
Requirement already satisfied: notebook>=6.4.10 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (7.3.3)
Requirement already satisfied: packaging in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (24.2)
Requirement already satisfied: pydantic<2.0,>=1.9.2 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (1.10.21)
Requirement already satisfied: pyparsing>=2.4 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (3.2.3)
Requirement already satisfied: python-dateutil>=2.8.1 in c:\users\issaq\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.14) (2.9.0.post0)

Requirement already satisfied: pytz>=2021.3 in c:\users\issaq\downloads\sofe3980u-la
b5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.1
4) (2025.2)
Requirement already satisfied: requests>=2.20 in c:\users\issaq\downloads\sofe3980u-
lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.
14) (2.32.3)
Requirement already satisfied: ruamel.yaml<0.17.18,>=0.16 in c:\users\issaq\download
s\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expecta
tions==0.17.14) (0.17.17)
Requirement already satisfied: scipy>=1.6.0 in c:\users\issaq\downloads\sofe3980u-la
b5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.1
4) (1.15.2)
Requirement already satisfied: tqdm>=4.59.0 in c:\users\issaq\downloads\sofe3980u-la
b5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.1
4) (4.67.1)
Requirement already satisfied: typing-extensions>=3.10.0.0 in c:\users\issaq\downloa
ds\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expect
ations==0.17.14) (4.12.2)
Requirement already satisfied: tzlocal>=1.2 in c:\users\issaq\downloads\sofe3980u-la
b5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.1
4) (5.3.1)
Requirement already satisfied: urllib3>=1.26 in c:\users\issaq\downloads\sofe3980u-l
ab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.1
4) (2.3.0)
Requirement already satisfied: numpy>=1.22.4 in c:\users\issaq\downloads\sofe3980u-l
ab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.1
4) (1.26.4)
Requirement already satisfied: pandas>=1.3.0 in c:\users\issaq\downloads\sofe3980u-l
ab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from great_expectations==0.17.1
4) (2.1.4)
Requirement already satisfied: entrypoints in c:\users\issaq\downloads\sofe3980u-lab
5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from altair<5.0.0,>=4.2.1->great_
expectations==0.17.14) (0.4)
Requirement already satisfied: toolz in c:\users\issaq\downloads\sofe3980u-lab5-main
\sofe3980u-lab5-main\lab5\lib\site-packages (from altair<5.0.0,>=4.2.1->great_expect
ations==0.17.14) (1.0.0)
Requirement already satisfied: cffi>=1.12 in c:\users\issaq\downloads\sofe3980u-lab5
-main\sofe3980u-lab5-main\lab5\lib\site-packages (from cryptography>=3.2->great_expe
ctations==0.17.14) (1.17.1)
Requirement already satisfied: decorator in c:\users\issaq\downloads\sofe3980u-lab5-
main\sofe3980u-lab5-main\lab5\lib\site-packages (from Ipython>=7.16.3->great_expecta
tions==0.17.14) (5.2.1)
Requirement already satisfied: ipython-pygments-lexers in c:\users\issaq\downloads\s
ofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from Ipython>=7.16.3-
>great_expectations==0.17.14) (1.1.1)
Requirement already satisfied: jedi>=0.16 in c:\users\issaq\downloads\sofe3980u-lab5
-main\sofe3980u-lab5-main\lab5\lib\site-packages (from Ipython>=7.16.3->great_expect
ations==0.17.14) (0.19.2)
Requirement already satisfied: matplotlib-inline in c:\users\issaq\downloads\sofe398
0u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from Ipython>=7.16.3->great
_expectations==0.17.14) (0.1.7)
Requirement already satisfied: prompt_toolkit<3.1.0,>=3.0.41 in c:\users\issaq\downl
oads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from Ipython>=
7.16.3->great_expectations==0.17.14) (3.0.50)
Requirement already satisfied: pygments>=2.4.0 in c:\users\issaq\downloads\sofe3980u
-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from Ipython>=7.16.3->great_e

xpectations==0.17.14) (2.19.1)
Requirement already satisfied: stack_data in c:\users\issaq\downloads\sofe3980u-lab5
-main\sofe3980u-lab5-main\lab5\lib\site-packages (from Ipython>=7.16.3->great_expect
ations==0.17.14) (0.6.3)
Requirement already satisfied: traitlets>=5.13.0 in c:\users\issaq\downloads\sofe398
0u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from Ipython>=7.16.3->great
_expectations==0.17.14) (5.14.3)
Requirement already satisfied: comm>=0.1.3 in c:\users\issaq\downloads\sofe3980u-lab
5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from ipywidgets>=7.5.1->great_exp
ectations==0.17.14) (0.2.2)
Requirement already satisfied: widgetsnbextension~=4.0.12 in c:\users\issaq\download
s\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from ipywidgets>=
7.5.1->great_expectations==0.17.14) (4.0.13)
Requirement already satisfied: jupyterlab-widgets~=3.0.12 in c:\users\issaq\download
s\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from ipywidgets>=
7.5.1->great_expectations==0.17.14) (3.0.13)
Requirement already satisfied: MarkupSafe>=2.0 in c:\users\issaq\downloads\sofe3980u
-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jinja2>=2.10->great_expe
ctations==0.17.14) (3.0.2)
Requirement already satisfied: jsonpointer>=1.9 in c:\users\issaq\downloads\sofe3980
u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jsonpatch>=1.22->great_
expectations==0.17.14) (3.0.0)
Requirement already satisfied: attrs>=22.2.0 in c:\users\issaq\downloads\sofe3980u-l
ab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jsonschema>=2.5.1->great_e
xpectations==0.17.14) (25.3.0)
Requirement already satisfied: jsonschema-specifications>=2023.03.6 in c:\users\issa
q\downloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jso
nschema>=2.5.1->great_expectations==0.17.14) (2024.10.1)
Requirement already satisfied: referencing>=0.28.4 in c:\users\issaq\downloads\sofe3
980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jsonschema>=2.5.1->g
reat_expectations==0.17.14) (0.36.2)
Requirement already satisfied: rpds-py>=0.7.1 in c:\users\issaq\downloads\sofe3980u-
lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jsonschema>=2.5.1->great_
expectations==0.17.14) (0.23.1)
Requirement already satisfied: fastjsonschema>=2.15 in c:\users\issaq\downloads\sofe
3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from nbformat>=5.0->grea
t_expectations==0.17.14) (2.21.1)
Requirement already satisfied: jupyter-core!=5.0.*,>=4.12 in c:\users\issaq\download
s\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from nbformat>=5.0
->great_expectations==0.17.14) (5.7.2)
Requirement already satisfied: jupyter-server<3,>=2.4.0 in c:\users\issaq\downloads
\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from notebook>=6.4.
10->great_expectations==0.17.14) (2.15.0)
Requirement already satisfied: jupyterlab-server<3,>=2.27.1 in c:\users\issaq\downlo
ads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from notebook>=
6.4.10->great_expectations==0.17.14) (2.27.3)
Requirement already satisfied: jupyterlab<4.4,>=4.3.6 in c:\users\issaq\downloads\so
fe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from notebook>=6.4.10-
>great_expectations==0.17.14) (4.3.6)
Requirement already satisfied: notebook-shim<0.3,>=0.2 in c:\users\issaq\downloads\s
ofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from notebook>=6.4.10
->great_expectations==0.17.14) (0.2.4)
Requirement already satisfied: tornado>=6.2.0 in c:\users\issaq\downloads\sofe3980u-
lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from notebook>=6.4.10->great_e
xpectations==0.17.14) (6.4.2)
Requirement already satisfied: tzdata>=2022.1 in c:\users\issaq\downloads\sofe3980u-

lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from pandas>=1.3.0->great_expe
ctations==0.17.14) (2025.2)
Requirement already satisfied: six>=1.5 in c:\users\issaq\downloads\sofe3980u-lab5-m
ain\sofe3980u-lab5-main\lab5\lib\site-packages (from python-dateutil>=2.8.1->great_e
xpectations==0.17.14) (1.17.0)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\users\issaq\downloads
\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from requests>=2.20
->great_expectations==0.17.14) (3.4.1)
Requirement already satisfied: idna<4,>=2.5 in c:\users\issaq\downloads\sofe3980u-la
b5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from requests>=2.20->great_expec
tations==0.17.14) (3.10)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\issaq\downloads\sofe39
80u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from requests>=2.20->great
_expectations==0.17.14) (2025.1.31)
Requirement already satisfied: pycparser in c:\users\issaq\downloads\sofe3980u-lab5-
main\sofe3980u-lab5-main\lab5\lib\site-packages (from cffi>=1.12->cryptography>=3.2-
>great_expectations==0.17.14) (2.22)
Requirement already satisfied: parso<0.9.0,>=0.8.4 in c:\users\issaq\downloads\sofe3
980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jedi>=0.16->Ipython>
=7.16.3->great_expectations==0.17.14) (0.8.4)
Requirement already satisfied: platformdirs>=2.5 in c:\users\issaq\downloads\sofe398
0u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-core!=5.0.*,>=
4.12->nbformat>=5.0->great_expectations==0.17.14) (4.3.7)
Requirement already satisfied: pywin32>=300 in c:\users\issaq\downloads\sofe3980u-la
b5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-core!=5.0.*,>=4.12-
>nbformat>=5.0->great_expectations==0.17.14) (310)
Requirement already satisfied: anyio>=3.1.0 in c:\users\issaq\downloads\sofe3980u-la
b5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-server<3,>=2.4.0->n
otebook>=6.4.10->great_expectations==0.17.14) (4.9.0)
Requirement already satisfied: argon2-cffi>=21.1 in c:\users\issaq\downloads\sofe398
0u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-server<3,>=2.
4.0->notebook>=6.4.10->great_expectations==0.17.14) (23.1.0)
Requirement already satisfied: jupyter-client>=7.4.4 in c:\users\issaq\downloads\sof
e3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-server<3,>
=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (8.6.3)
Requirement already satisfied: jupyter-events>=0.11.0 in c:\users\issaq\downloads\so
fe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-server<3,
>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (0.12.0)
Requirement already satisfied: jupyter-server-terminals>=0.4.4 in c:\users\issaq\dow
nloads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-
server<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (0.5.3)
Requirement already satisfied: nbconvert>=6.4.4 in c:\users\issaq\downloads\sofe3980
u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-server<3,>=2.4.
0->notebook>=6.4.10->great_expectations==0.17.14) (7.16.6)
Requirement already satisfied: overrides>=5.0 in c:\users\issaq\downloads\sofe3980u-
lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-server<3,>=2.4.0-
>notebook>=6.4.10->great_expectations==0.17.14) (7.7.0)
Requirement already satisfied: prometheus-client>=0.9 in c:\users\issaq\downloads\so
fe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-server<3,
>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (0.21.1)
Requirement already satisfied: pywinpty>=2.0.1 in c:\users\issaq\downloads\sofe3980u
-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-server<3,>=2.4.0
->notebook>=6.4.10->great_expectations==0.17.14) (2.0.15)
Requirement already satisfied: pyzmq>=24 in c:\users\issaq\downloads\sofe3980u-lab5-
main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-server<3,>=2.4.0->note
book>=6.4.10->great_expectations==0.17.14) (26.3.0)

Requirement already satisfied: send2trash>=1.8.2 in c:\users\issaq\downloads\sofe398
0u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-server<3,>=2.
4.0->notebook>=6.4.10->great_expectations==0.17.14) (1.8.3)
Requirement already satisfied: terminado>=0.8.3 in c:\users\issaq\downloads\sofe3980
u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-server<3,>=2.4.
0->notebook>=6.4.10->great_expectations==0.17.14) (0.18.1)
Requirement already satisfied: websocket-client>=1.7 in c:\users\issaq\downloads\sof
e3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-server<3,>
=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (1.8.0)
Requirement already satisfied: async-lru>=1.0.0 in c:\users\issaq\downloads\sofe3980
u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyterlab<4.4,>=4.3.6-
>notebook>=6.4.10->great_expectations==0.17.14) (2.0.5)
Requirement already satisfied: httpx>=0.25.0 in c:\users\issaq\downloads\sofe3980u-l
ab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyterlab<4.4,>=4.3.6->no
tebook>=6.4.10->great_expectations==0.17.14) (0.28.1)
Requirement already satisfied: ipykernel>=6.5.0 in c:\users\issaq\downloads\sofe3980
u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyterlab<4.4,>=4.3.6-
>notebook>=6.4.10->great_expectations==0.17.14) (6.29.5)
Requirement already satisfied: jupyter-lsp>=2.0.0 in c:\users\issaq\downloads\sofe39
80u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyterlab<4.4,>=4.3.
6->notebook>=6.4.10->great_expectations==0.17.14) (2.2.5)
Requirement already satisfied: setuptools>=40.8.0 in c:\users\issaq\downloads\sofe39
80u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyterlab<4.4,>=4.3.
6->notebook>=6.4.10->great_expectations==0.17.14) (65.5.0)
Requirement already satisfied: babel>=2.10 in c:\users\issaq\downloads\sofe3980u-lab
5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyterlab-server<3,>=2.27.1
->notebook>=6.4.10->great_expectations==0.17.14) (2.17.0)
Requirement already satisfied: json5>=0.9.0 in c:\users\issaq\downloads\sofe3980u-la
b5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyterlab-server<3,>=2.27.
1->notebook>=6.4.10->great_expectations==0.17.14) (0.10.0)
Requirement already satisfied: wcwidth in c:\users\issaq\downloads\sofe3980u-lab5-ma
in\sofe3980u-lab5-main\lab5\lib\site-packages (from prompt_toolkit<3.1.0,>=3.0.41->I
python>=7.16.3->great_expectations==0.17.14) (0.2.13)
Requirement already satisfied: executing>=1.2.0 in c:\users\issaq\downloads\sofe3980
u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from stack_data->Ipython>=7.
16.3->great_expectations==0.17.14) (2.2.0)
Requirement already satisfied: asttokens>=2.1.0 in c:\users\issaq\downloads\sofe3980
u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from stack_data->Ipython>=7.
16.3->great_expectations==0.17.14) (3.0.0)
Requirement already satisfied: pure-eval in c:\users\issaq\downloads\sofe3980u-lab5-
main\sofe3980u-lab5-main\lab5\lib\site-packages (from stack_data->Ipython>=7.16.3->g
reat_expectations==0.17.14) (0.2.3)
Requirement already satisfied: sniffio>=1.1 in c:\users\issaq\downloads\sofe3980u-la
b5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from anyio>=3.1.0->jupyter-serve
r<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (1.3.1)
Requirement already satisfied: argon2-cffi-bindings in c:\users\issaq\downloads\sofe
3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from argon2-cffi>=21.1->
jupyter-server<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (21.2.0)
Requirement already satisfied: httpcore==1.* in c:\users\issaq\downloads\sofe3980u-l
ab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from httpx>=0.25.0->jupyterlab<
4.4,>=4.3.6->notebook>=6.4.10->great_expectations==0.17.14) (1.0.7)
Requirement already satisfied: h11<0.15,>=0.13 in c:\users\issaq\downloads\sofe3980u
-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from httpcore==1.*->httpx>=0.
25.0->jupyterlab<4.4,>=4.3.6->notebook>=6.4.10->great_expectations==0.17.14) (0.14.
0)
Requirement already satisfied: debugpy>=1.6.5 in c:\users\issaq\downloads\sofe3980u-

lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from ipykernel>=6.5.0->jupyter
lab<4.4,>=4.3.6->notebook>=6.4.10->great_expectations==0.17.14) (1.8.13)
Requirement already satisfied: nest-asyncio in c:\users\issaq\downloads\sofe3980u-la
b5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from ipykernel>=6.5.0->jupyterla
b<4.4,>=4.3.6->notebook>=6.4.10->great_expectations==0.17.14) (1.6.0)
Requirement already satisfied: psutil in c:\users\issaq\downloads\sofe3980u-lab5-mai
n\sofe3980u-lab5-main\lab5\lib\site-packages (from ipykernel>=6.5.0->jupyterlab<4.4,
>=4.3.6->notebook>=6.4.10->great_expectations==0.17.14) (7.0.0)
Requirement already satisfied: python-json-logger>=2.0.4 in c:\users\issaq\downloads
\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-events
>=0.11.0->jupyter-server<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14)
(3.3.0)
Requirement already satisfied: pyyaml>=5.3 in c:\users\issaq\downloads\sofe3980u-lab
5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-events>=0.11.0->jupy
ter-server<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (6.0.2)
Requirement already satisfied: rfc3339-validator in c:\users\issaq\downloads\sofe398
0u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-events>=0.11.0
->jupyter-server<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (0.1.4)
Requirement already satisfied: rfc3986-validator>=0.1.1 in c:\users\issaq\downloads
\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jupyter-events
>=0.11.0->jupyter-server<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14)
(0.1.1)
Requirement already satisfied: beautifulsoup4 in c:\users\issaq\downloads\sofe3980u-
lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from nbconvert>=6.4.4->jupyter
-server<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (4.13.3)
Requirement already satisfied: bleach!=5.0.0 in c:\users\issaq\downloads\sofe3980u-l
ab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from bleach[css]!=5.0.0->nbconv
ert>=6.4.4->jupyter-server<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14)
(6.2.0)
Requirement already satisfied: defusedxml in c:\users\issaq\downloads\sofe3980u-lab5
-main\sofe3980u-lab5-main\lab5\lib\site-packages (from nbconvert>=6.4.4->jupyter-ser
ver<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (0.7.1)
Requirement already satisfied: jupyterlab-pygments in c:\users\issaq\downloads\sofe3
980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from nbconvert>=6.4.4->ju
pyter-server<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (0.3.0)
Requirement already satisfied: nbclient>=0.5.0 in c:\users\issaq\downloads\sofe3980u
-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from nbconvert>=6.4.4->jupyte
r-server<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (0.10.2)
Requirement already satisfied: pandocfilters>=1.4.1 in c:\users\issaq\downloads\sofe
3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from nbconvert>=6.4.4->j
upyter-server<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (1.5.1)
Requirement already satisfied: webencodings in c:\users\issaq\downloads\sofe3980u-la
b5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from bleach!=5.0.0->bleach[css]!
=5.0.0->nbconvert>=6.4.4->jupyter-server<3,>=2.4.0->notebook>=6.4.10->great_expectat
ions==0.17.14) (0.5.1)
Requirement already satisfied: tinycss2<1.5,>=1.1.0 in c:\users\issaq\downloads\sofe
3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from bleach[css]!=5.0.0-
>nbconvert>=6.4.4->jupyter-server<3,>=2.4.0->notebook>=6.4.10->great_expectations==
0.17.14) (1.4.0)
Requirement already satisfied: fqdn in c:\users\issaq\downloads\sofe3980u-lab5-main
\sofe3980u-lab5-main\lab5\lib\site-packages (from jsonschema[format-nongpl]>=4.18.0-
>jupyter-events>=0.11.0->jupyter-server<3,>=2.4.0->notebook>=6.4.10->great_expectati
ons==0.17.14) (1.5.1)
Requirement already satisfied: isoduration in c:\users\issaq\downloads\sofe3980u-lab
5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jsonschema[format-nongpl]>=
4.18.0->jupyter-events>=0.11.0->jupyter-server<3,>=2.4.0->notebook>=6.4.10->great_ex

```
pectations==0.17.14) (20.11.0)
Requirement already satisfied: uri-template in c:\users\issaq\downloads\sofe3980u-la
b5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jsonschema[format-nongpl]>=
4.18.0->jupyter-events>=0.11.0->jupyter-server<3,>=2.4.0->notebook>=6.4.10->great_ex
pectations==0.17.14) (1.3.0)
Requirement already satisfied: webcolors>=24.6.0 in c:\users\issaq\downloads\sofe398
0u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from jsonschema[format-nong
pl]>=4.18.0->jupyter-events>=0.11.0->jupyter-server<3,>=2.4.0->notebook>=6.4.10->gre
at_expectations==0.17.14) (24.11.1)
Requirement already satisfied: soupsieve>1.2 in c:\users\issaq\downloads\sofe3980u-l
ab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from beautifulsoup4->nbconvert>
=6.4.4->jupyter-server<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (2.
6)
Requirement already satisfied: arrow>=0.15.0 in c:\users\issaq\downloads\sofe3980u-l
ab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from isoduration->jsonschema[fo
rmat-nongpl]>=4.18.0->jupyter-events>=0.11.0->jupyter-server<3,>=2.4.0->notebook>=6.
4.10->great_expectations==0.17.14) (1.3.0)
Requirement already satisfied: types-python-dateutil>=2.8.10 in c:\users\issaq\downl
oads\sofe3980u-lab5-main\sofe3980u-lab5-main\lab5\lib\site-packages (from arrow>=0.1
5.0->isoduration->jsonschema[format-nongpl]>=4.18.0->jupyter-events>=0.11.0->jupyter
-server<3,>=2.4.0->notebook>=6.4.10->great_expectations==0.17.14) (2.9.0.20241206)
Note: you may need to restart the kernel to use updated packages.
```

2. Import Necessary Libraries

In [53]:
```python
import pandas as pd
import great_expectations as gx
```

3. Load Labels.csv

Download and upload the Labels.csv into this notebook, and then load the file.

In [54]:
```python
df = pd.read_csv("https://archive.ics.uci.edu/ml/machine-learning-databases/adult/a
                 names=["age", "workclass", "fnlwgt", "education", "education-num",
                        "occupation", "relationship", "race", "sex", "capital-gain"
                        "hours-per-week", "native-country", "income"])
```

4. Preview the Dataset

In [55]:
```python
df.head()
```

Out[55]:

	age	workclass	fnlwgt	education	education-num	marital-status	occupation	relationship	rac
0	39	State-gov	77516	Bachelors	13	Never-married	Adm-clerical	Not-in-family	Whit
1	50	Self-emp-not-inc	83311	Bachelors	13	Married-civ-spouse	Exec-managerial	Husband	Whit
2	38	Private	215646	HS-grad	9	Divorced	Handlers-cleaners	Not-in-family	Whit
3	53	Private	234721	11th	7	Married-civ-spouse	Handlers-cleaners	Husband	Blac
4	28	Private	338409	Bachelors	13	Married-civ-spouse	Prof-specialty	Wife	Blac

5. Set Up Great Expectations Context and Data Source

In [57]:
```python
context = gx.get_context()

datasource = context.sources.add_pandas(name="my_pandas_datasource")
```

6. Define and Create a Data Batch

In [58]:
```python
asset = datasource.add_dataframe_asset(name="labels_asset_v2")
batch_request = asset.build_batch_request(dataframe=df)

validator = context.get_validator(batch_request=batch_request)
```

7. Define Three Expectations for Column Values

Using this link, choose three expectation functions and apply them to the labels dataset in a relevant manner.

You should replace the 'ExpectColumnValuesToBeBetween' function with other functions you select from the link.

You can also check the format/parameters required of each function when you click "See more" on the function.

```python
In [59]:  expectation_1 = validator.expect_column_values_to_be_between(
              column="Car1_Location_X",
              min_value=0,
              max_value=500
          )

          expectation_2 = validator.expect_column_values_to_match_regex(
              column="Ground_Truth_View",
              regex=r".*\.png"
          )

          expectation_3 = validator.expect_column_values_to_be_unique(
              column="Timestamp"
          )
```

```
Calculating Metrics:    0%|          | 0/8 [00:00<?, ?it/s]
Calculating Metrics:    0%|          | 0/8 [00:00<?, ?it/s]
Calculating Metrics:    0%|          | 0/8 [00:00<?, ?it/s]
```

Expectation 1

```python
In [61]:  expectation_1 = validator.expect_column_values_to_be_between(
              column="Car1_Location_X",
              min_value=0,
              max_value=500
          )
```

```
Calculating Metrics:    0%|          | 0/8 [00:00<?, ?it/s]
```

Validate Data Against Expectation 1

```python
In [62]:  expectation_1
```

```
Out[62]:  {
            "success": false,
            "result": {
              "element_count": 121,
              "unexpected_count": 121,
              "unexpected_percent": 100.0,
              "partial_unexpected_list": [
                -51.40297655,
                -53.81963722,
                -50.23914439,
                -53.70722021,
                -52.05372109,
                -53.93975603,
                -50.30258412,
                -53.17447194,
                -52.72667437,
                -50.18179353,
                -52.40699613,
                -52.38122971,
                -53.01906414,
                -50.85034015,
                -51.93070037,
                -50.75051989,
                -50.63015195,
                -50.69818291,
                -51.95966168,
                -50.88663347
              ],
              "missing_count": 0,
              "missing_percent": 0.0,
              "unexpected_percent_total": 100.0,
              "unexpected_percent_nonmissing": 100.0
            },
            "meta": {},
            "exception_info": {
              "raised_exception": false,
              "exception_traceback": null,
              "exception_message": null
            }
          }
```

Expectation 2

```
In [63]:  expectation_2 = validator.expect_column_values_to_match_regex(
              column="Ground_Truth_View",
              regex=r".*\.png"
          )
```

Calculating Metrics: 0%| | 0/8 [00:00<?, ?it/s]

Validate Data Against Expectation 2

```
In [64]:  expectation_2
```

```
Out[64]:  {
              "success": true,
              "result": {
                "element_count": 121,
                "unexpected_count": 0,
                "unexpected_percent": 0.0,
                "partial_unexpected_list": [],
                "missing_count": 0,
                "missing_percent": 0.0,
                "unexpected_percent_total": 0.0,
                "unexpected_percent_nonmissing": 0.0
              },
              "meta": {},
              "exception_info": {
                "raised_exception": false,
                "exception_traceback": null,
                "exception_message": null
              }
          }
```

Expectation 3

In [65]:
```
expectation_3 = validator.expect_column_values_to_be_unique(
    column="Timestamp"
)
```

```
Calculating Metrics:     0%|              | 0/8 [00:00<?, ?it/s]
```

Validate Data Against Expectation 3

In [66]:
```
expectation_3
```

```
Out[66]:  {
              "success": true,
              "result": {
                "element_count": 121,
                "unexpected_count": 0,
                "unexpected_percent": 0.0,
                "partial_unexpected_list": [],
                "missing_count": 0,
                "missing_percent": 0.0,
                "unexpected_percent_total": 0.0,
                "unexpected_percent_nonmissing": 0.0
              },
              "meta": {},
              "exception_info": {
                "raised_exception": false,
                "exception_traceback": null,
                "exception_message": null
              }
          }
```