IMPORT REQUIRED LIBRARIES

```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
import plotly.express as px
```

INSTALLING PACKAGES

```
!pip install tensorflow
Requirement already satisfied: tensorflow in c:\users\ranjhamed\anaconda3\lib\site-packages (2.10.0)
Requirement already satisfied: tensorflow-intel==2.10.0 ; platform_system == "Windows" and platform_machine == "AMD64" in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow) (2.10.0)
Requirement already satisfied: packaging in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (20.4)
Requirement already satisfied: gast<=0.4,>=0.2.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (0.4.
0)
Requirement already satisfied: google-pasta>=0.1.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (0.
2.0)
Requirement already satisfied: clirr>=2.2.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (2.10.0)
Requirement already satisfied: keras<2.11,>=2.10.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (2.
10.0)
Requirement already satisfied: astunparse>=1.6.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (1.6.
3)
Requirement already satisfied: tensorflow-io-gcs-filesystem>=0.23.1 ; platform_machine == "AMD64" in c:\users\ranjhamed\anaconda3\lib\site-packages
(from tensorflow-intel==2.10.0->tensorflow) (0.31.0)
Requirement already satisfied: termcolor>=1.1.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (1.1.
0)
Requirement already satisfied: wrapt>=1.11.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (1.11.1)
Requirement already satisfied: opt-einsum>=2.3.2 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (3.3.0)
Requirement already satisfied: estimator>=2.9.0,<2.11 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (1.8.2)
Requirement already satisfied: flatbuffers>=24.3.25 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (2
.0.7)
Requirement already satisfied: absl-py>=1.0.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (1.0.0)
Requirement already satisfied: numpy>=1.24,<=1.23.1; python_version >= "3.8" and platform_machine == "arm64" and platform_system == "Darwin" in c:\u
sers\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (1.23.1)
Requirement already satisfied: libclang>=13.0.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (18.0.
0)
Requirement already satisfied: protobuf<3.20,>=3.9.2; python_version >= "3.7" in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-int
el==2.10.0->tensorflow) (3.19.4)
Requirement already satisfied: grpcio<2.0,>=1.24.3 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorflow) (1.56.
0)
Requirement already satisfied: typing_extensions>=3.6.6; python_version < "3.8" in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-i
ntel==2.10.0->tensorflow) (4.3.0)
Requirement already satisfied: wheel; python_version >= "3.6" and platform_machine == "aarch64" in c:\users\ranjhamed\anaconda3\lib\site-packages
(from tensorflow-intel==2.10.0->tensorflow) (0.37.1)
Requirement already satisfied: tensorboard<2.11,>=2.10.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorflow-intel==2.10.0->tensorfl
ow) (2.9.0)
Requirement already satisfied: google-auth-oauthlib<1,>=0.5 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorboard<2.11,>=2.10.0->tens
orflow-intel==2.10.0->tensorflow) (0.4.6)
Requirement already satisfied: google-auth<2,>=1.6.3 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorboard<2.11,>=2.10.0->tensorflow-
intel==2.10.0->tensorflow) (2.29.0)
Requirement already satisfied: werkzeug>=1.0.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorboard<2.11,>=2.10.0->tensorflow-intel==
2.10.0->tensorflow) (1.0.1)
Requirement already satisfied: markdown>=2.6.8 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorboard<2.11,>=2.10.0->tensorflow-intel=
=2.10.0->tensorflow) (3.3.4)
Requirement already satisfied: requests<2.21,>=2.9.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorboard<2.11,>=2.10.0->tensorflow-
intel==2.10.0->tensorflow) (2.25.1)
Requirement already satisfied: tensorboard-data-server<0.6.0,>=0.5.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorboard<2.11,>=2.
10.0->tensorflow-intel==2.10.0->tensorflow) (0.5.0)
Requirement already satisfied: tensorboard-plugin-wit>=1.6.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorboard<2.11,>=2.10.0->ten
sorflow-intel==2.10.0->tensorflow) (1.6.0)
Requirement already satisfied: setuptools>41.0.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from tensorboard<2.11,>=2.10.0->tensorflow-int
el==2.10.0->tensorflow) (49.2.1)
Requirement already satisfied: cachetools~=4.0.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from google-auth<2,>=1.6.3->tensorboard<2.11,>
=2.10.0->tensorflow-intel==2.10.0->tensorflow) (4.0.0)
Requirement already satisfied: rsa>=3.1.4 in c:\users\ranjhamed\anaconda3\lib\site-packages (from google-auth<2,>=1.6.3->tensorboard<2.11,>=2.10.0->
tensorflow-intel==2.10.0->tensorflow) (4.9)
Requirement already satisfied: pyasn1-modules>=0.2.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from google-auth<2,>=1.6.3->tensorboard<2.11,
>=2.10.0->tensorflow-intel==2.10.0->tensorflow) (0.2.8)
Requirement already satisfied: requests-oauthlib>=0.7.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from google-auth-oauthlib<1,>=0.5->tens
orboard<2.11,>=2.10.0->tensorflow-intel==2.10.0->tensorflow) (1.3.0)
Requirement already satisfied: urllib3<1.26,>=1.21.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from requests<2.21,>=2.9.1->tensorboard<2.11,
>=2.10.0->tensorflow-intel==2.10.0->tensorflow) (1.25.11)
Requirement already satisfied: chardet<4,>=3.0.2 in c:\users\ranjhamed\anaconda3\lib\site-packages (from requests<2.21,>=2.9.1->tensorboard<2.11,>
=2.10.0->tensorflow-intel==2.10.0->tensorflow) (3.0.4)
Requirement already satisfied: idna<2.10,>=2.5 in c:\users\ranjhamed\anaconda3\lib\site-packages (from requests<2.21,>=2.9.1->tensorboard<2.11,>=2.
10.0->tensorflow-intel==2.10.0->tensorflow) (2.10)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\ranjhamed\anaconda3\lib\site-packages (from requests<2.21,>=2.9.1->tensorboard<2.11,>
=2.10.0->tensorflow-intel==2.10.0->tensorflow) (2020.6.20)
Requirement already satisfied: oauthlib>3.0.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from requests-oauthlib<1.0.0,>=0.7.0->google-auth-oauthlib
<1,>=0.5->tensorboard<2.11,>=2.10.0->tensorflow-intel==2.10.0->tensorflow) (3.1.0)
```

```
!pip install torch
Requirement already satisfied: torch in c:\users\ranjhamed\anaconda3\lib\site-packages (2.6.1)
Requirement already satisfied: filelock in c:\users\ranjhamed\anaconda3\lib\site-packages (from torch) (3.12.2)
Requirement already satisfied: typing-extensions>=4.10.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from torch) (4.6.0)
Requirement already satisfied: sympy == 1.13.1; python_version >= "3.9" in c:\users\ranjhamed\anaconda3\lib\site-packages (from torch) (1.14.1)
Requirement already satisfied: networkx in c:\users\ranjhamed\anaconda3\lib\site-packages (from torch) (2.5.1)
Requirement already satisfied: jinja2 in c:\users\ranjhamed\anaconda3\lib\site-packages (from torch) (2.11.3)
Requirement already satisfied: fsspec in c:\users\ranjhamed\anaconda3\lib\site-packages (from torch) (2024.12.1)
Requirement already satisfied: mpmath>=0.19 in c:\users\ranjhamed\anaconda3\lib\site-packages (from sympy == 1.13.1; python_version >= "3.9" and pl
atform_machine != "aarch64" or python_version >= "3.13" and platform_machine != "aarch64"->torch) (1.3.0)
Requirement already satisfied: MarkupSafe>=0.23 in c:\users\ranjhamed\anaconda3\lib\site-packages (from jinja2->torch) (2.1.1)
```

```
!pip install transformers
Requirement already satisfied: transformers in c:\users\ranjhamed\anaconda3\lib\site-packages (4.30.2)
Requirement already satisfied: huggingface-hub<1.0,>=0.14.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from transformers) (0.32.2)
Requirement already satisfied: huggingface-hub~=0.14.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from transformers) (0.18.0)
Requirement already satisfied: numpy>=1.17 in c:\users\ranjhamed\anaconda3\lib\site-packages (from transformers) (1.23.1)
Requirement already satisfied: pyyaml>=5.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from transformers) (6.0)
Requirement already satisfied: requests in c:\users\ranjhamed\anaconda3\lib\site-packages (from transformers) (2.25.1)
Requirement already satisfied: numpyc17.12 in c:\users\ranjhamed\anaconda3\lib\site-packages (from transformers) (1.24.3)
Requirement already satisfied: regex!=2019.12.17 in c:\users\ranjhamed\anaconda3\lib\site-packages (from transformers) (2021.8.3)
Requirement already satisfied: tqdm>=4.27 in c:\users\ranjhamed\anaconda3\lib\site-packages (from transformers) (4.66.4)
Requirement already satisfied: packaging>=20.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from transformers) (23.1)
Requirement already satisfied: filelock in c:\users\ranjhamed\anaconda3\lib\site-packages (from transformers) (3.12.2)
Requirement already satisfied: typing-extensions>=3.7.4.3 in c:\users\ranjhamed\anaconda3\lib\site-packages (from huggingface-hub~=0.14.1->transfo
rmers) (4.6.0)
Requirement already satisfied: fsspec in c:\users\ranjhamed\anaconda3\lib\site-packages (from huggingface-hub~=0.14.1->transformers) (2023.6.0)
Requirement already satisfied: chardet<4,>=3.0.2 in c:\users\ranjhamed\anaconda3\lib\site-packages (from requests->transformers) (3.0.4)
Requirement already satisfied: idna<2.10,>=2.5 in c:\users\ranjhamed\anaconda3\lib\site-packages (from requests->transformers) (2.10)
Requirement already satisfied: urllib3<1.26,>=1.21.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from requests->transformers) (1.25.11)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\ranjhamed\anaconda3\lib\site-packages (from requests->transformers) (2020.6.20)
Note: you may need to restart the kernel to use updated packages.
```

```
!pip install opencv-python
Requirement already satisfied: opencv-python in c:\users\ranjhamed\anaconda3\lib\site-packages (4.8.0.74)Note: you may need to restart the kernel to
use updated packages.
Requirement already satisfied: numpy>=1.19.3 in c:\users\ranjhamed\anaconda3\lib\site-packages (from opencv-python) (1.24.3)
```

LOADING DATASET

```
# Load the original data (needed regardless of the balancing)
data = pd.read_csv("C:/Users/MY/Desktop/Medical/Record.csv")
data
```

```
       patient_id  name  age  date_of_birth  gender  ...  medical_conditions  medications  allergies  last_appointment_date
0               1  Scott Smith   30-04-1987       F  ...  hbs, sinus security  example, parent, city  nach product, bad  26-07-2022
1               2  Rachel Frederick   19-04-1977       M  ...  performance, participants, surface  ha, developing, guy  north, hospital, international  14-02-2023
2               3  Eric Kline   18-05-1936       F  ...  quite, alone, international  states, situation, popular  mia, other, at  24-04-2021
3               4  James Rodriguez   20-07-1992       M  ...  line, sea, television  about, term, often  discuss, plug, somebody  26-06-2022
4               5  David Scott   07-12-2016       M  ...  make, moment, physical  deep, letter, difference  because, true, blood  17-05-2021
...           ...  ...  ...  ...  ...  ...  ...  ...  ...  ...
99995       99996  Patricia Garner   24-10-1958       F  ...  we, team, begin  second, economic, serve  lots, budget, discuss  09-01-2022
99996       99997  Pamela Mitchell   06-02-1927       F  ...  you, few, hand  doctor, support, enough  debate, choice, but  20-03-2022
99997       99998  Randall Contreras   29-05-1996       F  ...  right, respond, you  like, garden, lawyer  themselves, store, spring  25-04-2021
99998       99999  Mark Jackson   02-12-1998       F  ...  participate, hot, between  income, bad, effect  clear, everybody, everyone  20-03-2022
99999      100000  Benjamin Lowery   05-06-1935       F  ...  Democrat, single, themselves  responsibility, source, better  book, thousand, southern  27-07-2022

[100000 rows x 9 columns]
```

```
# Check the dataset info
print("dataset shape:", data.shape)
print("\n dataset info:")
data.info()
print("\n Missing values:")
print(data.isnull().sum)
print("\n Sample data:")
print(data.head)
```

```
dataset shape: (100000, 9)

 dataset info:
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 100000 entries, 0 to 99999
Data columns (total 9 columns):
 #   Column              Non-Null Count  Dtype
---  ------              --------------  -----
 0   patient_id          100000 non-null  int64
 1   name                100000 non-null  object
 2   age                 100000 non-null  int64
 3   date_of_birth       100000 non-null  object
 4   gender              100000 non-null  object
 5   medical_conditions  100000 non-null  object
 6   medications         100000 non-null  object
 7   allergies           100000 non-null  object
 8   last_appointment_date  100000 non-null  object
dtypes: int64(3), object(6)
memory usage: 6.9 MB

 Missing values:
patient_id  name  age  date_of_birth  ...  medical_conditions  medications  allergies  last_appointment_date
0           0     0              0  ...                   0            0          0                      0
dtype: int64

 Sample data:
<bound_method_NDFrame.head of       patient_id  name  age  date_of_birth  ...  medical_conditions  medications  allergies  last_appointment_date
0              1  Scott Smith   30-04-1987       F  ...  hbs, sinus security  example, parent, city  nach product, bad  26-07-2022
1              2  Rachel Frederick   19-04-1977       M  ...  performance, participants, surface  ha, developing, guy  north, hospital, international  14-02-2023
2              3  Eric Kline   18-05-1936       F  ...  quite, alone, international  states, situation, popular  mia, other, at  24-04-2021
3              4  James Rodriguez   20-07-1992       M  ...  line, sea, television  about, term, often  discuss, plug, somebody  26-06-2022
4              5  David Scott   07-12-2016       M  ...  make, moment, physical  deep, letter, difference  because, true, blood  17-05-2021
...          ...  ...  ...  ...  ...  ...  ...  ...  ...  ...
99995      99996  Patricia Garner   24-10-1958       F  ...  we, team, begin  second, economic, serve  lots, budget, discuss  09-01-2022
99996      99997  Pamela Mitchell   06-02-1927       F  ...  you, few, hand  doctor, support, enough  debate, choice, but  20-03-2022
99997      99998  Randall Contreras   29-05-1996       F  ...  right, respond, you  like, garden, lawyer  themselves, store, spring  25-04-2021
99998      99999  Mark Jackson   02-12-1998       F  ...  participate, hot, between  income, bad, effect  clear, everybody, everyone  20-03-2022
99999     100000  Benjamin Lowery   05-06-1935       F  ...  Democrat, single, themselves  responsibility, source, better  book, thousand, southern  27-07-2022

[100000 rows x 9 columns]>
```

```
data.head()
```

```
   patient_id  name  age  date_of_birth  gender  ...  medical_conditions  medications  allergies  last_appointment_date
0           1  Scott Smith   30-04-1987       F  ...  hbs, sinus security  example, parent, city  nach product, bad  26-07-2022
1           2  Rachel Frederick   19-04-1977       M  ...  performance, participants, surface  ha, developing, guy  north, hospital, international  14-02-2023
2           3  Eric Kline   18-05-1936       F  ...  quite, alone, international  states, situation, popular  mia, other, at  24-04-2021
3           4  James Rodriguez   20-07-1992       M  ...  line, sea, television  about, term, often  discuss, plug, somebody  26-06-2022
4           5  David Scott   07-12-2016       M  ...  make, moment, physical  deep, letter, difference  because, true, blood  17-05-2021

[5 rows x 9 columns]
```

```
data.tail()
```

```
       patient_id  name  age  date_of_birth  gender  ...  medical_conditions  medications  allergies  last_appointment_date
99995       99996  Patricia Garner   24-10-1958       F  ...  we, team, begin  second, economic, serve  lots, budget, discuss  09-01-2022
99996       99997  Pamela Mitchell   06-02-1927       F  ...  you, few, hand  doctor, support, enough  debate, choice, but  20-03-2022
99997       99998  Randall Contreras   29-05-1996       F  ...  right, respond, you  like, garden, lawyer  themselves, store, spring  25-04-2021
99998       99999  Mark Jackson   02-12-1998       F  ...  participate, hot, between  income, bad, effect  clear, everybody, everyone  20-03-2022
99999      100000  Benjamin Lowery   05-06-1935       F  ...  Democrat, single, themselves  responsibility, source, better  book, thousand, southern  27-07-2022

[5 rows x 9 columns]
```

STATISTICAL VIEW

```
data.describe()
```

```
       patient_id
count  100000.000000
mean    50500.500000
std     28867.657797
min         1.000000
25%     25750.750000
50%     50500.500000
75%     75250.250000
max     100000.000000
```

DATA WRANGLING

```
data.isnull().sum()
```

```
patient_id                0
name                      0
age                       0
date_of_birth             0
gender                    0
medical_conditions        0
medications               0
allergies                 0
last_appointment_date     0
dtype: int64
```

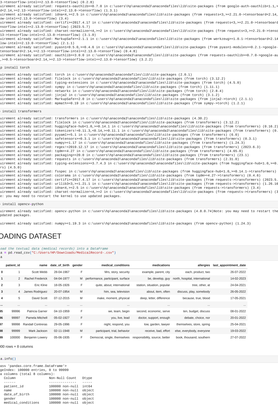
VISUALIZATION

```
!pip install matplotlib
Requirement already satisfied: matplotlib in c:\users\ranjhamed\anaconda3\lib\site-packages (3.5.2)
Requirement already satisfied: kiwisolver >= 1.0.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib) (1.4.2)
Requirement already satisfied: pillow >= 6.2.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib) (9.2.0)
Requirement already satisfied: cycler >= 0.10 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib) (0.11.0)
Requirement already satisfied: fonttools >= 4.22.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib) (4.38.0)
Requirement already satisfied: pyparsing >= 2.2.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib) (3.0.9)
Requirement already satisfied: numpy >= 1.17 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib) (1.23.1)
Requirement already satisfied: packaging >= 20.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib) (23.1)
Requirement already satisfied: python-dateutil >= 2.7 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib) (2.8.2)
Requirement already satisfied: six >= 1.5 in c:\users\ranjhamed\anaconda3\lib\site-packages (from python-dateutil >= 2.7->matplotlib) (1.16.0)
```

```
!pip install seaborn
Requirement already satisfied: seaborn in c:\users\ranjhamed\anaconda3\lib\site-packages (0.12.0)
Requirement already satisfied: numpy >= 1.17 in c:\users\ranjhamed\anaconda3\lib\site-packages (from seaborn) (1.23.1)
Requirement already satisfied: pandas >= 0.25 in c:\users\ranjhamed\anaconda3\lib\site-packages (from seaborn) (1.4.4)
Requirement already satisfied: matplotlib >= 3.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from seaborn) (3.5.2)
Requirement already satisfied: kiwisolver >= 1.0.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib >= 3.1->seaborn) (1.4.2)
Requirement already satisfied: pillow >= 6.2.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib >= 3.1->seaborn) (9.2.0)
Requirement already satisfied: cycler >= 0.10 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib >= 3.1->seaborn) (0.11.0)
Requirement already satisfied: fonttools >= 4.22.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib >= 3.1->seaborn) (4.38.0)
Requirement already satisfied: pyparsing >= 2.2.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib >= 3.1->seaborn) (3.0.9)
Requirement already satisfied: packaging >= 20.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib >= 3.1->seaborn) (23.1)
Requirement already satisfied: python-dateutil >= 2.7 in c:\users\ranjhamed\anaconda3\lib\site-packages (from matplotlib >= 3.1->seaborn) (2.8.2)
Requirement already satisfied: pytz >= 2020.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from pandas >= 0.25->seaborn) (2022.7)
Requirement already satisfied: six >= 1.5 in c:\users\ranjhamed\anaconda3\lib\site-packages (from python-dateutil >= 2.7->matplotlib >= 3.1->seaborn) (1.16.0)
```

EXPLORATORY DATA ANALYSIS

```
import matplotlib.pyplot as plt

# Sample data
patient_names = ['Scott Smith', 'Rachel Frederick', 'Eric Kline', 'Mark Jackson', 'Pamela Mitchell']
genders = ['F', 'M', 'F', 'M', 'F']
patient_ids = [1, 2, 3, 4, 5]

# Plot the bar chart
plt.figure(figsize=(8, 6))
plt.bar(patient_names, genders)
plt.xlabel('Patient ID')
plt.ylabel('Gender')
plt.title('Patient Gender Distribution')
plt.xticks(patient_ids, patient_names, rotation=90)  # Rotate the x-axis labels to patient names
plt.show()
```



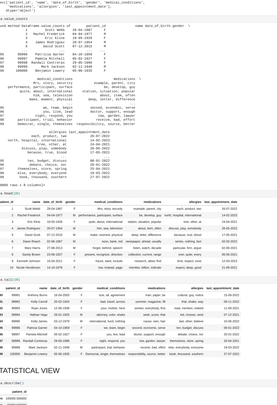
IMPORT CV2 LIBRARY

```
import cv2
import matplotlib.pyplot as plt
img = cv2.imread('C:/Users/MY/Desktop/Medical/Medical/T-200000.jpg', 1)
```

```
array([[[91, 101, 101],
        [91, 101, 101],
        [91, 101, 101],
        ...,
        [91, 101, 101],
        [91, 101, 101],
        [91, 101, 101]],

       [[91, 101, 101],
        [91, 101, 101],
        [91, 101, 101],
        ...,
        [91, 101, 101],
        [91, 101, 101],
        [91, 101, 101]],

       [[91, 101, 101],
        [91, 101, 101],
        [91, 101, 101],
        ...,
        [91, 101, 101],
        [91, 101, 101],
        [91, 101, 101]],

       ...,

       [[91, 101, 101],
        [91, 101, 101],
        [91, 101, 101],
        ...,
        [91, 101, 101],
        [91, 101, 101],
        [91, 101, 101]],

       [[91, 101, 101],
        [91, 101, 101],
        [91, 101, 101],
        ...,
        [91, 101, 101],
        [91, 101, 101],
        [91, 101, 101]],

       [[91, 101, 101],
        [91, 101, 101],
        [91, 101, 101],
        ...,
        [91, 101, 101],
        [91, 101, 101],
        [91, 101, 101]]], dtype=uint8)
```

```
plt.imshow(img)
```

```
<matplotlib.image.AxesImage at 0x1c2c7f4d0>
```




```
img.shape
```

```
(64, 64, 3)
```

```
img.ndim
```

```
3
```

```
img.dtype(s)
```

```
dtype('uint8')
```

```
!pip install pillow
Requirement already satisfied: pillow in c:\users\ranjhamed\anaconda3\lib\site-packages (9.4.0)
Note: you may need to restart the kernel to use updated packages.
```

```
!pip install torchvision
Requirement already satisfied: torchvision in c:\users\ranjhamed\anaconda3\lib\site-packages (0.15.2)
Requirement already satisfied: numpy in c:\users\ranjhamed\anaconda3\lib\site-packages (from torchvision) (1.24.3)
Requirement already satisfied: requests in c:\users\ranjhamed\anaconda3\lib\site-packages (from torchvision) (2.25.1)
Requirement already satisfied: torch==2.0.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from torchvision) (2.0.1)
Requirement already satisfied: pillow!=8.3.*,>=5.3.0 in c:\users\ranjhamed\anaconda3\lib\site-packages (from torchvision) (9.4.0)
Requirement already satisfied: typing-extensions in c:\users\ranjhamed\anaconda3\lib\site-packages (from torch==2.0.1->torchvision) (4.6.0)
Requirement already satisfied: sympy in c:\users\ranjhamed\anaconda3\lib\site-packages (from torch==2.0.1->torchvision) (1.14.1)
Requirement already satisfied: networkx in c:\users\ranjhamed\anaconda3\lib\site-packages (from torch==2.0.1->torchvision) (2.5.1)
Requirement already satisfied: jinja2 in c:\users\ranjhamed\anaconda3\lib\site-packages (from torch==2.0.1->torchvision) (2.11.3)
Requirement already satisfied: filelock in c:\users\ranjhamed\anaconda3\lib\site-packages (from torch==2.0.1->torchvision) (3.12.2)
Requirement already satisfied: urllib3<1.26,>=1.21.1 in c:\users\ranjhamed\anaconda3\lib\site-packages (from requests->torchvision) (1.25.11)
Requirement already satisfied: chardet<4,>=3.0.2 in c:\users\ranjhamed\anaconda3\lib\site-packages (from requests->torchvision) (3.0.4)
Requirement already satisfied: idna<2.10,>=2.5 in c:\users\ranjhamed\anaconda3\lib\site-packages (from requests->torchvision) (2.10)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\ranjhamed\anaconda3\lib\site-packages (from requests->torchvision) (2020.6.20)
Requirement already satisfied: mpmath>=0.19 in c:\users\ranjhamed\anaconda3\lib\site-packages (from sympy->torch==2.0.1->torchvision) (1.3.0)
Requirement already satisfied: MarkupSafe>=0.23 in c:\users\ranjhamed\anaconda3\lib\site-packages (from jinja2->torch==2.0.1->torchvision) (2.1.1)
Note: you may need to restart the kernel to use updated packages.
```

```
import numpy as np
import cv2
# Process the question
question = input("Enter your question: ")
answer = input("Enter your answer: ")
print("Question:", question)
print("Answer:", answer)

# Load and display the image
image_path = input("Enter image path: ")
image = cv2.imread(image_path)

plt.imshow(image)
plt.axis('off')
plt.show()

Enter your question: What is diagnosis in A-Ray Image
Enter your answer: Pneumonia
Question: What is diagnosis in A-Ray Image
Answer: Pneumonia
Enter image path: C:/Users/MY/Desktop/Medical/Medical/T-200000.jpg
```