MIT | Academy of Engineering

(An Autonomous Institute Affiliated to Savitribai Phule Pune University)

PYTHON PROJECT

COURSE TEACHER - MRS. BHAGYASHREE ALHAT

2021 - 2022 SEMESTER II

SMART WATCH ANALYSIS

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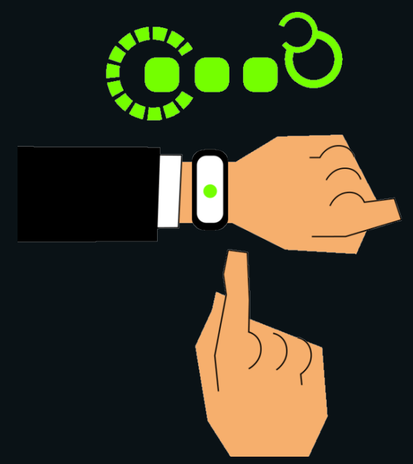
Contents :-

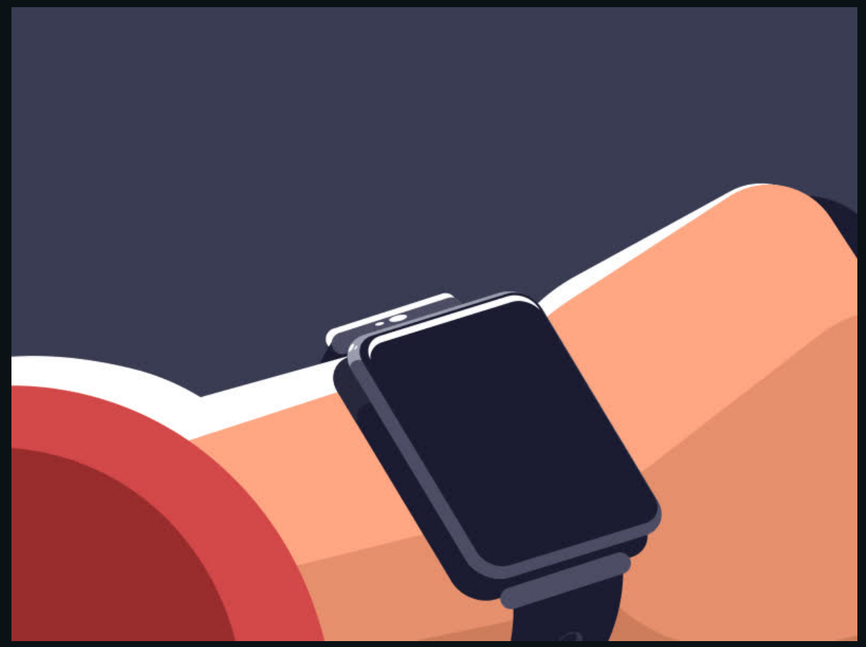
Introduction :-

- Portable devices
- Integrated into wristwatches
- Nowadays mostly Fitness Oriented
- Companion device to Smartphone

Features :-

- Blood pressure
- Steps taken
- GPS distance covered during run/walk
- Calorie burned
- Oxygen level indication
- ECG Status
- Other athletic activity tracking
- Stress Measure





Code :-

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

importing required modules

```python
brand_data = pd.read_excel('D:\\brands.xlsx')

print("Smart Watch Brands in India -->\n")
print(brand_data.to_string(index=False))
```

reading and printing data sheet of smartwatch brands

```
----------------------------------------SMART WATCH ANALYSIS----------------------------------------------------


Smart Watch Brands in India -->

 Sr no.     Brand          Model  Price     Launch Date  Ratings
      1     Apple       Series 7  45000  October, 2021         9
      2      boAt   Xtend Watch   8000     June, 2021         9
      3   Samsung  Galaxy Watch 4  26000   August, 2021         8
      4   OnePlus     Smart Band   2000    April, 2022         8
      5     Noise  ColorFit Ultra   3000  January, 2021         8
      6     Honor   Magic Watch 2  15000   August, 2021         7
      7   FitBit        Charge 5  15000     June, 2021         7
      8  Amazefit    GTR Watch 2  13000      May, 2021         8
      9        MI         Band 6   3500    March, 2021         9
     10 Fastrack      Reflex 4.0   4000 December, 2021         9


Enter the brand :-
```

```
Apple Smart Watch -->

  Watch ID Activity Date  Total Steps Total Distance  VeryActiveMinutes  LightlyActiveMinutes   Calories
#160272022     21/1/2022         4128          3 km                 25                   217       1654
#160272022     22/1/2022         3456        2.8 km                 21                   328       1564
#160272022     23/1/2022          980        0.9 km                 30                   181        360
#160272022     24/1/2022         7964          5 km                 29                   221       1896
#160272022     25/1/2022         2345        2.4 km                 36                   209       1120

1.Scatter Analysis
2.Bar Analysis

Enter the value :-
```

Code :-

```
if choice==1 :

        apple_data = pd.read_excel('D:\\apple.xlsx')

        print("\nApple Smart Watch -->\n")
        print(apple_data.to_string(index=False))
```

According to user, read and print data of particular watch

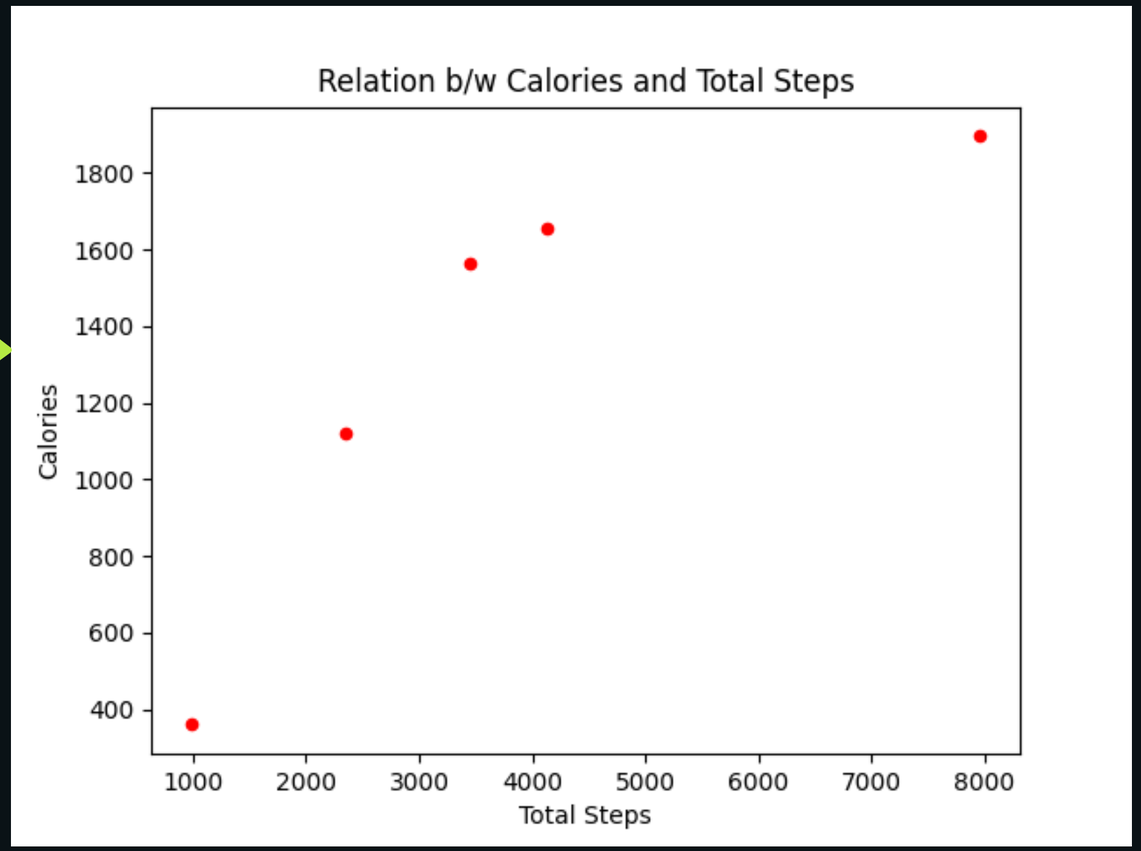
```
print("\n1.Scatter Analysis\n2.Bar Analysis")
        analysis = int(input("\nEnter the value :- "))
```

Asking user about type of data analysis

Output :-

1. Scatter Analysis

```
if analysis==1 :
            apple_data.plot(kind = 'scatter', x = 'Total Steps', y = 'Calories',
title="Relation b/w Calories and Total Steps", color="red")
            plt.show()
```

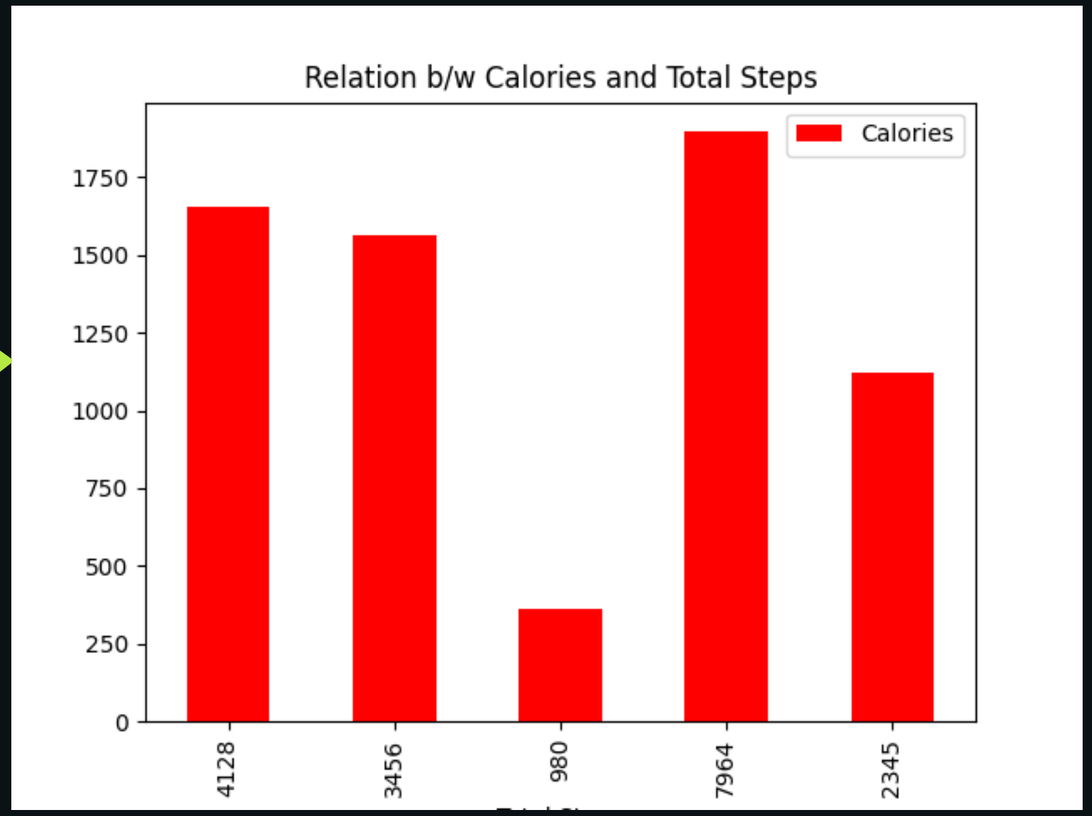


- Direct relation between Total Steps taken and Calories burned
- Using Scatter Method

Output :-

2. Bar Analysis

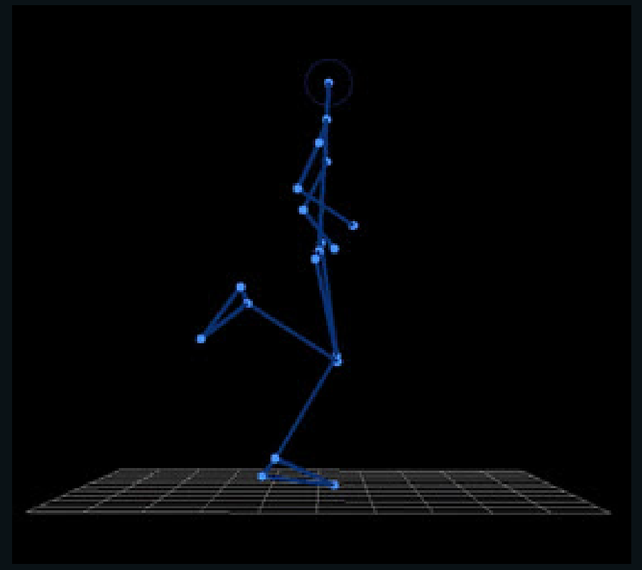
```
if analysis==2 :
            apple_data.plot(kind = 'bar', x = 'Total Steps', y =
'Calories', title="Relation b/w Calories and Total Steps", color="red")
            plt.show()
```

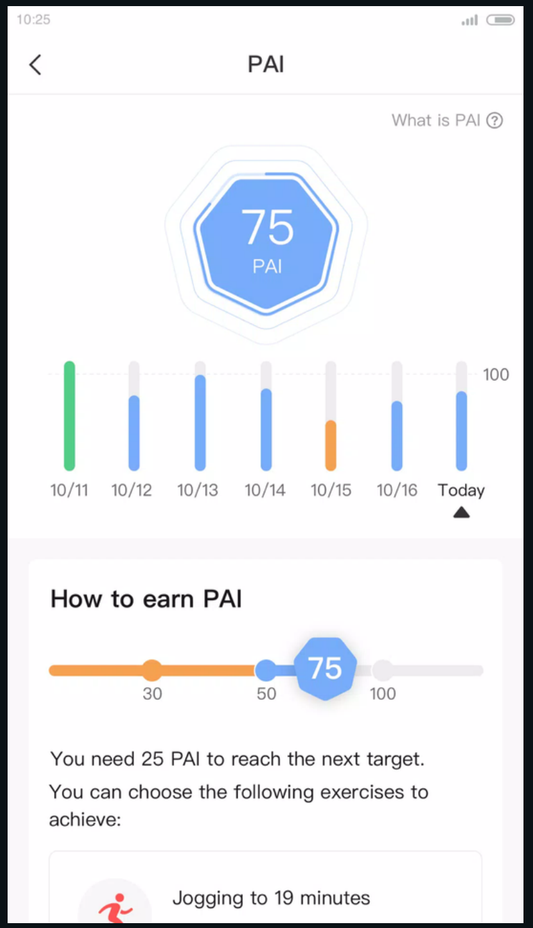


- Direct relation between Total Steps taken and Calories burned
- Using Bar Method

Use of Data Analysis :-

- Idle Lifestyle alerts
- Health Goals
- Sleep Quality Analysis
- Stress/Mood Analysis
- Call alerts
- Reminders





Screenshot from Zepp App
Used as companion app for AmazeFit Devices

THANK YOU

Stack Overflow :- Aryan Bhalerao

https://stackoverflow.com/users/16842301/innominate-void

Github :- mohitjaiswal28 (Mohit Jaiswal)

https://github.com/mohitjaiswal28/Python_SmartWatchAnalysis

References :-

https://www.w3schools.com/python/pandas

https://www.geeksforgeeks.org/pandas-tutorial/

https://www.programiz.com/python-programming

https://thecleverprogrammer.com/2022/05/31/smartwatch-data-analysis-using-python/

All the codes are written and executed in VS Code

Source Code :-

```
import pandas as pd
import numpy as nmp                          #importing required modules
import matplotlib.pyplot as plt
import plotly.express as px


print("\n\n
-----------------------------------------SMART WATCH ANALYSIS-----------------------------------------------
\n\n")

brand_data = pd.read_excel('D:\\brands.xlsx')            #reading data sheet of smart watch brands

print("Smart Watch Brands in India -->\n")
print(brand_data.to_string(index=False))                #printing data sheet of smart watch brands

while True :

    print("\n")
    choice = int(input("Enter the brand :- "))

    print("\n
-------------------------------------------------------------------------------------------------------------
"
)

    if choice==1 :

        apple_data = pd.read_excel('D:\\apple.xlsx')            #reading data of apple watch

        print("\nApple Smart Watch -->\n")
        print(apple_data.to_string(index=False))                #printing data of apple watch

        print("\n1.Scatter Analysis\n2.Bar Analysis")
        analysis = int(input("\nEnter the value :- "))
```

```
    if analysis==1 :
        apple_data.plot(kind = 'scatter', x = 'Total Steps', y = 'Calories', title=
"Relation b/w Calories and Total Steps", color="red")
        plt.show
()

#scatter analysis



    if analysis==2 :
        apple_data.plot(kind = 'bar', x = 'Total Steps', y = 'Calories', title=
"Relation b/w Calories and Total Steps", color="red")
        plt.show
()

#bar analysis
        break

elif choice == 2 :

    boat_data = pd.read_excel('D:\\boat.xlsx')

    print("\nboAt Smart Watch -->\n")
    print(boat_data.to_string(index=False))

    print("\n1.Scatter Analysis\n2.Bar Analysis")
    analysis = int(input("\nEnter the value :- "))

    if analysis==1 :
        boat_data.plot(kind = 'scatter', x = 'Total Steps', y = 'Calories', title=
"Relation b/w Calories and Total Steps", color="red")
        plt.show()
        break

    if analysis==2 :
        boat_data.plot(kind = 'bar', x = 'Total Steps', y = 'Calories', title=
"Relation b/w Calories and Total Steps", color="red")
        plt.show()
        break

    break
```

```
    elif choice == 3 :

        samsung_data = pd.read_excel('D:\\samsung.xlsx')

        print("\nSamsung Galaxy Smart Watch -->\n")
        print(samsung_data.to_string(index=False))

        print("\n1.Scatter Analysis\n2.Bar Analysis")
        analysis = int(input("\nEnter the value :- "))

        if analysis==1 :
            samsung_data.plot(kind = 'scatter', x = 'Total Steps', y = 'Calories', title=
"Relation b/w Calories and Total Steps", color="red")
            plt.show()
            break

        if analysis==2 :
            samsung_data.plot(kind = 'bar', x = 'Total Steps', y = 'Calories', title=
"Relation b/w Calories and Total Steps", color="red")
            plt.show()
            break

    elif choice == 4 :

        oneplus_data = pd.read_excel('D:\\oneplus.xlsx')

        print("\nHonor Brand Smart Watch -->\n")
        print(oneplus_data.to_string(index=False))

        print("\n1.Scatter Analysis\n2.Bar Analysis")
        analysis = int(input("\nEnter the value :- "))

        if analysis==1 :
            oneplus_data.plot(kind = 'scatter', x = 'Total Steps', y = 'Calories', title=
"Relation b/w Calories and Total Steps", color="red")
            plt.show()
            break

        if analysis==2 :
            oneplus_data.plot(kind = 'bar', x = 'Total Steps', y = 'Calories', title=
"Relation b/w Calories and Total Steps", color="red")
            plt.show()
            break

    elif choice == 5 :

        noise_data = pd.read_excel('D:\\noise.xlsx')

        print("\nNoise Colorfit Smart Watch -->\n")
        print(noise_data.to_string(index=False))

        noise_data.plot(kind = 'scatter', x = 'Total Steps', y = 'Calories', title=
"Relation b/w Calories and Total Steps")
        plt.show()

        print("\n1.Scatter Analysis\n2.Bar Analysis")
        analysis = int(input("\nEnter the value :- "))

        if analysis==1 :
            noise_data.plot(kind = 'scatter', x = 'Total Steps', y = 'Calories', title=
"Relation b/w Calories and Total Steps", color="red")
            plt.show()
            break

        if analysis==2 :
            noise_data.plot(kind = 'bar', x = 'Total Steps', y = 'Calories', title=
"Relation b/w Calories and Total Steps", color="red")
            plt.show()
            break

    elif choice==0 :
        exit()

'''
    For other brands, we can analyse the same way by using the same code
'''
```

Output :-

```
Smart Watch Brands in India -->

 Sr no.     Brand          Model  Price     Launch Date  Ratings
      1     Apple       Series 7  45000  October, 2021         9
      2      boAt   Xtend Watch   8000     June, 2021         9
      3   Samsung  Galaxy Watch 4  26000   August, 2021         8
      4   OnePlus    Smart Band   2000    April, 2022         8
      5     Noise  ColorFit Ultra   3000  January, 2021         8
      6     Honor   Magic Watch 2  15000   August, 2021         7
      7    FitBit       Charge 5  15000     June, 2021         7
      8  Amazefit    GTR Watch 2  13000      May, 2021         8
      9        MI         Band 6   3500    March, 2021         9
     10 Fastrack      Reflex 4.0   4000 December, 2021         9


Enter the brand :- 1

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Apple Smart Watch -->

  Watch ID Activity Date  Total Steps Total Distance  VeryActiveMinutes  LightlyActiveMinutes   Calories
#160272022     21/1/2022         4128          3 km                 25                   217       1654
#160272022     22/1/2022         3456        2.8 km                 21                   328       1564
#160272022     23/1/2022          980        0.9 km                 30                   181        360
#160272022     24/1/2022         7964          5 km                 29                   221       1896
#160272022     25/1/2022         2345        2.4 km                 36                   209       1120

1.Scatter Analysis
2.Bar Analysis

Enter the value :- 1
```
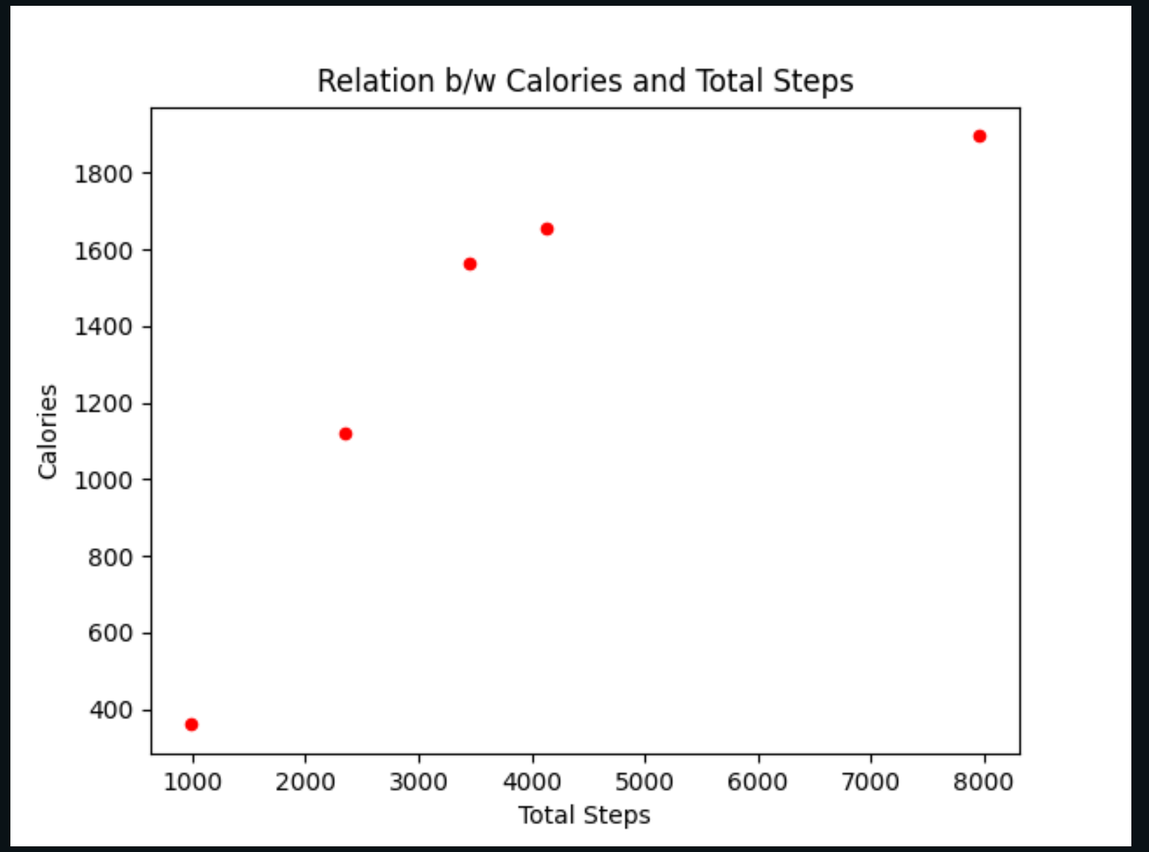
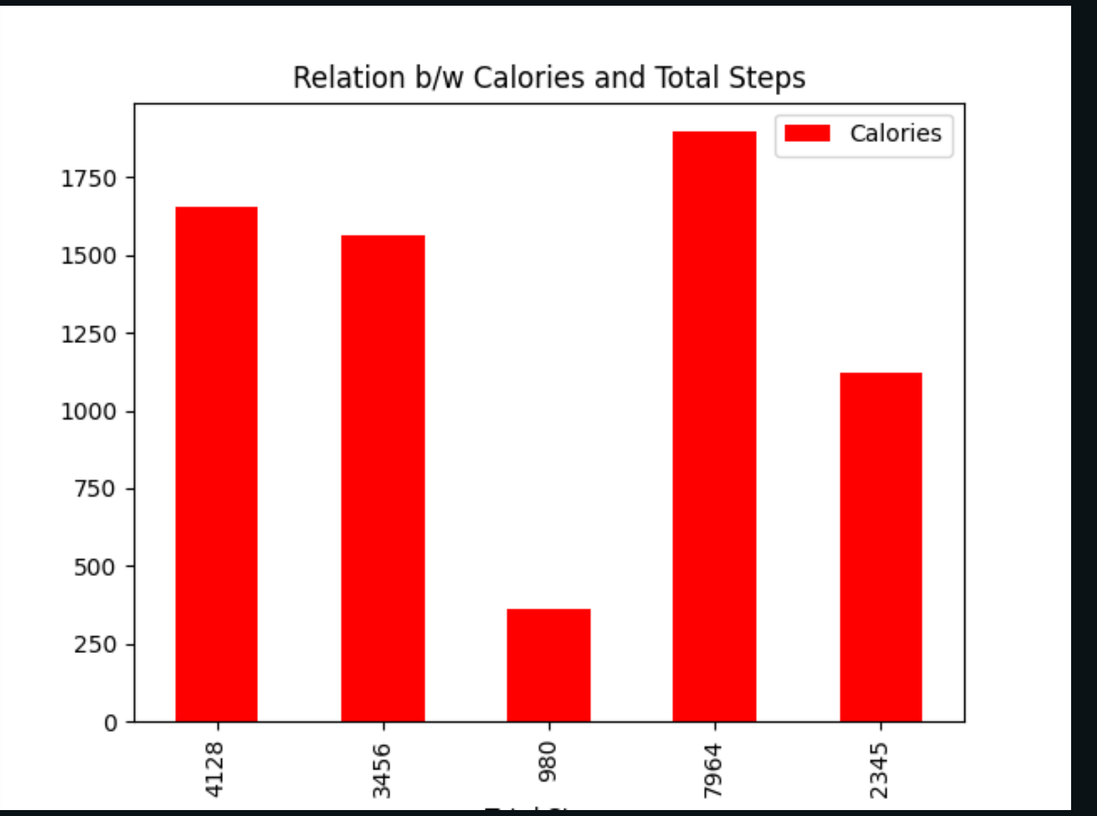


Relation b/w Calories and Total Steps
Calories
Total Steps
1800
1600
1400
1200
1000
800
600
400
1000
2000
3000
4000
5000
6000
7000
8000


Relation b/w Calories and Total Steps
Calories
1750
1500
1250
1000
750
500
250
0
4128
3456
980
7964
2345

Link for Original Canva PPT -

https://www.canva.com/design/DAFFwgKNHZc/BuIdAw5hFeFRkVqatWoAqw/view?utm_content=DAFFwgKNHZc&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton