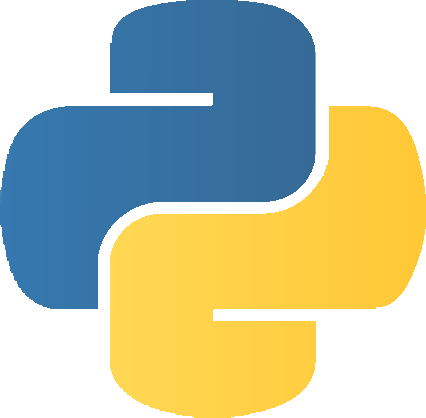
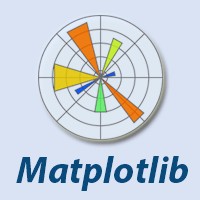
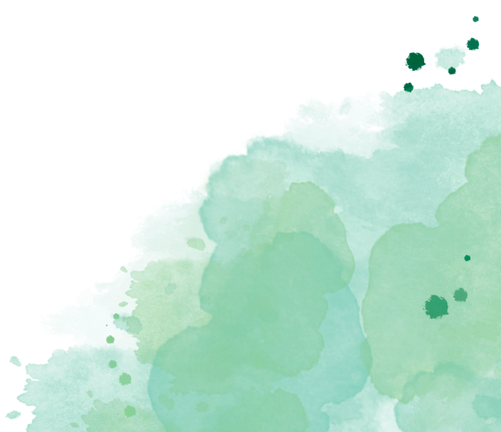
MAHARAJA AGRASEN MODEL SCHOOL



CD-BLOCK PITAMPURA DELHI-110034

INFORMATICS PRACTICES

PROJECT FILE

SUBJECT CODE: 065 SESSION : 2023-24

SUBMITTED BY:

**Mehak Khandelwal Monika**

**XII-E**

ACKNOWLEDGEMENT

We want to express our gratitude to the Principal, Dr. Pratibha Kohli, and our teacher of Informatics Practices, Ms. Jyoti Sharma, at the Maharaja Agrasen Model School in CD Block Pitampura, New Delhi, for their tremendous assistance and direction in the completion of our project. Only because of their efforts our project was able to be effectively finished. This project is being turned in as a practical exam for 2023 All India Senior Secondary Certificate Examination (AISSCE), which is part of the Central Board of Secondary Education's (CBSE) curriculum.

CERTIFICATE

This is to confirm that this assignment was finished under my supervision by Mehak and Monika of class XII-E of Maharaja Agrasen Model School, CD Block Pitampura, New Delhi. They have shown the utmost sincerity and a keen interest in seeing this project through. They effectively finished the informatics project work to my satisfaction. This project is being turned in as a practical exam for 2023 All India Senior Secondary Certificate Examination (AISSCE), which is part of the Central Board of Secondary Education's (CBSE) curriculum.

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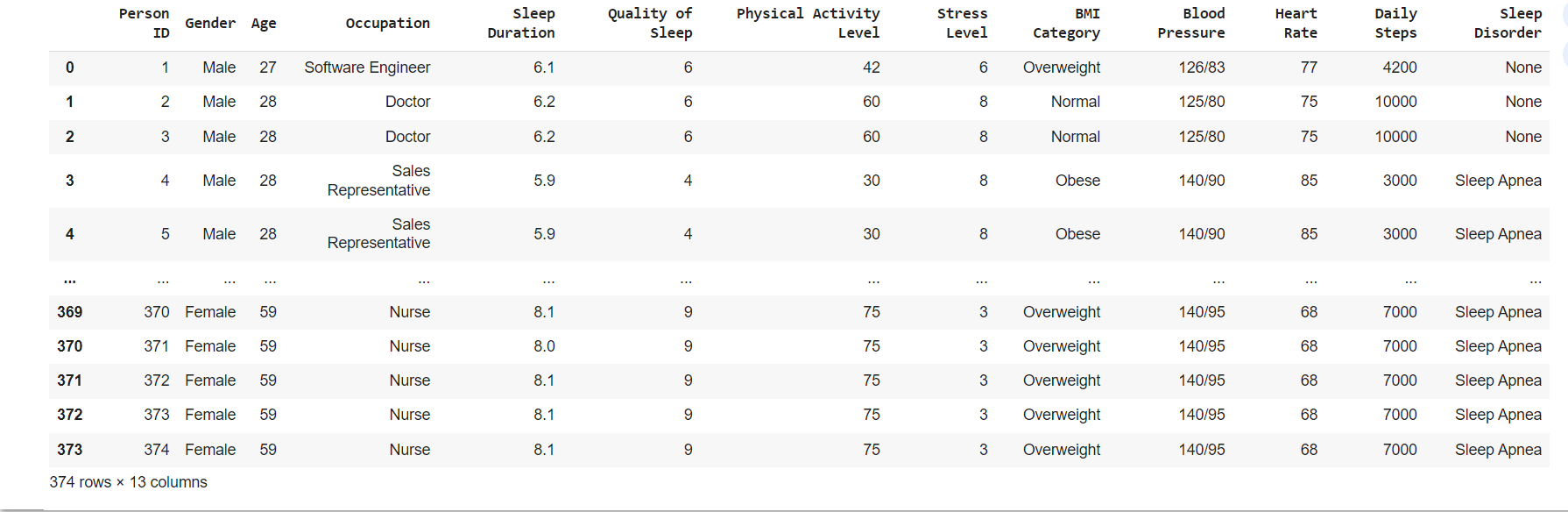
**MS. JYOTI SHARMA**

**(PGT INFORMATICS PRACTICES)**

PROJECT DESCRIPTION

This Python code utilizes the pandas and matplotlib libraries to conduct a comprehensive analysis of sleep health and lifestyle variables. It introduces a user-friendly menu system for easy exploration of diverse insights. The analysis includes compelling visualizations like pie charts highlighting occupation groups affected by sleep deprivation, line charts visualizing age groups experiencing good sleep quality, and bar charts presenting the most active occupation and age groups. Additionally, there are informative stacked bar charts showcasing the correlation between sleep disorders and BMI categories, histograms capturing age distribution, and dual-line graphs contrasting stress and physical activity levels across different ages. The script further identifies the prevailing sleep disorder and compares physical activity to daily steps through histograms, as well as BMI categories against physical activity levels using stacked bar charts. Collectively, these visualizations provide a comprehensive understanding of sleep patterns and lifestyle influences within the dataset, making it an engaging and informative project.

CSV FILE



COLUMNS OF CSV FILE

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Person ID | Gender | Age | Occupation | Sleep Duration |

|  |  |  |  |
| --- | --- | --- | --- |
| Quality of Sleep | Physical Activity Level | Stress Level | BMI Category |

|  |  |  |  |
| --- | --- | --- | --- |
| Blood Pressure | Heart Rate | Daily Steps | Sleep Disorder |

SOURCE CODE

import pandas as pd

import matplotlib.pyplot as plt

from google.colab import files

uploaded=files.upload()

dfsleep\_health=pd.read\_csv('Sleep\_health\_and\_lifestyle\_dataset.csv')

dfsleep\_health

**#choice 1**

def occ\_sd ():

sleep\_dep=6

#threshold sd at 6

sleep\_deprived = dfsleep\_health[dfsleep\_health['Sleep Duration'] < 6]

occupation\_sleep\_deprived = sleep\_deprived['Occupation'].value\_counts()

# Plot the pie chart

plt.figure(figsize=(8, 8))

plt.pie(occupation\_sleep\_deprived, labels=occupation\_sleep\_deprived.index, startangle=140)

plt.title('Occupation Groups of Sleep-Deprived Individuals')

plt.axis('equal') # Equal aspect ratio ensures the pie chart is circular.

plt.show()

**#choice 2**

def age\_gs():

#individual with good quality of sleep

good\_quality\_sleep = dfsleep\_health[(dfsleep\_health['Quality of Sleep'] >= 7) & (dfsleep\_health['Quality of Sleep'] <= 10)]

#grouping the individuals by thier age

age\_group\_gs = good\_quality\_sleep['Age'].value\_counts()

# Create a line chart

plt.figure(figsize=(10, 6))

plt.plot(age\_group\_gs.index, age\_group\_gs.values, marker='o')

plt.title('Age Groups with Good Quality Sleep')

plt.xlabel('Age')

plt.ylabel('Number of Individuals')

plt.grid(True)

plt.show()

**#choice 3**

def occ\_age\_maxpal():

# Group the data by age and calculate the mean physical activity level for each age group

age\_group\_activity = dfsleep\_health.groupby('Age')['Physical Activity Level'].mean()

# Find the age group with the maximum physical activity level

max\_activity\_age\_group = age\_group\_activity.idxmax()

# Plotting the chart

plt.figure(figsize=(10, 6))

age\_group\_activity.plot(kind='bar', color='magenta')

plt.title('Average Physical Activity Level by Age Group')

plt.xlabel('Age Group')

plt.ylabel('Average Physical Activity Level')

plt.axvline(x=max\_activity\_age\_group, color='red', linestyle='--', label='Max Activity Age Group')

plt.legend()

plt.xticks(rotation=45)

plt.show()

**#choice 4**

def sleep\_BMI():

# Group the data by 'BMI Category' and 'Sleep Disorder', and then count the occurrences

grouped\_data = dfsleep\_health.groupby(['BMI Category', 'Sleep Disorder'])['Person ID'].count()

# Plot the data using a stacked bar chart

grouped\_data.plot(kind='bar', stacked=True,figsize=(10, 6))

plt.title('Relationship between Sleep Disorders and BMI Categories')

plt.xlabel('Sleep Disorder')

plt.ylabel('Number of People')

plt.legend(title='BMI Category')

plt.tight\_layout()

plt.show()

**#choice 5**

def avg\_age():

average\_age = dfsleep\_health['Age'].mean()

print("Average Age:", average\_age)

# Display age distribution using a histogram

plt.hist(dfsleep\_health['Age'], bins=20, edgecolor='black')

plt.xlabel('Age')

plt.ylabel('Frequency')

plt.title('Age Distribution')

plt.show()

**#choice 6**

def age\_highstress\_pa():

age\_grouped = dfsleep\_health.groupby('Age').agg({'Stress Level': 'mean','Physical Activity Level': 'mean'}).reset\_index()

plt.figure(figsize=(10, 6))

plt.plot(age\_grouped['Age'], age\_grouped['Stress Level'], marker='o', label='Stress Level')

plt.plot(age\_grouped['Age'], age\_grouped['Physical Activity Level'], marker='o', label='Physical Activity Level')

plt.title('Average Stress Level and Physical Activity Level by Age Group')

plt.xlabel('Age')

plt.ylabel('Average Level')

plt.legend()

plt.grid(True)

plt.xticks(age\_grouped['Age']) # Set x-axis ticks to match age groups

plt.show()

**#choice 7**

def sleep\_disorder():

# Remove rows with Sleep Disorder as "None"

dfsleep\_health\_filtered = dfsleep\_health[dfsleep\_health['Sleep Disorder'] != 'None']

# Count the occurrences of each sleep disorder

sleep\_disorder\_counts = dfsleep\_health\_filtered['Sleep Disorder'].value\_counts()

# Get the most prevalent sleep disorder

most\_prevalent\_sleep\_disorder = sleep\_disorder\_counts.idxmax()

# Plot the chart

plt.figure(figsize=(10, 6))

plt.bar(sleep\_disorder\_counts.index, sleep\_disorder\_counts.values, color='skyblue')

plt.xlabel('Sleep Disorder')

plt.ylabel('Count')

plt.title('Prevalent Sleep Disorder')

plt.xticks(rotation=45)

plt.tight\_layout()

print(f"Most Prevalent Sleep Disorder excluding the none values: {most\_prevalent\_sleep\_disorder}")

plt.show()

**#choice 8**

def comparison():

plt.figure(figsize=(10, 6))

# Creating a histogram for Physical Activity Level

plt.subplot(131)

plt.hist(dfsleep\_health["Physical Activity Level"], color='r', bins=10)

plt.title("Physical Activity Level")

# Creating a histogram for Daily Steps

plt.subplot(133)

plt.hist(dfsleep\_health["Daily Steps"], color='y', bins=10)

plt.title("Daily Steps")

plt.tight\_layout()

plt.show()

**#choice 9**

def plot\_bmi\_vs\_activity():

grouped = dfsleep\_health.groupby(['BMI Category', 'Physical Activity Level']).size().unstack()

grouped.plot(kind='bar', stacked=True, figsize=(10, 6))

plt.title('Comparison between BMI Category and Physical Activity Level')

plt.xlabel('BMI Category')

plt.ylabel('Count')

plt.legend(title='Physical Activity Level')

plt.show()

a=input("Enter your name")

print('Hey.',a,'! Here are some questions for you to test your sleep health.')

while True:

print("."\*222)

print("\t","\t","\t","\t","\t","\t","\t","\t","\t","\t","MENU")

print("."\*222)

print("."\*222)

print("\t","\t","\t","\t","\t","\t","\t","\t","\t","Warm Greetings from us to you")

print("."\*222)

print("1. To display the occupation group who are sleep deprived")

print("2. To display the age group who are getting good quality (7-10) of sleep")

print("3. To display the age group who has the maximum physical activity level")

print("4. To display the relation between sleep disorders and obese people")

print("5. To display average age and age distribution of individuals in the dataset?")

print("6. To display age groups that tend to have higher stress levels or lower physical activity levels")

print("7. To display the sleep disorder which is most prevalent in the dataset")

print("8. To display the comparison between physical activity and daily steps")

print("9. To display the comparison between BMI category and physical activity")

print("10. Exit ")

ch=int(input("Enter your choice"))

if ch==1:

print("THANK YOU" , a)

occ\_sd()

elif ch==2:

print("THANK YOU" , a)

age\_gs()

elif ch==3:

print("THANK YOU" , a)

occ\_age\_maxpal()

elif ch==4:

print("THANK YOU" , a)

sleep\_BMI()

elif ch==5:

print("THANK YOU" , a)

avg\_age()

elif ch==6:

print("THANK YOU" , a)

age\_highstress\_pa()

elif ch==7:

print("THANK YOU" , a)

sleep\_disorder()

elif ch==8:

print("THANK YOU" , a)

comparison()

elif ch==9:

print("THANK YOU" , a)

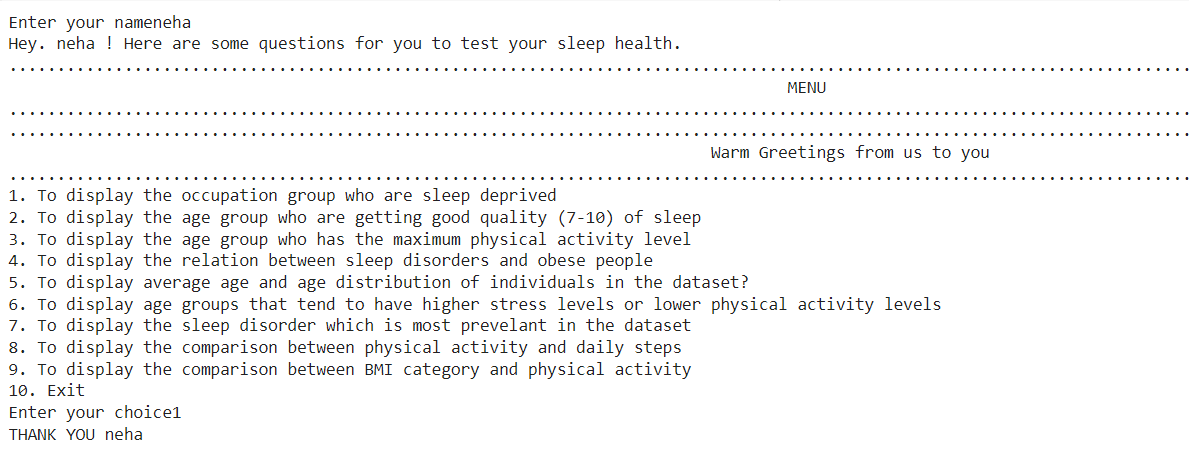
plot\_bmi\_vs\_activity()

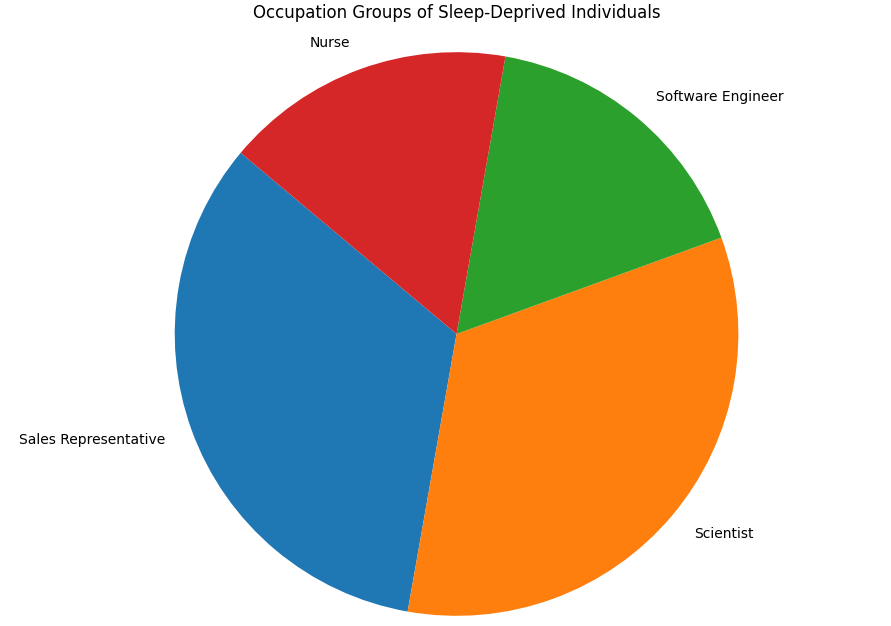
elif ch==10:

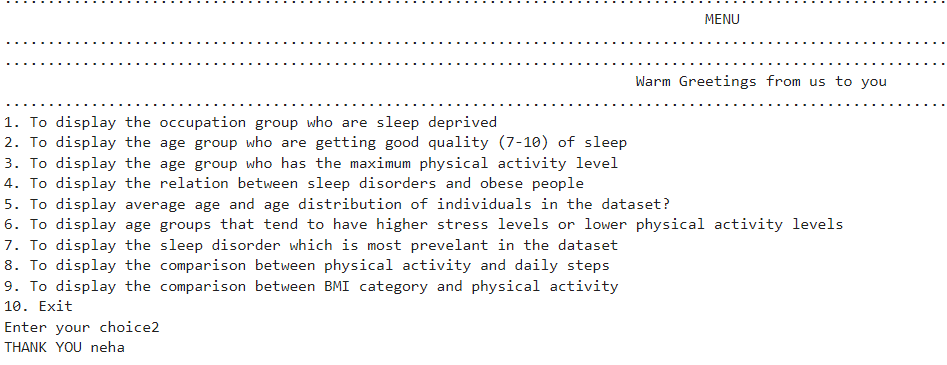
print("Thank you for being with us and taking the time to review our analysis. We hope that the insights provided have been valuable and informative.")

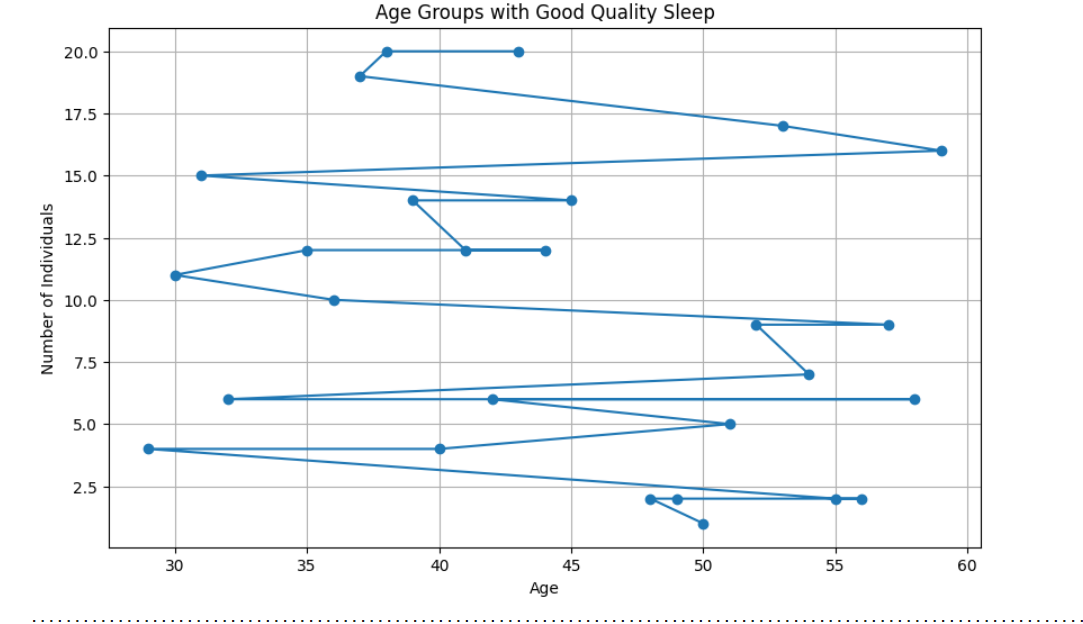
break

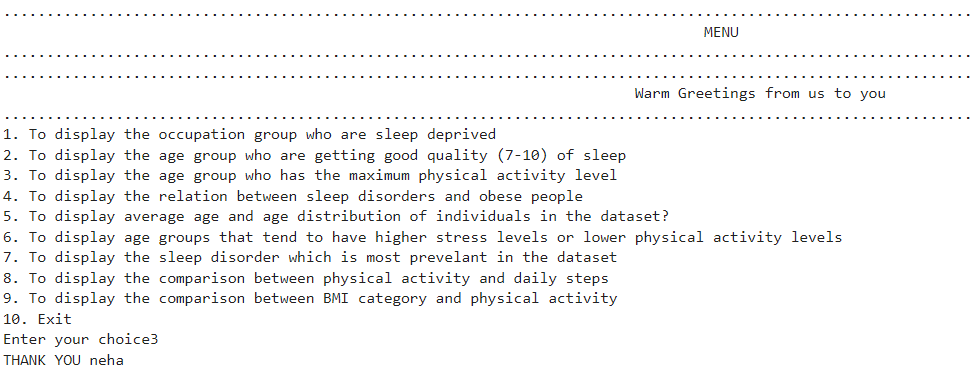
OUTPUT SCREEN

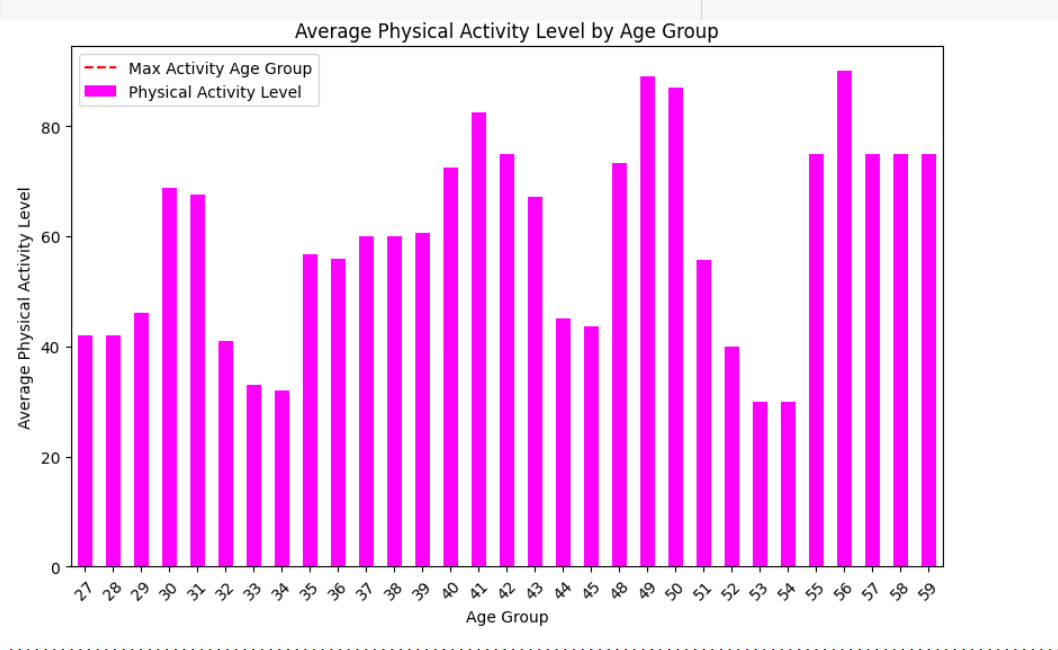


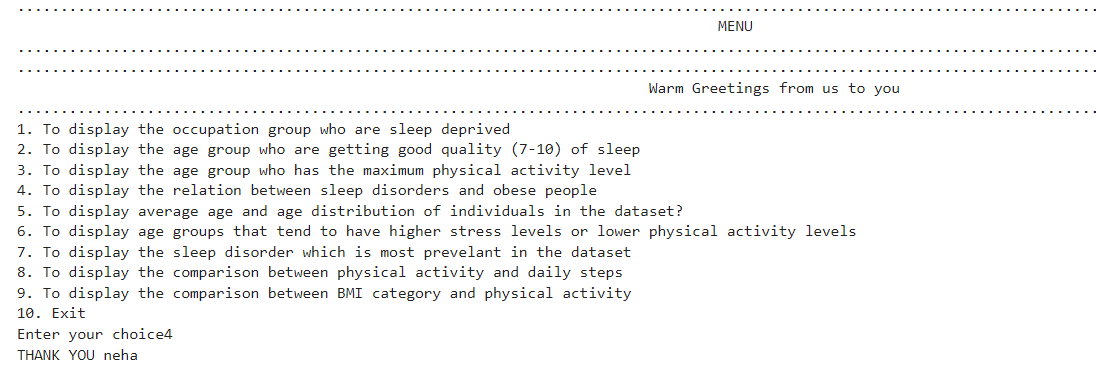


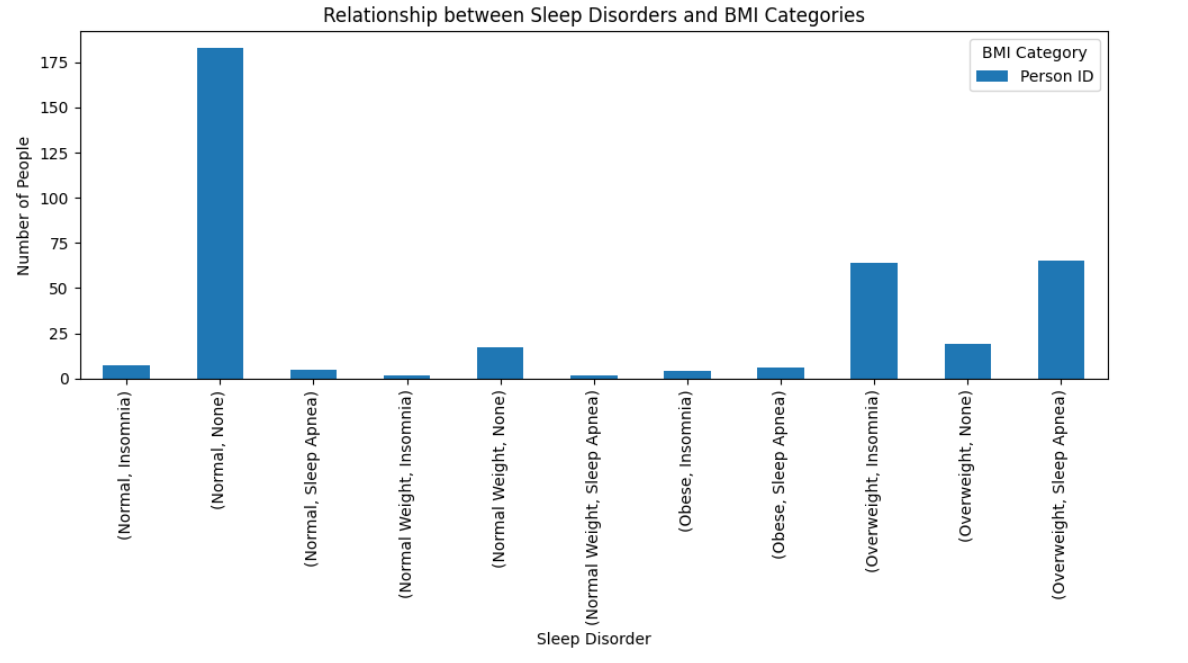


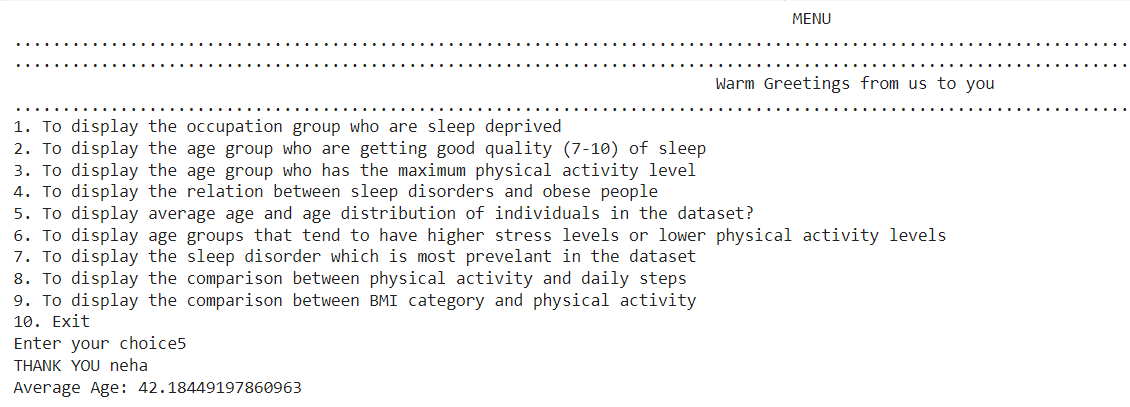


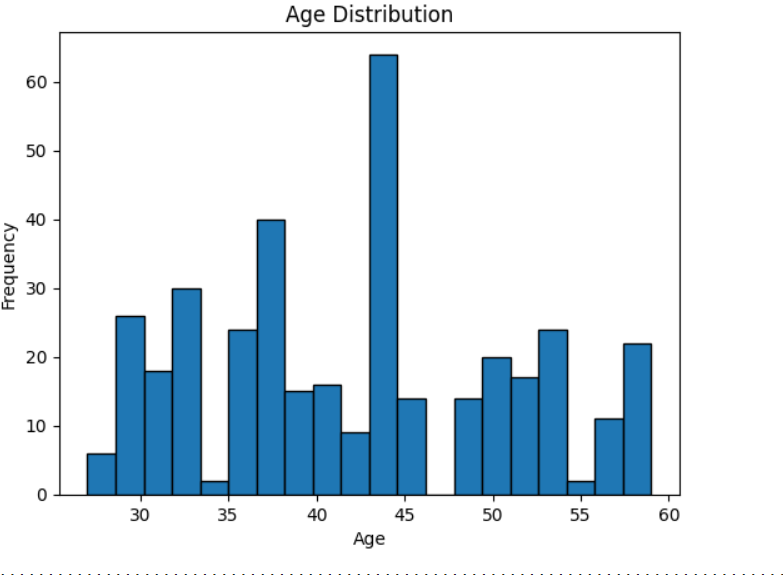


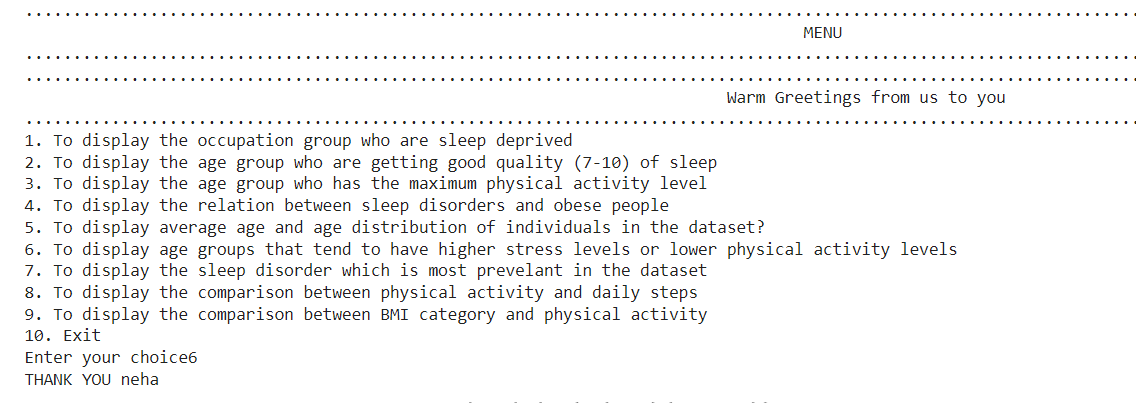


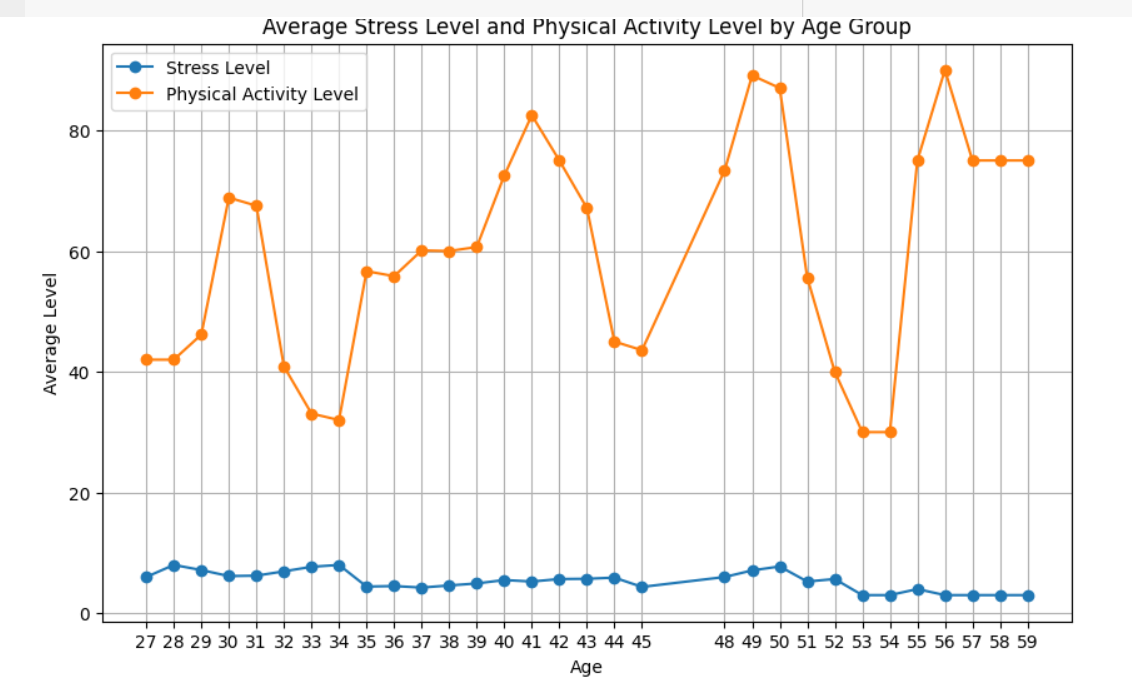


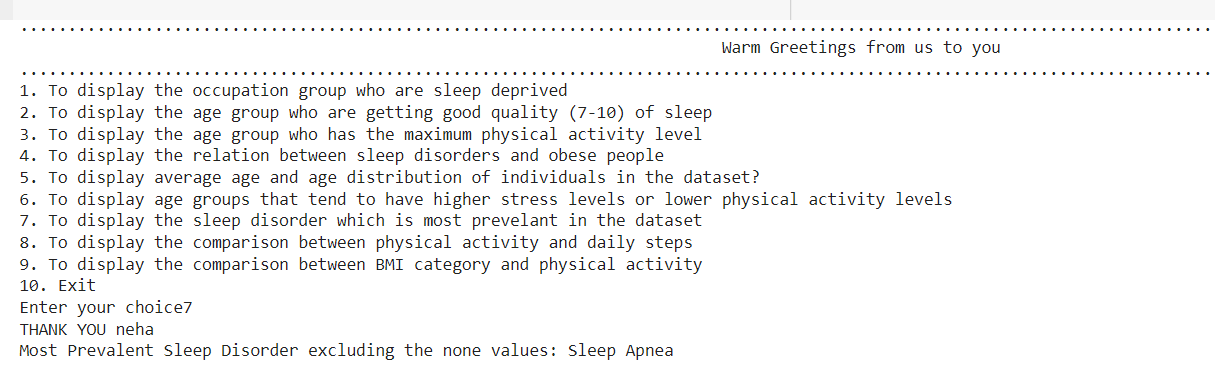


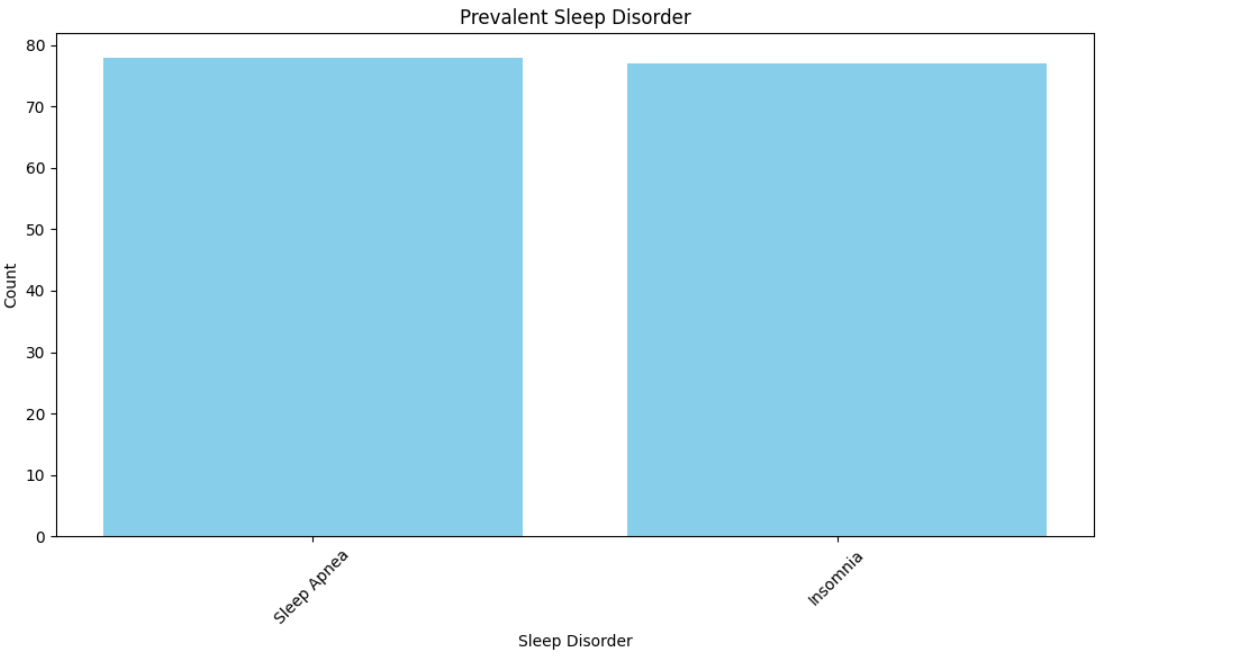


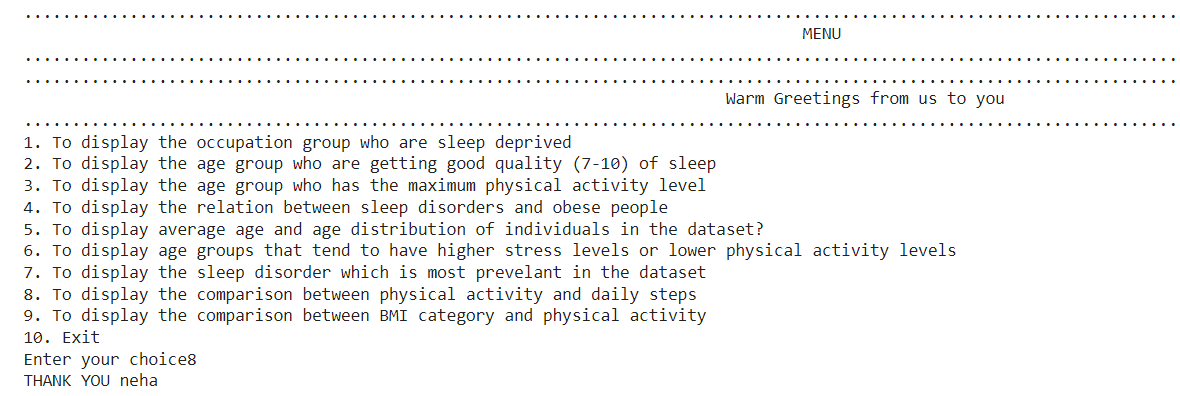


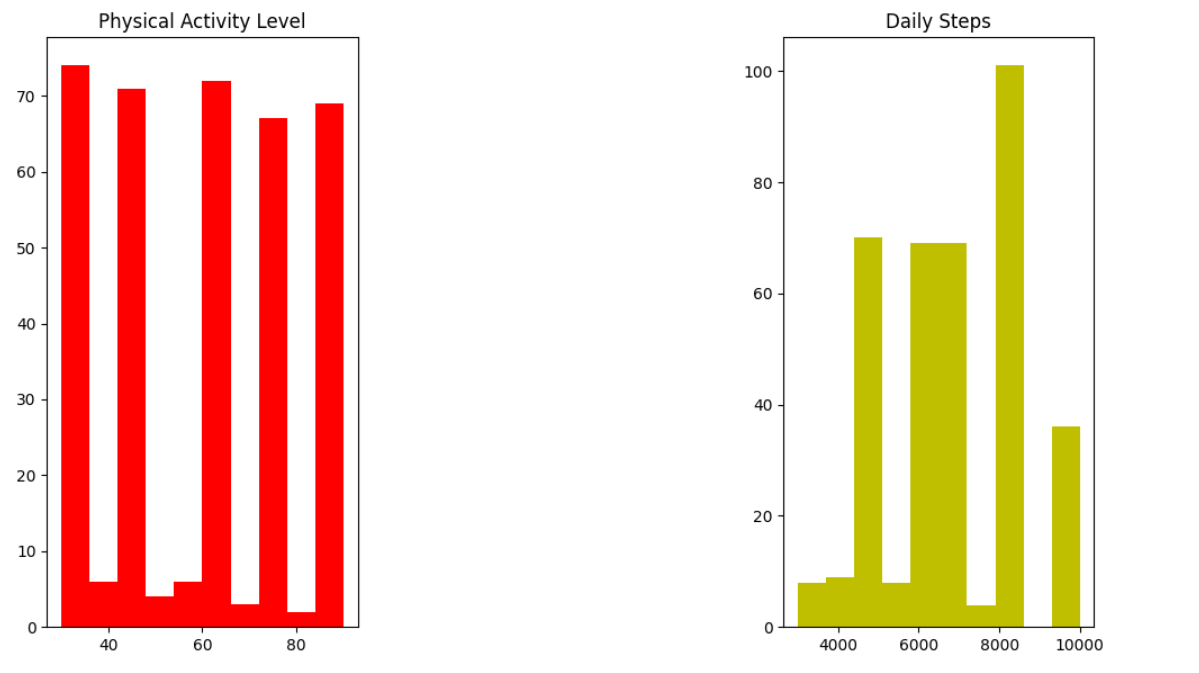


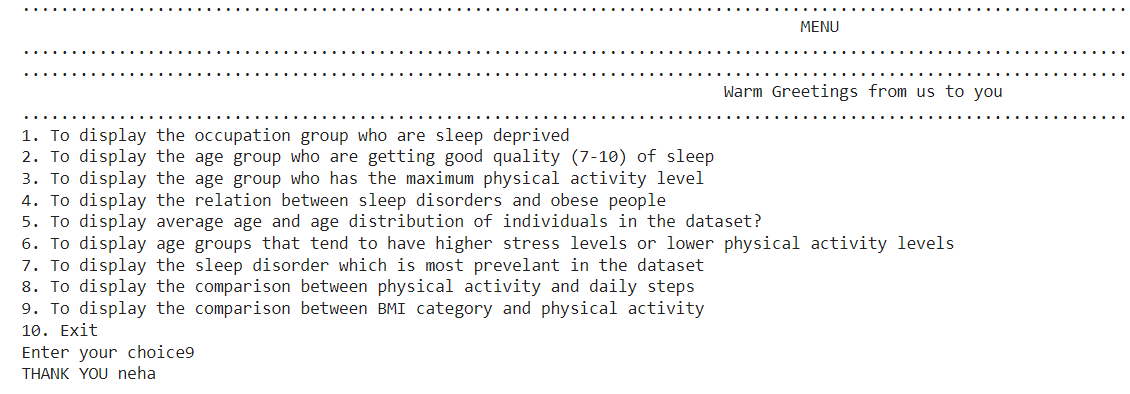


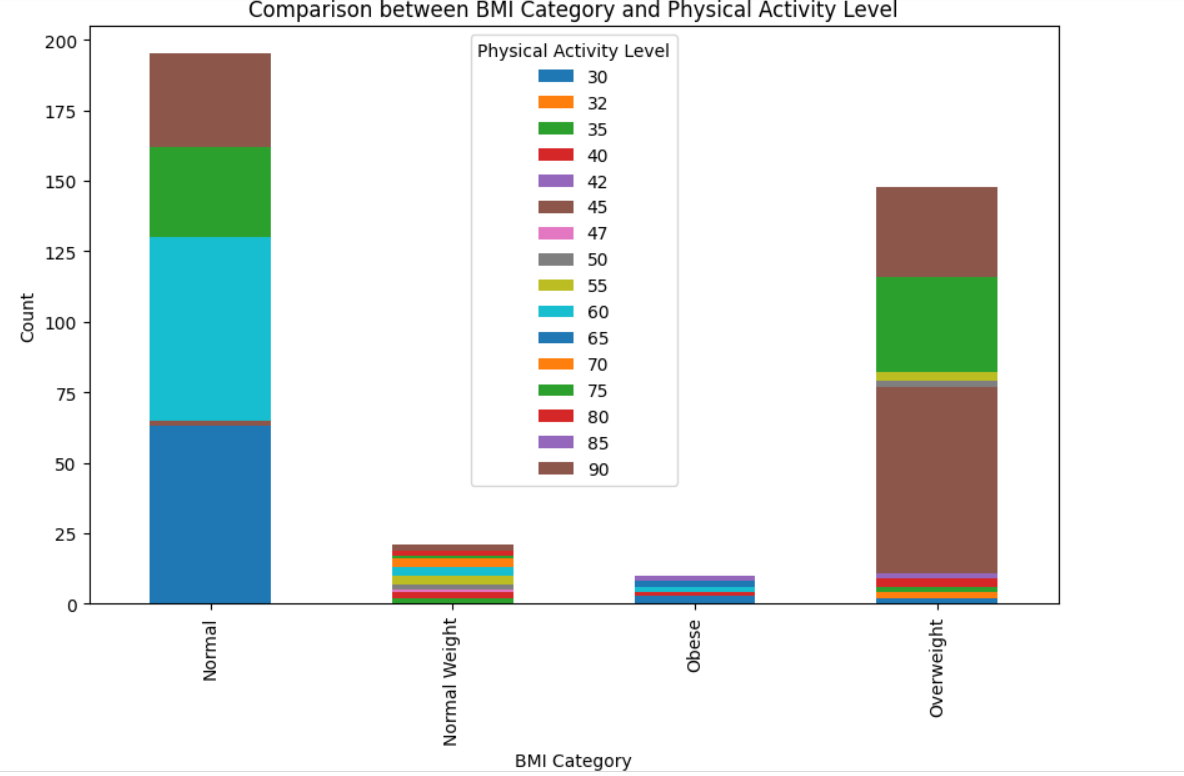


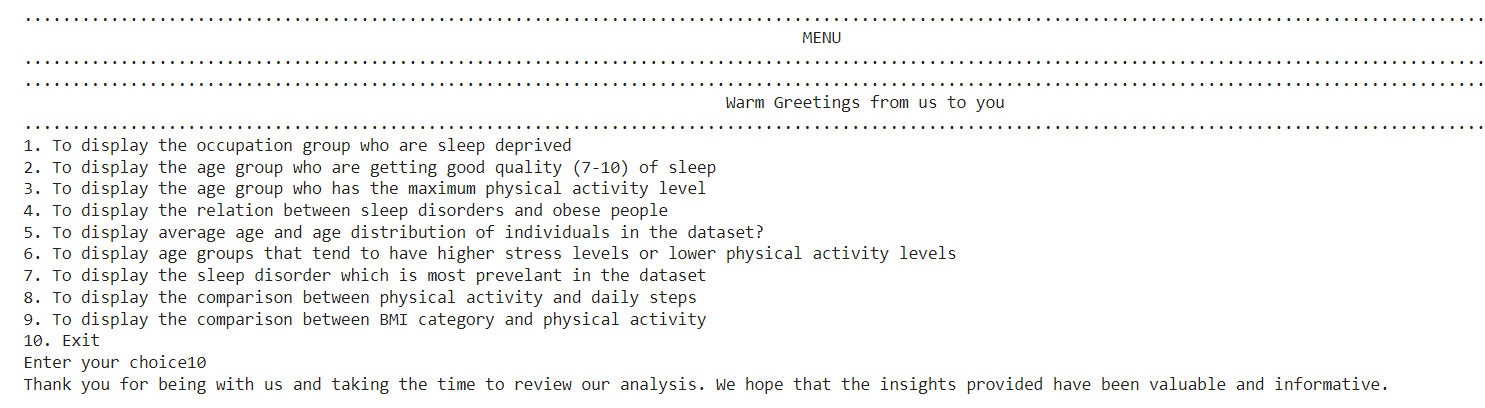












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