FITLIFE HUB

MILESTONE: Application (Python or R)

STUDY_GROUP_42

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Percentage of Effort Contributed by Student1: 50%

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Signature of Student1: Deepana

Signature of Student2: Aishwariya

Submission Date: 11/26/2023

In [1]:
```
pip install mysql-connector-python
```

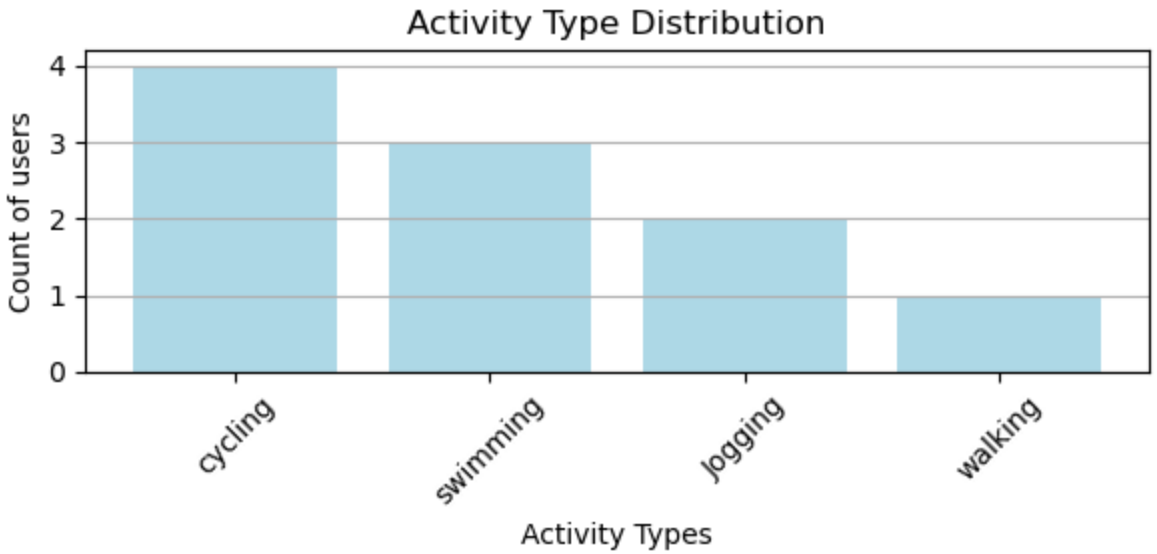
```
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: mysql-connector-python in c:\users\deepa\appdata\roaming\python\python311\site-packages
(8.2.0)
Requirement already satisfied: protobuf<=4.21.12,>=4.21.1 in c:\users\deepa\appdata\roaming\python\python311\site-packa
ges (from mysql-connector-python) (4.21.12)
Note: you may need to restart the kernel to use updated packages.
```

In [2]:
```
import mysql.connector
import matplotlib.pyplot as plt
import numpy as np
from mysql.connector import Error
```

In [4]:
```
#SQL queries along with visualizations
try:
    connection = mysql.connector.connect(host='localhost',
                                         database='fithub',
                                         user='root',
                                         password='Kavin06$')

    if connection.is_connected():
        db_info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_info)

        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("You're connected to database: ", record)

        sql_select_query_1 = "select count(activity_type),activity_type from activities group by activity_type"
        cursor.execute(sql_select_query_1)
        records1 = cursor.fetchall()
        print("Query 1:\n")
        print("Activities:\n")
        for row in records1:
            print(row[1],"-",row[0], "\n")

        activity_types = [row[1] for row in records1]
        activity_counts = [row[0] for row in records1]

        plt.figure(figsize=(6, 3))
        plt.bar(activity_types, activity_counts, color='lightblue')
```

```
        plt.xlabel('Activity Types')
        plt.ylabel('Count of users')
        plt.title('Activity Type Distribution')
        plt.xticks(rotation=45)  # Rotating x-axis labels for better readability
        plt.grid(axis='y')

        plt.tight_layout()
        plt.show()

except Error as e:
    print("Error while connecting to MySQL", e)

finally:
    if 'connection' in locals() and connection.is_connected():
        cursor.close()
        connection.close()
        print("MySQL connection is closed")
```

```
Connected to MySQL Server version  8.0.34
You're connected to database:  ('fithub',)
Query 1:

Activities:

cycling - 4

swimming - 3

Jogging - 2

walking - 1
```

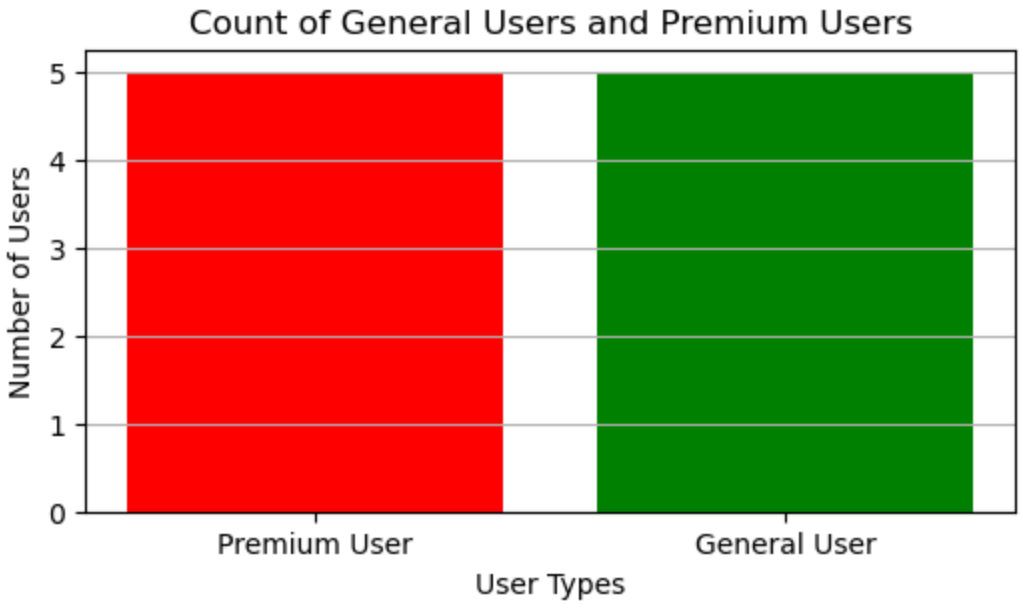



```
MySQL connection is closed
```

In [5]:
```
try:
    connection = mysql.connector.connect(host='localhost',
                                         database='fithub',
                                         user='root',
                                         password='Kavin06$')

    if connection.is_connected():
        db_info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_info)

        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("You're connected to database: ", record)

        sql_select_query_2 = """SELECT
        CASE
            WHEN U.User_Id IN (SELECT User_Id FROM Premium_User) THEN 'Premium User'
            ELSE 'General User'
            END AS User_Type,
            COUNT(*) AS User_Count
        FROM
            User U
        GROUP BY
        User_Type"""
```

```
        cursor.execute(sql_select_query_2)
        records2 = cursor.fetchall()
        print("Query 2:\n")
        print("User count:\n")
        for row in records2:
            print(row[0],"-",row[1],"\n")

        user_types = [row[0] for row in records2]
        user_counts = [row[1] for row in records2]

        plt.figure(figsize=(6, 3))
        plt.bar(user_types, user_counts, color=['red', 'green'])
        plt.xlabel('User Types')
        plt.ylabel('Number of Users')
        plt.title('Count of General Users and Premium Users')
        plt.grid(axis='y')

        plt.show()

except Error as e:
    print("Error while connecting to MySQL", e)

finally:
    if 'connection' in locals() and connection.is_connected():
        cursor.close()
        connection.close()
        print("MySQL connection is closed")
```

```
Connected to MySQL Server version  8.0.34
You're connected to database:  ('fithub',)
Query 2:

User count:

Premium User - 5

General User - 5
```




```
MySQL connection is closed
```

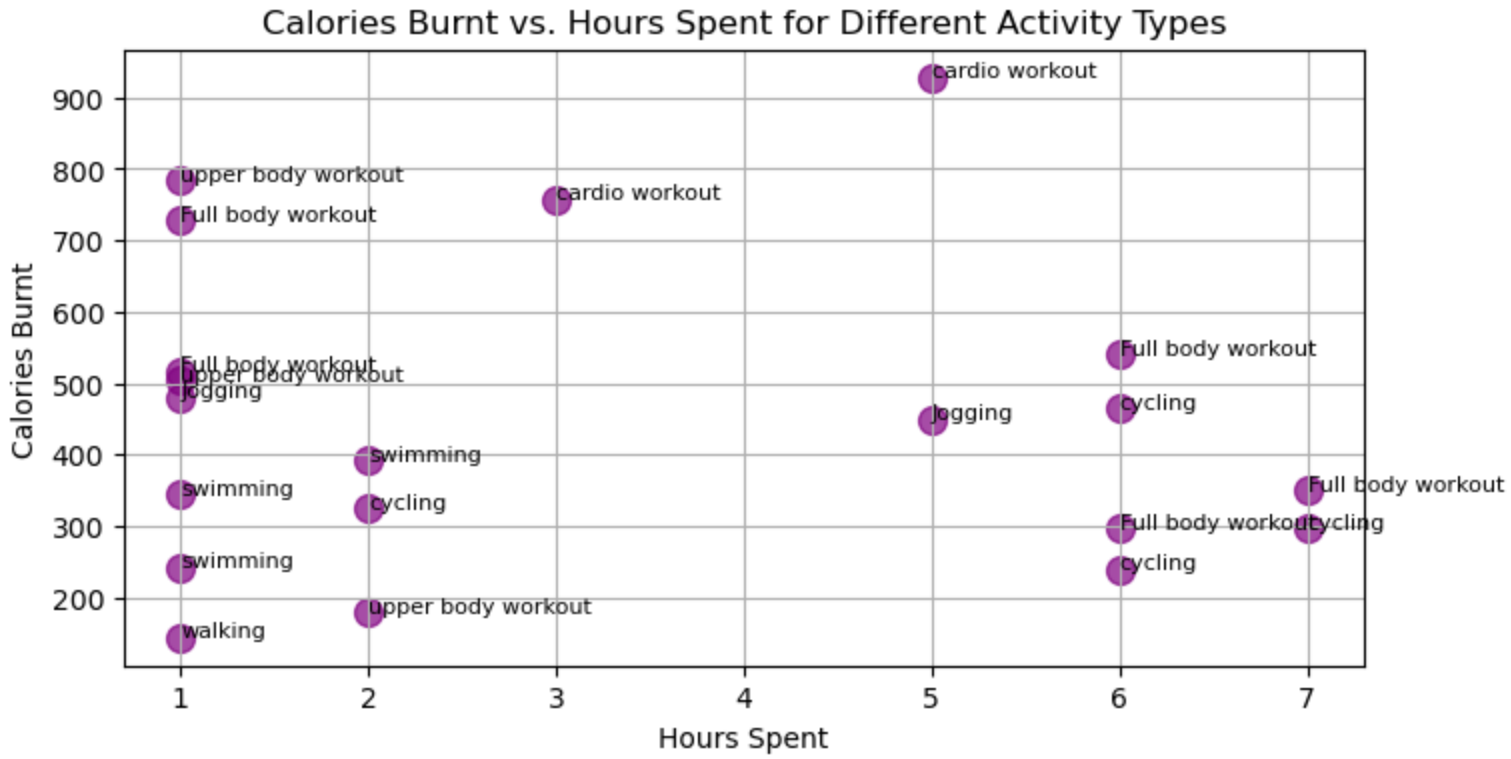
In [6]:

```
try:
    connection = mysql.connector.connect(host='localhost',
                                         database='fithub',
                                         user='root',
                                         password='Kavin06$')
    if connection.is_connected():
        db_info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_info)

        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("You're connected to database: ", record)

        sql_select_query_3 = "SELECT Activity_type, Calories_burnt, Hours FROM Activity_Tracker"
        cursor.execute(sql_select_query_3)
        records3 = cursor.fetchall()
        print("Query 3:\n")
        print("Activity_Tracker:\n")
        for row in records3:
            print(row[0],"-",row[1],"-",row[2],"\n")

        activity_types = [row[0] for row in records3]
        calories_burnt = [row[1] for row in records3]
```

```
        hours_spent = [row[2] for row in records3]

        plt.figure(figsize=(8, 4))
        plt.scatter(hours_spent, calories_burnt, c='purple', s=100, alpha=0.7)

        plt.xlabel('Hours Spent')
        plt.ylabel('Calories Burnt')
        plt.title('Calories Burnt vs. Hours Spent for Different Activity Types')

        for i, activity in enumerate(activity_types):
            plt.text(hours_spent[i], calories_burnt[i], activity, fontsize=8, ha='left')

        plt.grid(True)
        plt.show()

except Error as e:
    print("Error while connecting to MySQL", e)

finally:
    if 'connection' in locals() and connection.is_connected():
        cursor.close()
        connection.close()
        print("MySQL connection is closed")
```

```
Connected to MySQL Server version  8.0.34
You're connected to database:  ('fithub',)
Query 3:

Activity_Tracker:

cycling - 324 - 2.0

swimming - 392 - 2.0

cycling - 465 - 6.0

swimming - 242 - 1.0

Jogging - 480 - 1.0

swimming - 344 - 1.0

cycling - 296 - 7.0

walking - 144 - 1.0

cycling - 239 - 6.0

Jogging - 449 - 5.0

cardio workout - 757 - 3.0

upper body workout - 179 - 2.0

Full body workout - 540 - 6.0

Full body workout - 516 - 1.0

upper body workout - 504 - 1.0

Full body workout - 728 - 1.0

Full body workout - 350 - 7.0

upper body workout - 784 - 1.0

Full body workout - 297 - 6.0
```

```
cardio workout - 928 - 5.0
```

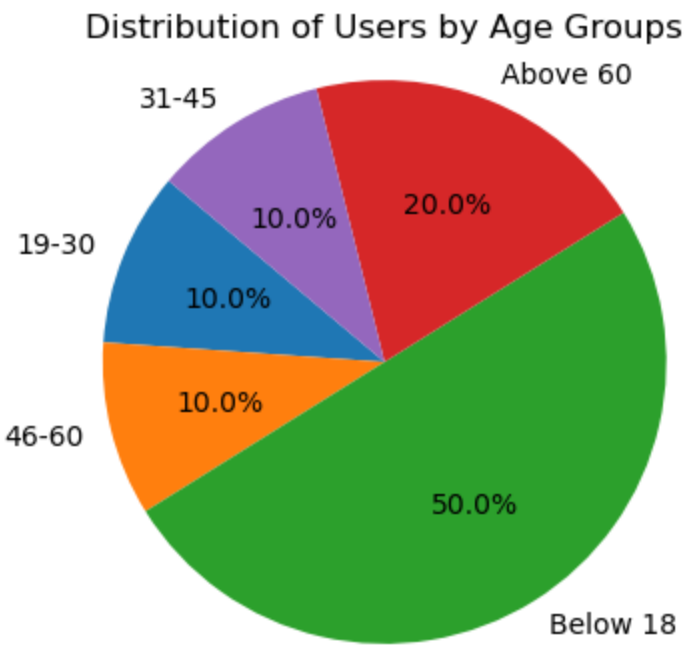



```
MySQL connection is closed
```

In [7]:
```
try:
    connection = mysql.connector.connect(host='localhost',
                                         database='fithub',
                                         user='root',
                                         password='Kavin06$')

    if connection.is_connected():
        db_info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_info)

        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("You're connected to database: ", record)

        sql_select_query_4 = """
        SELECT
```

```
            CASE
                WHEN TIMESTAMPDIFF(YEAR, User_DOB, CURDATE()) BETWEEN 0 AND 18 THEN 'Below 18'
                WHEN TIMESTAMPDIFF(YEAR, User_DOB, CURDATE()) BETWEEN 19 AND 30 THEN '19-30'
                WHEN TIMESTAMPDIFF(YEAR, User_DOB, CURDATE()) BETWEEN 31 AND 45 THEN '31-45'
                WHEN TIMESTAMPDIFF(YEAR, User_DOB, CURDATE()) BETWEEN 46 AND 60 THEN '46-60'
                ELSE 'Above 60'
            END AS Age_Group,
            COUNT(*) AS User_Count
        FROM User
        GROUP BY Age_Group"""
        cursor.execute(sql_select_query_4)
        records4 = cursor.fetchall()
        print("Query 4:\n")
        print("Age group:\n")
        for row in records4:
            print(row[0],"-",row[1],"\n")

        labels = [row[0] for row in records4]
        sizes = [row[1] for row in records4]

        plt.figure(figsize=(4, 4))
        plt.pie(sizes, labels=labels, autopct='%1.1f%%', startangle=140)
        plt.axis('equal')
        plt.title('Distribution of Users by Age Groups')
        plt.show()

except Error as e:
    print("Error while connecting to MySQL", e)

finally:
    if 'connection' in locals() and connection.is_connected():
        cursor.close()
        connection.close()
        print("MySQL connection is closed")
```

```
Connected to MySQL Server version  8.0.34
You're connected to database:  ('fithub',)
Query 4:

Age group:

19-30 - 1

46-60 - 1

Below 18 - 5

Above 60 - 2

31-45 - 1
```



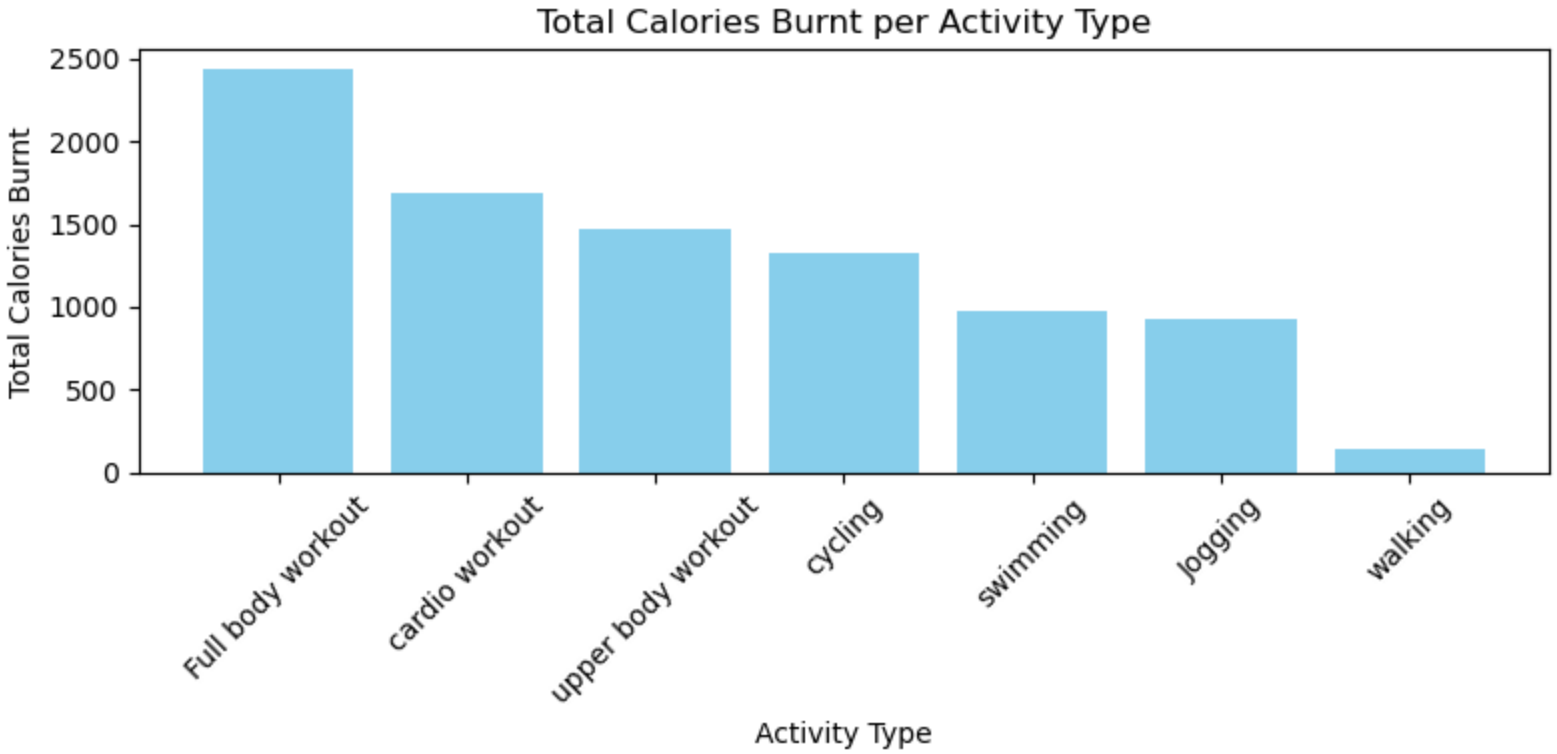

```
MySQL connection is closed
```

In [8]:
```
try:
    connection = mysql.connector.connect(host='localhost',
                                         database='fithub',
                                         user='root',
                                         password='Kavin06$')
```

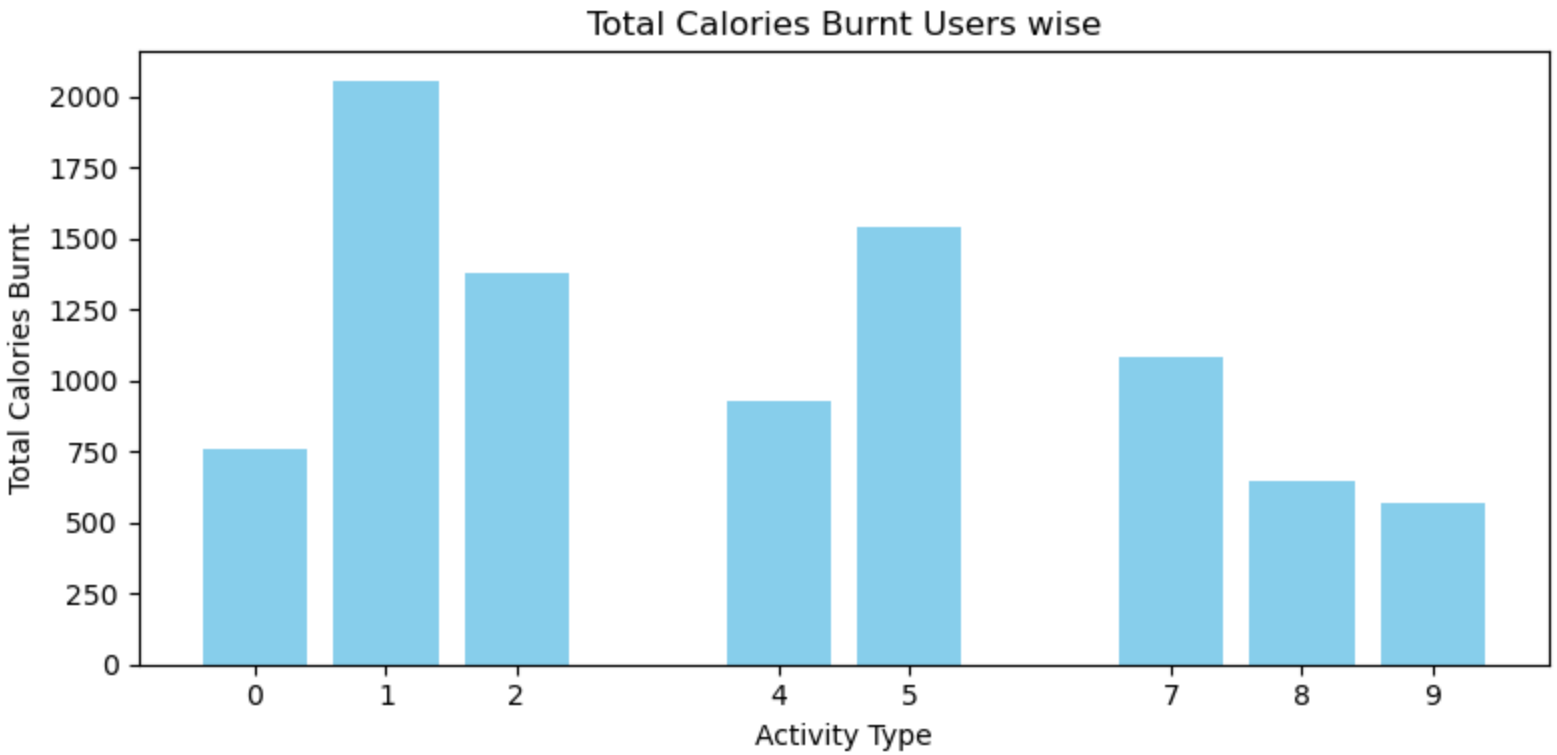
```
if connection.is_connected():
    db_Info = connection.get_server_info()
    print("Connected to MySQL Server version ", db_Info)
    cursor = connection.cursor()
    cursor.execute("select database();")
    record = cursor.fetchone()
    print("Your connected to database: ", record)

#1 Visualizations of total calories burnt for each category

    sql_select_Query_viz = """
    select activity_type,sum(calories_burnt) Total_calories_burnt from activity_tracker
    group by activity_type
    order by 2 desc;
    """
    cursor = connection.cursor()
    cursor.execute(sql_select_Query_viz)
    records = cursor.fetchall()

    Activity_Type = [row[0] for row in records]
    Total_calories_burnt = [row[1] for row in records]
    for row in records:
        print('Activity_Type =',row[0],' Total Calories burnt=',row[1],"\n")

    plt.figure(figsize=(8, 4))  # Set the figure size (width, height)
    plt.bar(Activity_Type, Total_calories_burnt, color='skyblue')
    # Add labels and title
    plt.xlabel('Activity Type')
    plt.ylabel('Total Calories Burnt')
    plt.title('Total Calories Burnt per Activity Type')
    # Rotate x-axis labels for better readability if needed
    plt.xticks(rotation=45)
    # Show plot
    plt.tight_layout()
    plt.show()


    #2 Visualizations of total calories burnt by every users

    sql_select_Query_viz_1 = """
    select a.User_Id,sum(Calories_burnt) as Total_Calories_Burnt
    from activity_tracker a
    inner join User U
    ON a.User_Id=U.user_id
    group by User_Id
```

```
        order by 2 desc;
        """
        cursor = connection.cursor()
        cursor.execute(sql_select_Query_viz_1)
        records = cursor.fetchall()

        Users = [row[0] for row in records]
        Total_Calories_Burnt_Users = [row[1] for row in records]
        for row in records:
            print('Users =',row[0],' Total Calories burnt=',row[1],"\n")

        plt.figure(figsize=(8, 4))  # Set the figure size (width, height)
        plt.bar(Users, Total_Calories_Burnt_Users, color='skyblue')
        # Add labels and title
        plt.xlabel('Activity Type')
        plt.ylabel('Total Calories Burnt')
        plt.title('Total Calories Burnt Users wise')
        # Rotate x-axis labels for better readability if needed
        plt.xticks(ticks=Users, labels=Users)
        # Show plot
        plt.tight_layout()
        plt.show()

except Error as e:
    print("Error while connecting to MySQL", e)
finally:
    if (connection.is_connected()):
        cursor.close()
        connection.close()
        print("MySQL connection is closed")
```

```
Connected to MySQL Server version  8.0.34
Your connected to database:  ('fithub',)
Activity_Type = Full body workout  Total Calories burnt= 2431

Activity_Type = cardio workout  Total Calories burnt= 1685

Activity_Type = upper body workout  Total Calories burnt= 1467

Activity_Type = cycling  Total Calories burnt= 1324

Activity_Type = swimming  Total Calories burnt= 978

Activity_Type = Jogging  Total Calories burnt= 929

Activity_Type = walking  Total Calories burnt= 144
```



```
Users = 1  Total Calories burnt= 2056

Users = 5  Total Calories burnt= 1541

Users = 2  Total Calories burnt= 1377

Users = 7  Total Calories burnt= 1081

Users = 4  Total Calories burnt= 928

Users = 0  Total Calories burnt= 758

Users = 8  Total Calories burnt= 646

Users = 9  Total Calories burnt= 571
```



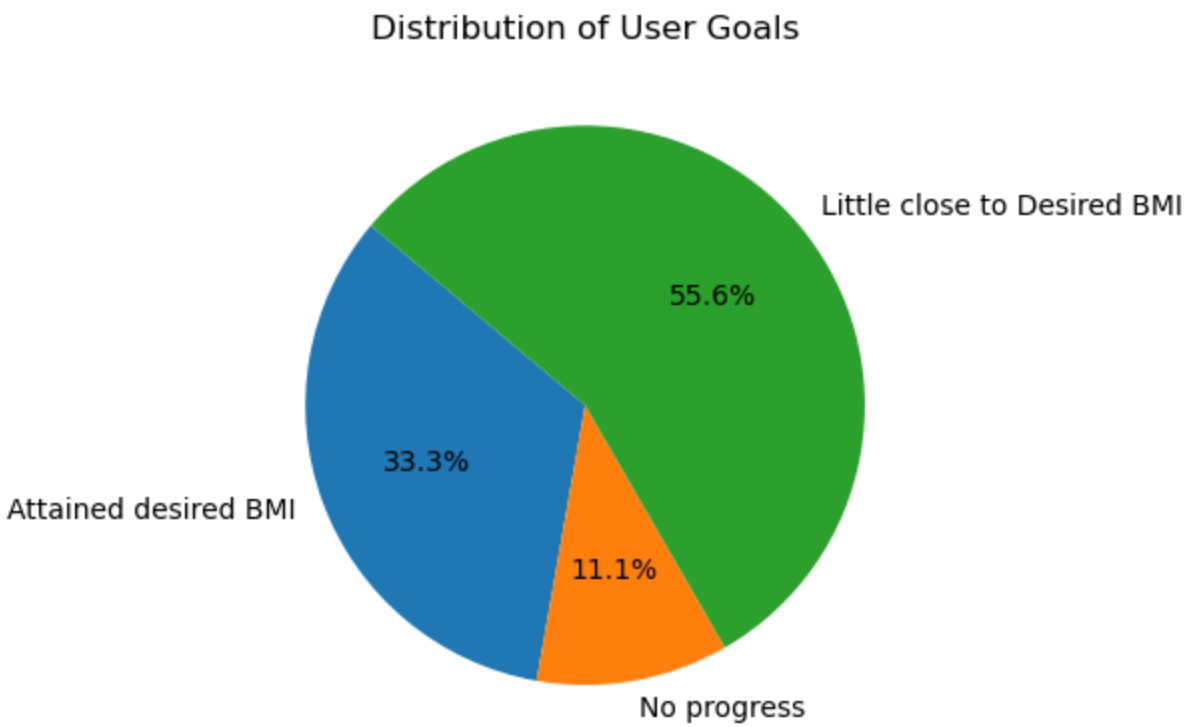

```
MySQL connection is closed
```

In [9]:
```
try:
    connection = mysql.connector.connect(host='localhost',
                                         database='fithub',
```

```
                                        user='root',
                                        password='Kavin06$')
    if connection.is_connected():
        db_Info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_Info)
        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("Your connected to database: ", record)

        sql_select_Query_viz_1 = """
        select distinct count(U.User_id) as Users_Count,'Attained desired BMI' as flag
        from User U, goal_setting g
        where U.user_Id=g.User_Id
        and Desired_BMi=Attained_BMI
        UNION
        select distinct count(U.User_id) as Users_Count,'No progress' as flag
        from User U, goal_setting g
        where U.user_Id=g.User_Id
        and BMI=Attained_BMI
        UNION
        select distinct count(U.User_id) as Users_Count,'Little close to Desired BMI' as flag
        from User U, goal_setting g
        where U.user_Id=g.User_Id
        and BMI<>Attained_BMI
        AND U.USER_ID NOT IN(select distinct U.user_id
        from User U, goal_setting g
        where U.user_Id=g.User_Id
        and Desired_BMi=Attained_BMI);
        """
        cursor = connection.cursor()
        cursor.execute(sql_select_Query_viz_1)
        records = cursor.fetchall()

        Users_count = [row[0] for row in records]
        flag = [row[1] for row in records]

        for row in records:
            print('Users_count =',row[0],' Categories=',row[1],"\n")

        # Calculate total count for percentage calculation
        total_count = sum(Users_count)

        # Calculate percentages
        percentages = [(count / total_count) * 100 for count in Users_count]
```

```
        # Create a pie chart
        plt.figure(figsize=(8, 4))

        # Define labels and explode (to highlight a particular section)
        labels = flag

        # Plotting the pie chart
        plt.pie(percentages, labels=labels, autopct='%1.1f%%', startangle=140)
        plt.title('Distribution of User Goals')
        plt.tight_layout()
        plt.show()

except Error as e:
    print("Error while connecting to MySQL", e)
finally:
    if (connection.is_connected()):
        cursor.close()
        connection.close()
        print("MySQL connection is closed")
```

```
Connected to MySQL Server version  8.0.34
Your connected to database:  ('fithub',)
Users_count = 3  Categories= Attained desired BMI

Users_count = 1  Categories= No progress

Users_count = 5  Categories= Little close to Desired BMI
```

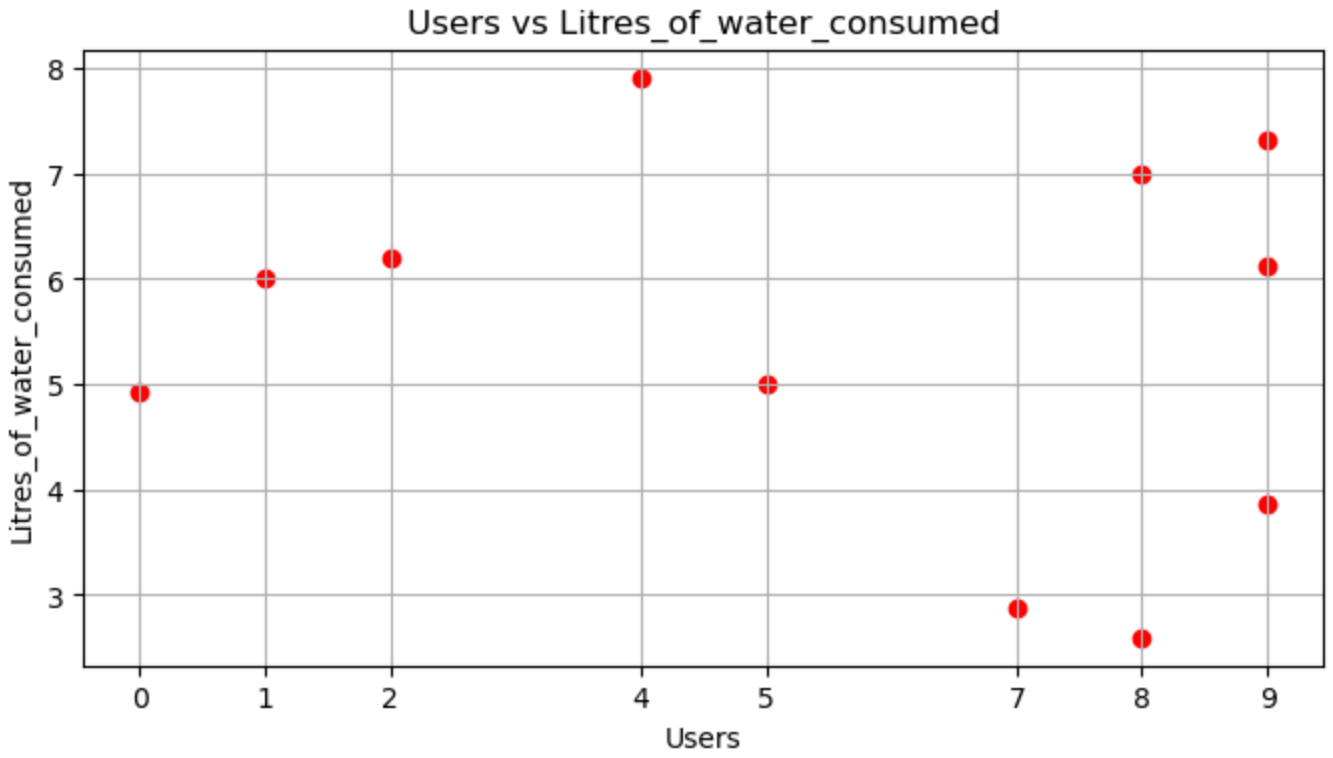



```
MySQL connection is closed
```

In [10]:
```
try:
    connection = mysql.connector.connect(host='localhost',
                                         database='fithub',
                                         user='root',
                                         password='Kavin06$')
    if connection.is_connected():
        db_Info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_Info)
        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("Your connected to database: ", record)

        sql_select_Query_viz_2 = """
        Select User_id,litres as water_intake_per_day
        from water_intake d
        inner join nutrition_tracker t
        on d.tracking_id=t.tracking_id;
        """
```

```
        cursor = connection.cursor()
        cursor.execute(sql_select_Query_viz_2)
        records = cursor.fetchall()

        User = [row[0] for row in records]
        Litres_of_water_consumed = [row[1] for row in records]

        for row in records:
            print('User =',row[0],' Litres_of_water_consumed=',row[1],"\n")

        plt.figure(figsize=(8, 4))
        plt.scatter(User, Litres_of_water_consumed, color='red')
        plt.xlabel('Users')
        plt.ylabel('Litres_of_water_consumed')
        plt.title('Users vs Litres_of_water_consumed')
        plt.xticks(ticks=Users, labels=Users)
        plt.grid(True)
        plt.show()

except Error as e:
    print("Error while connecting to MySQL", e)
finally:
    if (connection.is_connected()):
        cursor.close()
        connection.close()
        print("MySQL connection is closed")
```

```
Connected to MySQL Server version  8.0.34
Your connected to database:  ('fithub',)
User = 7  Litres_of_water_consumed= 2.86779

User = 2  Litres_of_water_consumed= 6.2

User = 9  Litres_of_water_consumed= 6.11803

User = 0  Litres_of_water_consumed= 4.93362

User = 4  Litres_of_water_consumed= 7.91195

User = 8  Litres_of_water_consumed= 2.59711

User = 9  Litres_of_water_consumed= 7.31013

User = 8  Litres_of_water_consumed= 6.99987

User = 9  Litres_of_water_consumed= 3.858

User = 1  Litres_of_water_consumed= 6.0

User = 5  Litres_of_water_consumed= 5.0
```

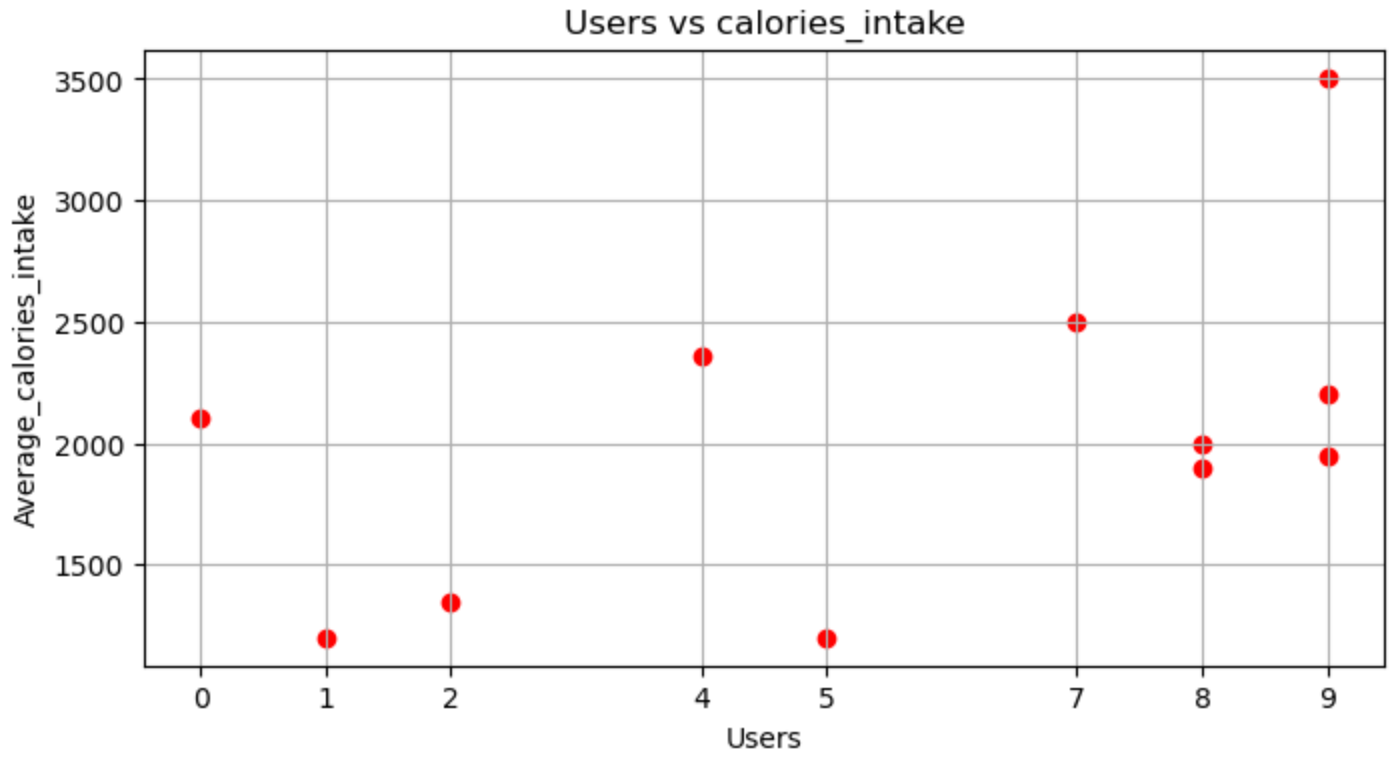



```
MySQL connection is closed
```

In [11]:
```
try:
    connection = mysql.connector.connect(host='localhost',
                                         database='fithub',
                                         user='root',
                                         password='Kavin06$')
    if connection.is_connected():
        db_Info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_Info)
        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("Your connected to database: ", record)

        sql_select_Query_viz_3 = """
        Select User_id,calories_taken as Average_calories_intake
        from daily_intake d
        inner join nutrition_tracker t
        on d.tracking_id=t.tracking_id;
        """
```

```
        cursor = connection.cursor()
        cursor.execute(sql_select_Query_viz_3)
        records = cursor.fetchall()

        User_1 = [row[0] for row in records]
        Average_calories_intake = [row[1] for row in records]

        for row in records:
            print('User =',row[0],'Average_calories_intake=',row[1],"\n")

        plt.figure(figsize=(8, 4))
        plt.scatter(User, Average_calories_intake, color='red')
        plt.xlabel('Users')
        plt.ylabel('Average_calories_intake')
        plt.title('Users vs calories_intake')
        plt.xticks(ticks=Users, labels=Users)
        plt.grid(True)
        plt.show()

except Error as e:
    print("Error while connecting to MySQL", e)
finally:
    if (connection.is_connected()):
        cursor.close()
        connection.close()
        print("MySQL connection is closed")
```

```
Connected to MySQL Server version  8.0.34
Your connected to database:  ('fithub',)
User = 7 Average_calories_intake= 2500

User = 2 Average_calories_intake= 1350

User = 9 Average_calories_intake= 1950

User = 0 Average_calories_intake= 2100

User = 4 Average_calories_intake= 2362

User = 8 Average_calories_intake= 2000

User = 9 Average_calories_intake= 3506

User = 8 Average_calories_intake= 1900

User = 9 Average_calories_intake= 2200

User = 1 Average_calories_intake= 1200

User = 5 Average_calories_intake= 1200
```




```
MySQL connection is closed
```

In [12]:
```
#sample sql queries

try:
    connection = mysql.connector.connect(host='localhost',
                                         database='fithub',
                                         user='root',
                                         password='Kavin06$')
    if connection.is_connected():
        db_Info = connection.get_server_info()
        print("Connected to MySQL Server version ", db_Info)
        cursor = connection.cursor()
        cursor.execute("select database();")
        record = cursor.fetchone()
        print("Your connected to database: ", record)
#1 Fetch User who consumes more amount of water
        sql_select_Query = """
        SELECT N.User_id, U.User_Name, W.litres
        FROM water_intake W, nutrition_tracker N, user U
        WHERE W.Tracking_id=N.Tracking_id
```

```
        AND U.User_Id = N.User_Id
        AND W.litres = (
        SELECT max(Litres)
        FROM water_intake
        );
        """
        cursor = connection.cursor()
        cursor.execute(sql_select_Query)
        records = cursor.fetchall()
        print("Person who cosnumed max litres of water during their work out routine:")
        for row in records:
            print('UserId =',row[0],' UserName=',row[1],'  Litres of water consumed=',row[2],"\n")


#2 Persons who did cycling
        sql_select_Query_1 = """
        SELECT A.Activity_type, U.User_Name, A.Calories_burnt, A.Distance_covered
        FROM activity_tracker A
        INNER JOIN User U
        ON U.User_Id=A.User_Id
        WHERE A.Activity_type='CYCLING';
        """
        cursor = connection.cursor()
        cursor.execute(sql_select_Query_1)
        records = cursor.fetchall()
        print("Users who did cycling:")
        for row in records:
            print('Activity_Type =',row[0],' UserName=',row[1],'  Calories burnt=',row[2],' Distance covered=',row[3],"

#3 Listing Premium Users
        sql_select_Query_2 = """
        SELECT P.User_Id, P.User_Name
        FROM user U, premium_user P
        WHERE U.User_Id = P.User_Id;
        """
        cursor = connection.cursor()
        cursor.execute(sql_select_Query_2)
        records = cursor.fetchall()
        print("Premium Users:")
        for row in records:
            print('User Id =',row[0],' User Name=',row[1],"\n")

#4 calculate calories burnt for each activity
        sql_select_Query_3 = """
        select activity_type,sum(calories_burnt) Total_calories_burnt from activities
```

```
        group by activity_type;
        """
        cursor = connection.cursor()
        cursor.execute(sql_select_Query_3)
        records = cursor.fetchall()
        print("Overall calories burnt for each activity:")
        for row in records:
            print('Type of Activity =',row[0],' Total Calories burnt=',row[1],"\n")

#5 Top 2 Users who actively burnt calories
        sql_select_Query_4 = """
        with User_Table as
        (

        select a.User_Id,User_name,sum(Calories_burnt) as Total_Calories_Burnt
        from activity_tracker a
        inner join User U
        ON a.User_Id=U.user_id
        group by User_Id
        )
        SELECT User_Name,Total_Calories_Burnt
        FROM User_Table P1
        WHERE 2 >
        (SELECT COUNT(*)
        FROM User_Table P2
        WHERE P1.Total_Calories_Burnt < P2.Total_Calories_Burnt)
        order by 2 desc;
        """
        cursor = connection.cursor()
        cursor.execute(sql_select_Query_4)
        records = cursor.fetchall()
        print("Top 2 Users who actively burnt their calories")
        for row in records:
            print('User_Name =',row[0],' Total Calories burnt=',row[1],"\n")


except Error as e:
    print("Error while connecting to MySQL", e)
finally:
    if (connection.is_connected()):
        cursor.close()
        connection.close()
        print("MySQL connection is closed")
```

```
Connected to MySQL Server version  8.0.34
Your connected to database:  ('fithub',)
Person who cosnumed max litres of water during their work out routine:
UserId = 4  UserName= Lawanda   Litres of water consumed= 7.91195

Users who did cycling:
Activity_Type = cycling  UserName= Heath   Calories burnt= 324  Distance covered= 3.24299

Activity_Type = cycling  UserName= Robbie7   Calories burnt= 465  Distance covered= 4.6526

Activity_Type = cycling  UserName= Kendra278   Calories burnt= 296  Distance covered= 2.96438

Activity_Type = cycling  UserName= Robbie7   Calories burnt= 239  Distance covered= 2.38884

Premium Users:
User Id = 0  User Name= Colby3

User Id = 2  User Name= Janice11

User Id = 4  User Name= Kristen3

User Id = 6  User Name= Lawanda

User Id = 8  User Name= Erick5

Overall calories burnt for each activity:
Type of Activity = cycling  Total Calories burnt= 1324

Type of Activity = swimming  Total Calories burnt= 978

Type of Activity = Jogging  Total Calories burnt= 929

Type of Activity = walking  Total Calories burnt= 144

Top 2 Users who actively burnt their calories
User_Name = Erick5  Total Calories burnt= 2056

User_Name = Robbie7  Total Calories burnt= 1541

MySQL connection is closed
```

In [ ]: