In [20]:

```
import pandas as pd
import numpy as np
```

In [21]:

```
df=pd.read_csv("C:\\Users\\nitin\\Downloads\\Fremont_Bridge_Bicycle_Counter_2025041
```

In [22]:

```
df.head()
```

Out[22]:

	Date	Fremont Bridge Sidewalks, south of N 34th St Total	Fremont Bridge Sidewalks, south of N 34th St Cyclist West Sidewalk	Fremont Bridge Sidewalks, south of N 34th St Cyclist East Sidewalk
0	10/02/2012 01:00:00 PM	55.0	7.0	48.0
1	10/02/2012 02:00:00 PM	130.0	55.0	75.0
2	10/02/2012 03:00:00 PM	152.0	81.0	71.0
3	10/02/2012 04:00:00 PM	278.0	167.0	111.0
4	10/02/2012 05:00:00 PM	563.0	393.0	170.0

In [23]:

```
df.shape
```

Out[23]:

```
(110184, 4)
```

In [25]:

```
df['total']=df[['Fremont Bridge Sidewalks, south of N 34th St Total','Fremont Bridg
```

In [29]:

```
df['Date']=pd.to_datetime(df['Date'])
```

In [30]:

```
df['hour']=df['Date'].dt.hour
df['dayofweek']=df['Date'].dt.dayofweek
df['year']=df['Date'].dt.year
df['month']=df['Date'].dt.month
```

In [31]:

```
df.head()
```

Out[31]:

	Date	Fremont Bridge Sidewalks, south of N 34th St Total	Fremont Bridge Sidewalks, south of N 34th St Cyclist West Sidewalk	Fremont Bridge Sidewalks, south of N 34th St Cyclist East Sidewalk	total	hour	dayofweek	year	month
0	2012-10-02 13:00:00	55.0	7.0	48.0	110.0	13	1	2012	10
1	2012-10-02 14:00:00	130.0	55.0	75.0	260.0	14	1	2012	10
2	2012-10-02 15:00:00	152.0	81.0	71.0	304.0	15	1	2012	10
3	2012-10-02 16:00:00	278.0	167.0	111.0	556.0	16	1	2012	10
4	2012-10-02 17:00:00	563.0	393.0	170.0	1126.0	17	1	2012	10

In [32]:

```
df=df.drop(['Date'],axis=1)
```

In [33]:

```
df.columns
```

Out[33]:

```
Index(['Fremont Bridge Sidewalks, south of N 34th St Total',
       'Fremont Bridge Sidewalks, south of N 34th St Cyclist West Sidewalk',
       'Fremont Bridge Sidewalks, south of N 34th St Cyclist East Sidewalk',
       'total', 'hour', 'dayofweek', 'year', 'month'],
      dtype='object')
```

In [34]:

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 110184 entries, 0 to 110183
Data columns (total 8 columns):
 #   Column                                                              Non-Null Co
unt   Dtype  
---  ------                                                              -----------
---   -----  
 0   Fremont Bridge Sidewalks, south of N 34th St Total                  110156 non-
null  float64
 1   Fremont Bridge Sidewalks, south of N 34th St Cyclist West Sidewalk  110156 non-
null  float64
 2   Fremont Bridge Sidewalks, south of N 34th St Cyclist East Sidewalk  110156 non-
null  float64
 3   total                                                               110184 non-
null  float64
 4   hour                                                                110184 non-
null  int32  
 5   dayofweek                                                           110184 non-
null  int32  
 6   year                                                                110184 non-
null  int32  
 7   month                                                               110184 non-
null  int32  
dtypes: float64(4), int32(4)
memory usage: 5.0 MB
```

In [35]:

```
df.isnull().sum()
```

Out[35]:

```
Fremont Bridge Sidewalks, south of N 34th St Total                    28
Fremont Bridge Sidewalks, south of N 34th St Cyclist West Sidewalk    28
Fremont Bridge Sidewalks, south of N 34th St Cyclist East Sidewalk    28
total                                                                  0
hour                                                                   0
dayofweek                                                              0
year                                                                   0
month                                                                  0
dtype: int64
```

In [36]:

```
df=df.dropna()
```

In [37]:

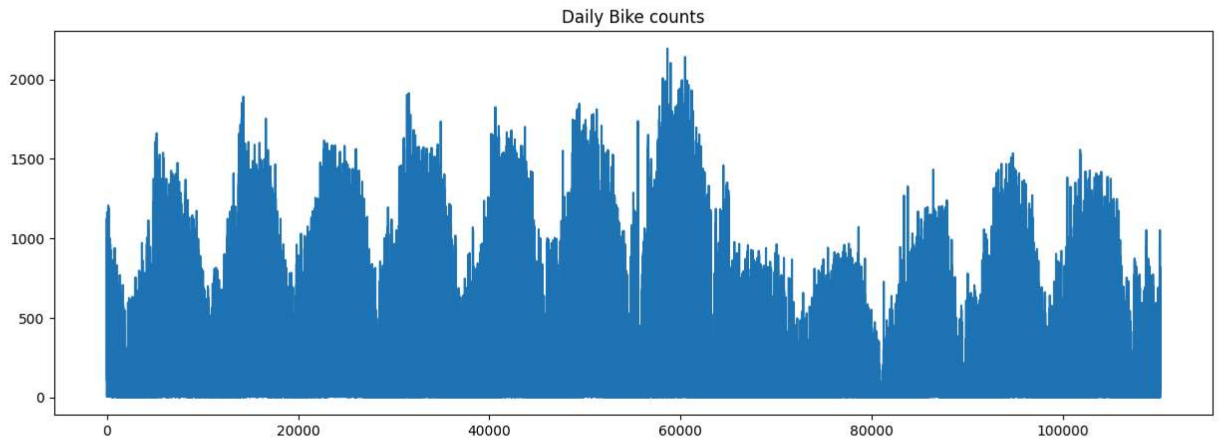
```
import seaborn as sns
import matplotlib.pyplot as plt
```

In [39]:

```
df['total'].plot(figsize=(15,5),title='Daily Bike counts')
```

Out[39]:

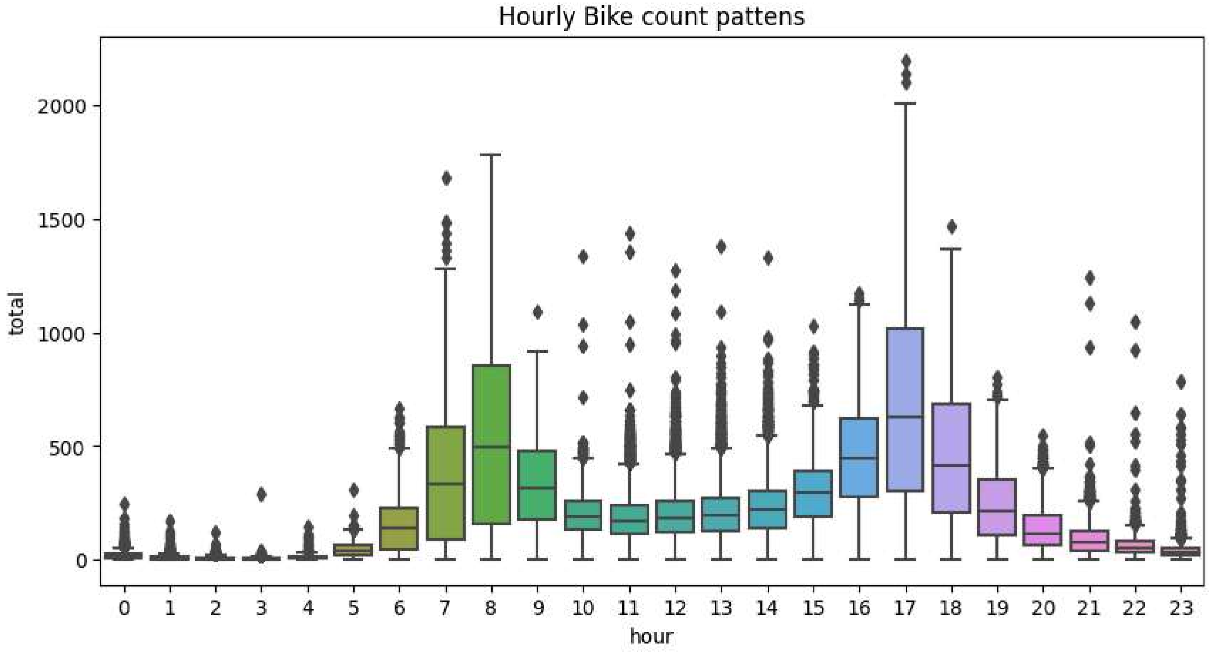
```
<Axes: title={'center': 'Daily Bike counts'}>
```



Daily Bike counts

```
In [42]: plt.figure(figsize=(10,5))
         sns.boxplot(x='hour', y='total', data=df)
         plt.title("Hourly Bike count pattens")
         plt.show()
```

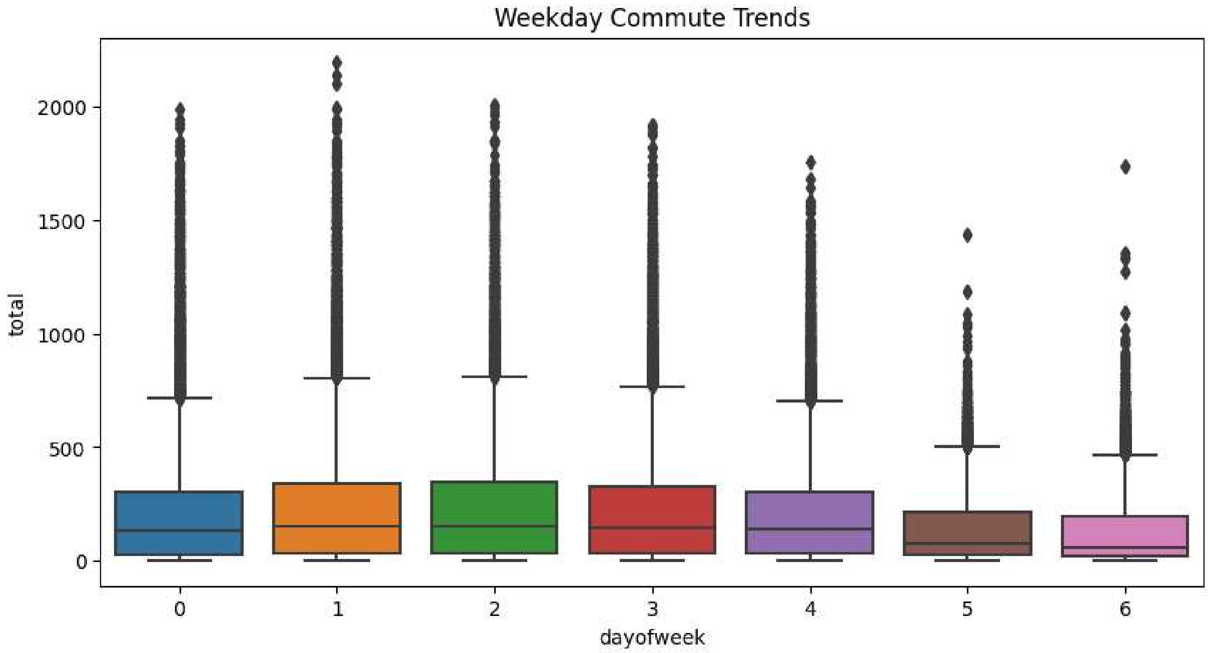
```
C:\Users\nitin\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\_ol
dcore.py:1498: FutureWarning: is_categorical_dtype is deprecated and will be removed
in a future version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
C:\Users\nitin\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\_ol
dcore.py:1498: FutureWarning: is_categorical_dtype is deprecated and will be removed
in a future version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
C:\Users\nitin\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\_ol
dcore.py:1498: FutureWarning: is_categorical_dtype is deprecated and will be removed
in a future version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
```



Hourly Bike count pattens

```
In [44]: plt.figure(figsize=(10,5))
         sns.boxplot(x='dayofweek', y='total', data=df)
         plt.title("Weekday Commute Trends")
         plt.show()
```

```
C:\Users\nitin\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\_ol
dcore.py:1498: FutureWarning: is_categorical_dtype is deprecated and will be removed
in a future version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
C:\Users\nitin\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\_ol
dcore.py:1498: FutureWarning: is_categorical_dtype is deprecated and will be removed
in a future version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
C:\Users\nitin\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\_ol
dcore.py:1498: FutureWarning: is_categorical_dtype is deprecated and will be removed
in a future version. Use isinstance(dtype, CategoricalDtype) instead
  if pd.api.types.is_categorical_dtype(vector):
```


Weekday Commute Trends

In [45]:

```
from sklearn.linear_model import LinearRegression
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score,r2_score,f1_score
```

In [47]:

```
x = df[['hour', 'dayofweek', 'month']]
y = df['total']
```

In [48]:

```
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.3,random_state=2)
```

In [54]:

```
lr=LinearRegression()
lr.fit(x_train,y_train)
```

Out[54]:

```
▾ LinearRegression

LinearRegression()
```

In [55]:

```
y_pred=lr.predict(x_test)
```

In [59]:

```
print("R² Score:", r2_score(y_test, y_pred))
```

```
R² Score: 0.07384675785085648
```

In [61]:

```
sample = [[8, 2, 4]]  # Example: 8 AM, Wednesday, April
prediction = lr.predict(sample)
print(f"Predicted bike count: {int(prediction[0])}")
```

```
Predicted bike count: 199
```

```
C:\Users\nitin\AppData\Local\Programs\Python\Python311\Lib\site-packages\sklearn\bas
e.py:465: UserWarning: X does not have valid feature names, but LinearRegression was
fitted with feature names
  warnings.warn(
```

In [ ]: