In [9]:
```
pip install --upgrade seaborn
```

```
Requirement already satisfied: seaborn in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (0.13.2)
Requirement already satisfied: numpy!=1.24.0,>=1.20 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from seaborn) (2.3.
Requirement already satisfied: pandas>=1.2 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from seaborn) (2.3.
Requirement already satisfied: matplotlib!=3.6.1,>=3.4 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from seaborn) (3.10
Requirement already satisfied: contourpy>=1.0.1 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from matplotlib!
=3.6.1,>=3.4->seaborn) (1.3.3)
Requirement already satisfied: cycler>=0.10 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from matplotlib!
=3.6.1,>=3.4->seaborn) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from matplotlib!
=3.6.1,>=3.4->seaborn) (4.59.1)
Requirement already satisfied: kiwisolver>=1.3.1 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from matplotlib!
=3.6.1,>=3.4->seaborn) (1.4.9)
Requirement already satisfied: packaging>=20.0 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from matplotlib!
=3.6.1,>=3.4->seaborn) (25.0)
Requirement already satisfied: pillow>=8 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from matplotlib!
=3.6.1,>=3.4->seaborn) (11.3.0)
Requirement already satisfied: pyparsing>=2.3.1 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from matplotlib!
=3.6.1,>=3.4->seaborn) (3.2.3)
Requirement already satisfied: python-dateutil>=2.7 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from matplotlib!
=3.6.1,>=3.4->seaborn) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from pandas>=1.2-
>seaborn) (2025.2)
Requirement already satisfied: tzdata>=2022.7 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from pandas>=1.2-
>seaborn) (2025.2)
Requirement already satisfied: six>=1.5 in c:\users\ar
ansari\appdata\local\programs\python\python313\lib\site-packages (from python-
dateutil>=2.7->matplotlib!=3.6.1,>=3.4->seaborn) (1.17.0)
Note: you may need to restart the kernel to use updated packages.
[notice] A new release of pip is available: 25.1.1 -> 25.2
[notice] To update, run: python.exe -m pip install --upgrade pip
```

In [10]:
```
import warnings
import seaborn as sns
import matplotlib.pyplot as plt
warnings.filterwarnings("ignore")
```

In [11]:
```
sns.get_dataset_names()
```

Out[11]:
```
['anagrams',
 'anscombe',
 'attention',
 'brain_networks',
 'car_crashes',
 'diamonds',
 'dots',
 'dowjones',
 'exercise',
 'flights',
 'fmri',
 'geyser',
 'glue',
 'healthexp',
 'iris',
 'mpg',
 'penguins',
 'planets',
 'seaice',
 'taxis',
 'tips',
 'titanic']
```

In [12]:
```
# Load sample dataset
tips = sns.load_dataset("tips")

#set a visualization style
sns.set_theme(style="darkgrid")
```

In [13]:
```
tips
```

Out[13]:

| | total_bill | tip | sex | smoker | day | time | size |
|---|---|---|---|---|---|---|---|
| 0 | 16.99 | 1.01 | Female | No | Sun | Dinner | 2 |
| 1 | 10.34 | 1.66 | Male | No | Sun | Dinner | 3 |
| 2 | 21.01 | 3.50 | Male | No | Sun | Dinner | 3 |
| 3 | 23.68 | 3.31 | Male | No | Sun | Dinner | 2 |
| 4 | 24.59 | 3.61 | Female | No | Sun | Dinner | 4 |
| ... | ... | ... | ... | ... | ... | ... | ... |
| 239 | 29.03 | 5.92 | Male | No | Sat | Dinner | 3 |
| 240 | 27.18 | 2.00 | Female | Yes | Sat | Dinner | 2 |
| 241 | 22.67 | 2.00 | Male | Yes | Sat | Dinner | 2 |
| 242 | 17.82 | 1.75 | Male | No | Sat | Dinner | 2 |
| 243 | 18.78 | 3.00 | Female | No | Thur | Dinner | 2 |

244 rows × 7 columns

In [14]:
```
import os
os.getcwd()
```

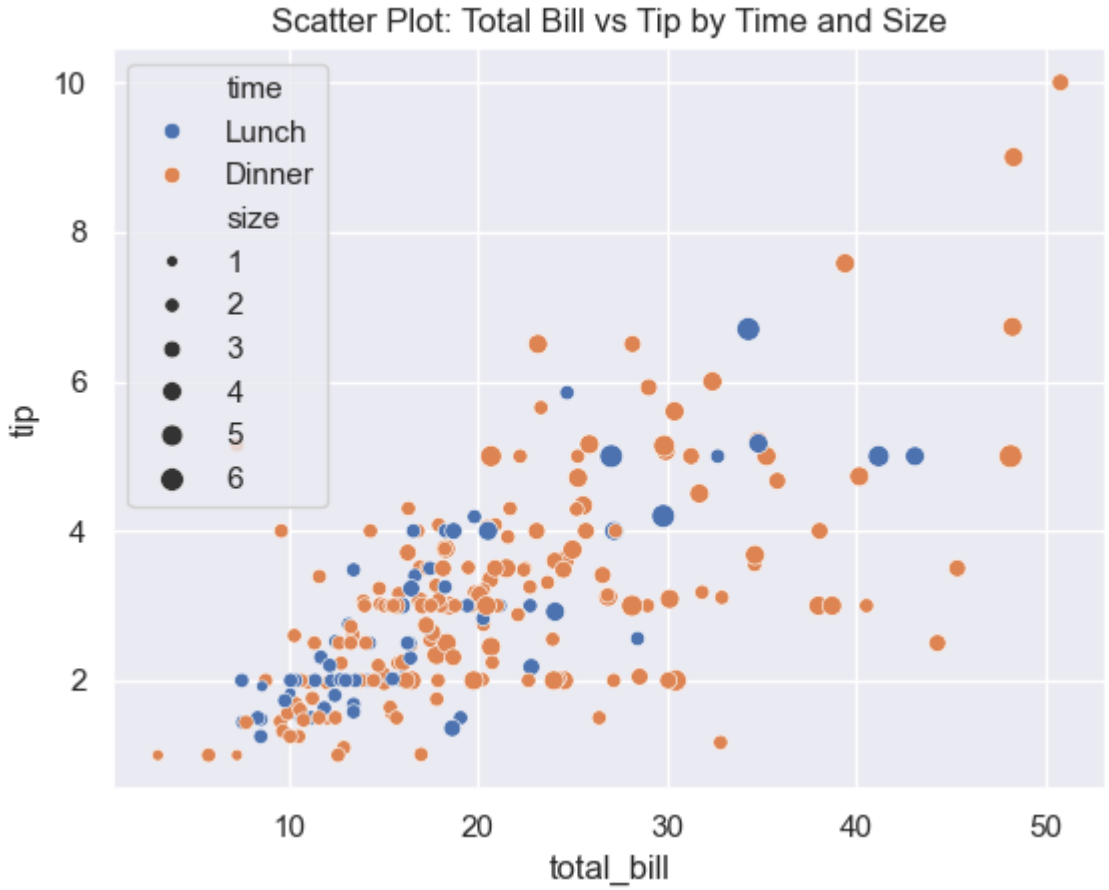
Out[14]:
```
'c:\\Users\\AR ANSARI\\vscode\\Python'
```

In [15]:
```
plt.figure(figsize=(8,6))
```

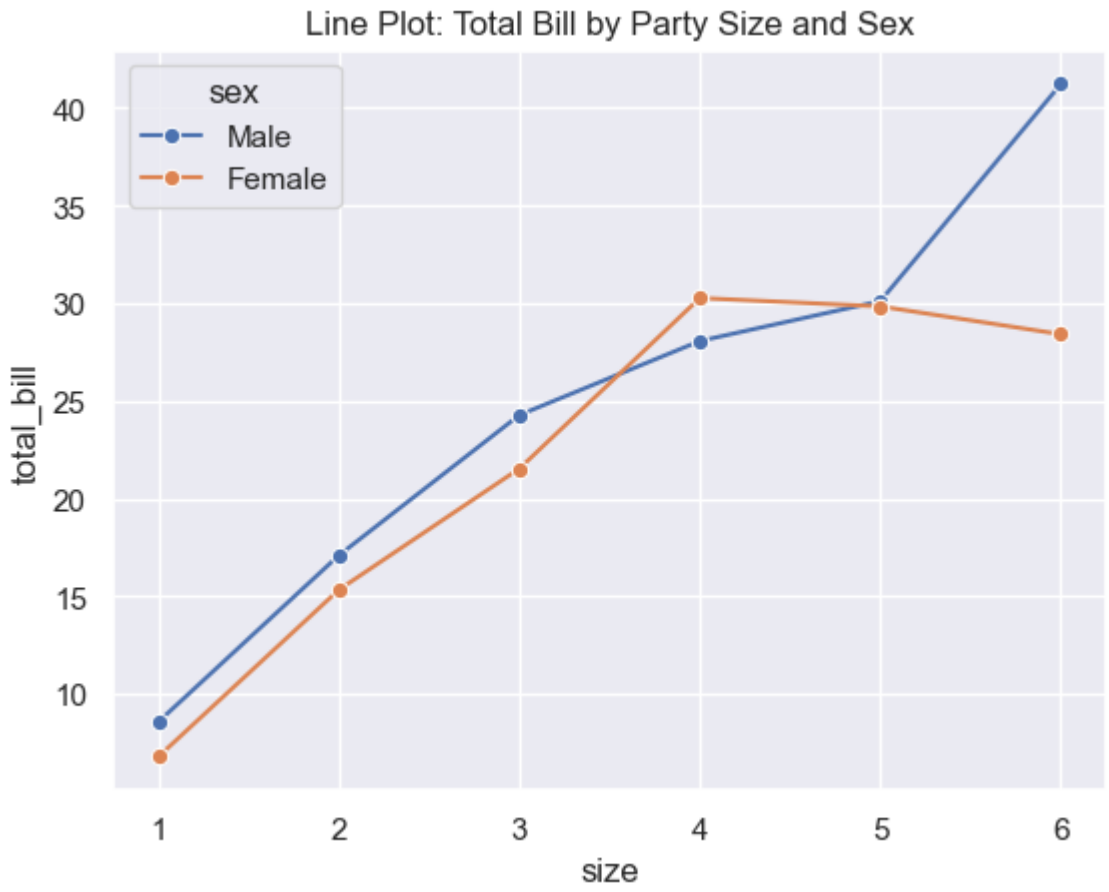
Out[15]: <Figure size 800x600 with 0 Axes>

<Figure size 800x600 with 0 Axes>

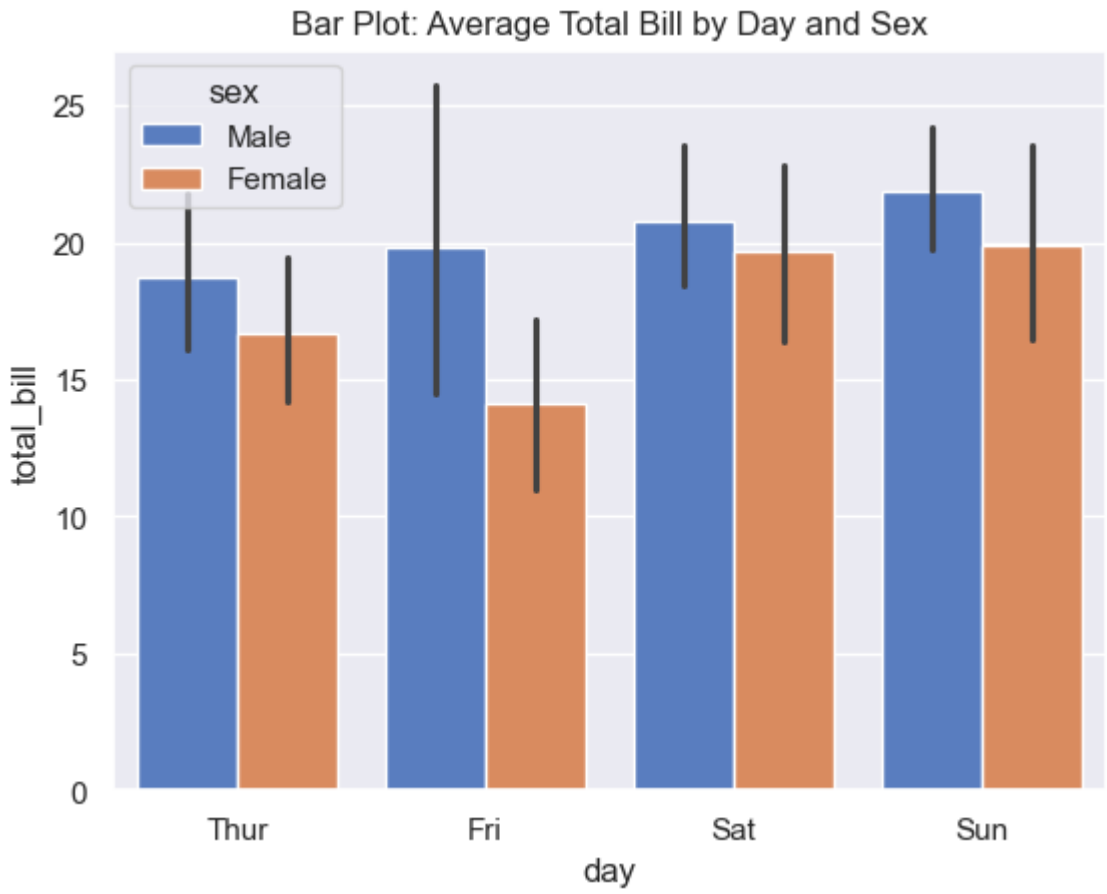
In [16]:
```
#1. Scatter Plot: Total Bill vs Tip, with hue and size

sns.scatterplot(data=tips, x="total_bill", y="tip", hue="time", size="size", pal
plt.title("Scatter Plot: Total Bill vs Tip by Time and Size")
plt.show()
```



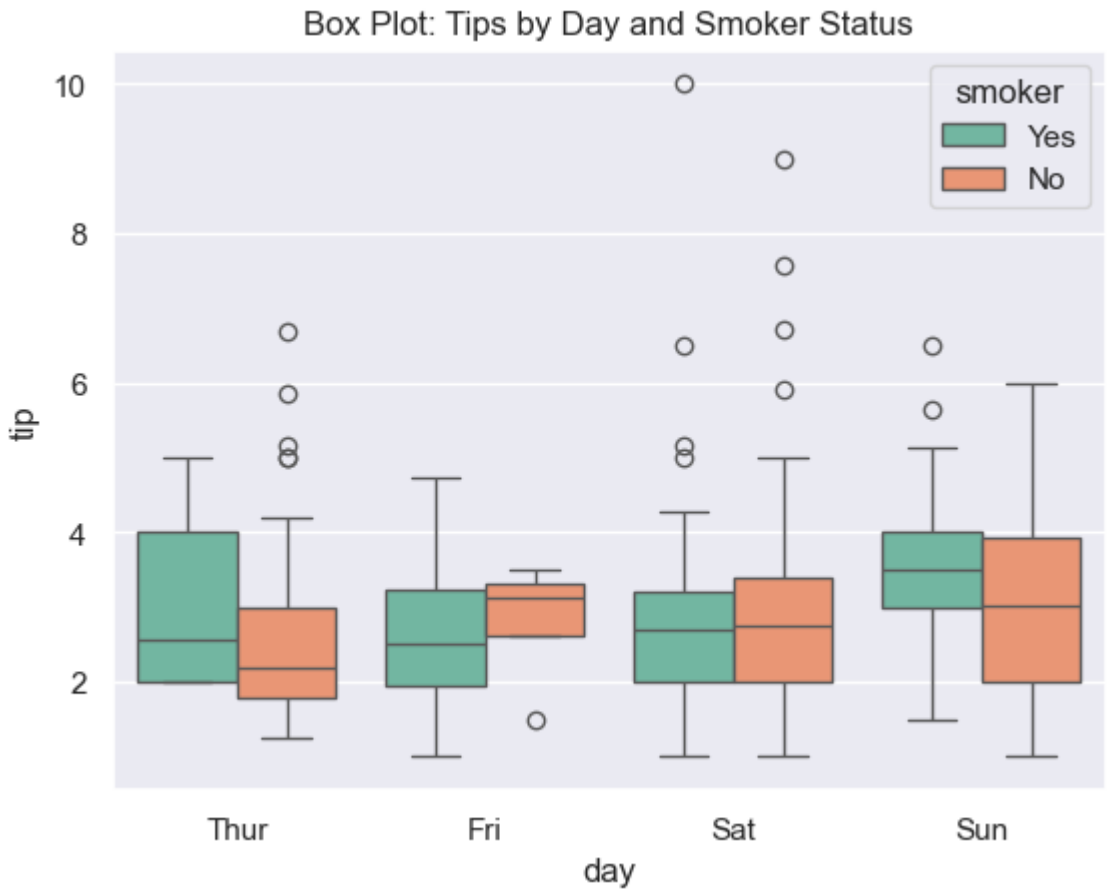

In [17]:
```
# 2. Line Plot: Total Bill by Party Size, split by Sex

sns.lineplot(data=tips, x="size", y="total_bill", hue="sex", ci=None, marker="o"
plt.title("Line Plot: Total Bill by Party Size and Sex")
plt.show()
```



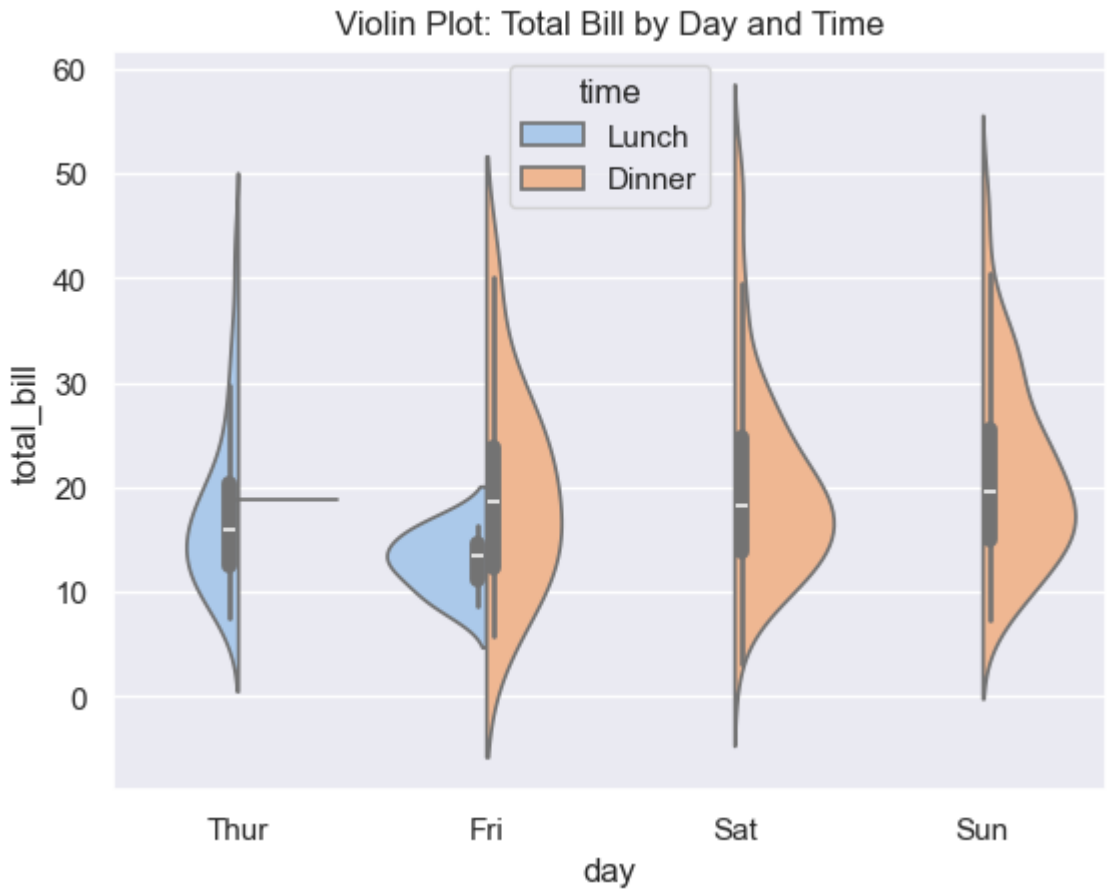

In [18]:
```
# 3. Bar Plot: Average Total Bill by Day, split by Sex

sns.barplot(data=tips, x="day", y="total_bill", hue="sex", palette="muted")
plt.title("Bar Plot: Average Total Bill by Day and Sex")
plt.show()
```



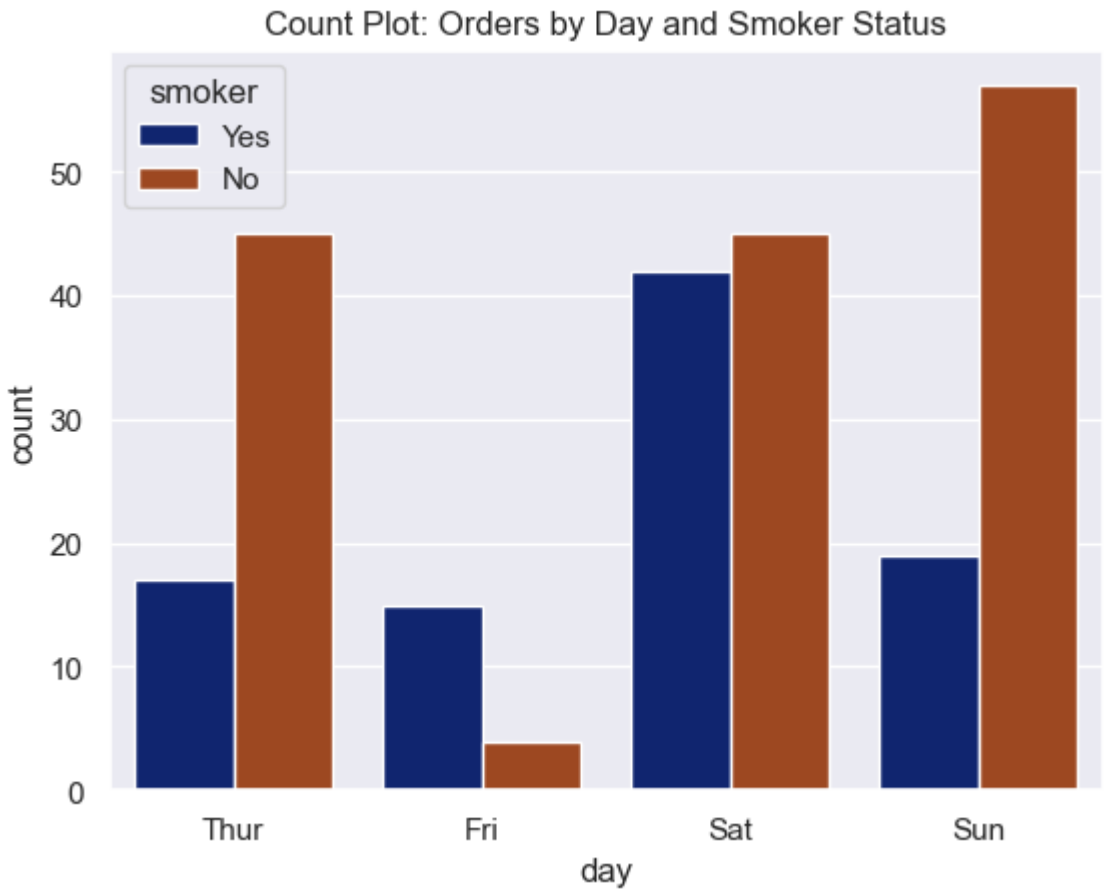

In [19]:
```
# 4. Box Plot: Total Bill by Day, split by Time

sns.boxplot(data=tips, x="day", y="tip", hue="smoker", palette="Set2")
plt.title("Box Plot: Tips by Day and Smoker Status")
plt.show()
```



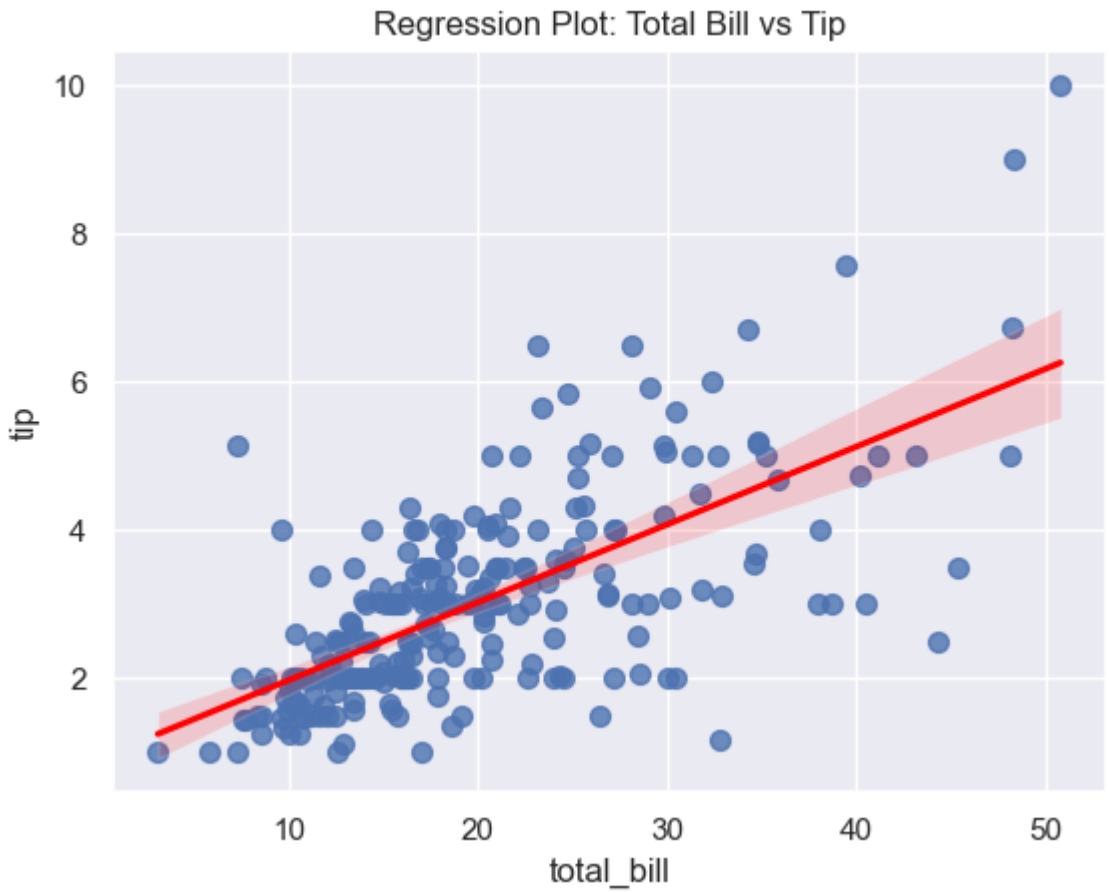

In [20]:
```
## 5. Violin Plot: Total Bill by Day, split by Time

sns.violinplot(data=tips, x="day", y="total_bill", hue="time", split=True, palet
plt.title("Violin Plot: Total Bill by Day and Time")
plt.show()
```



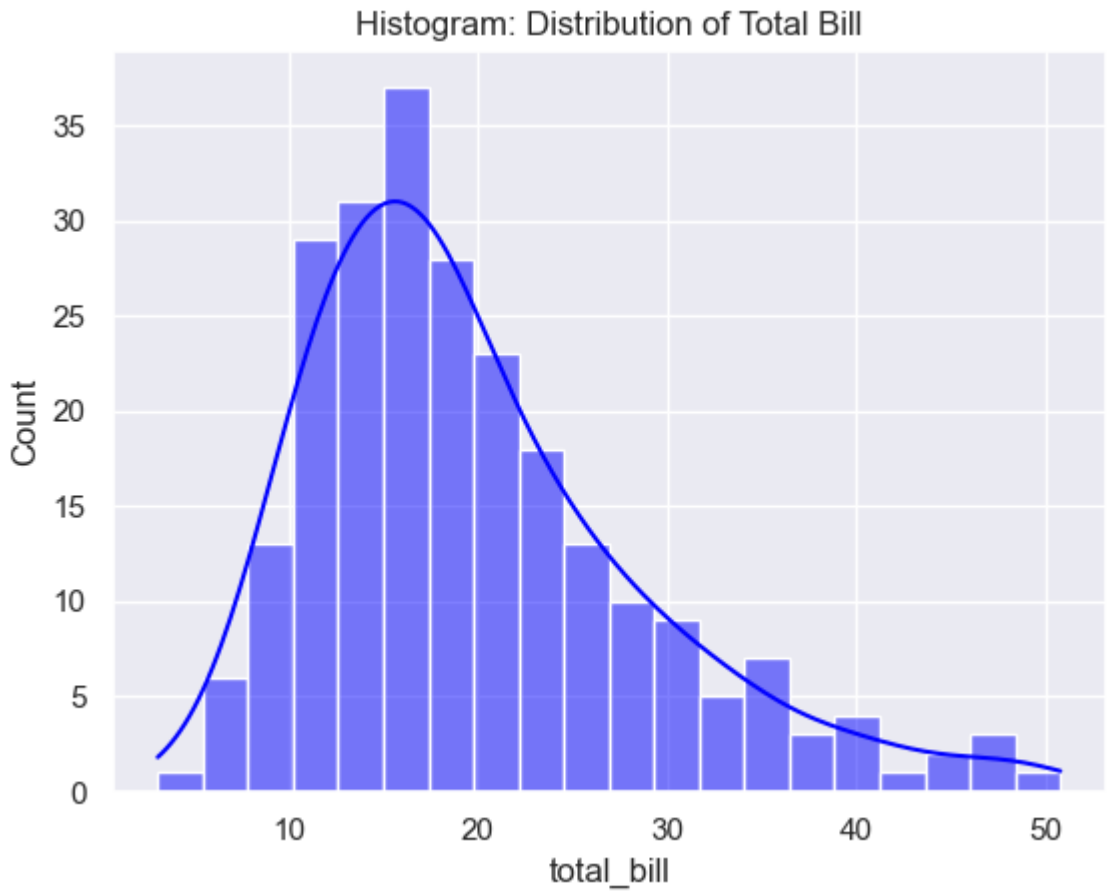

In [21]:
```
# 6. Count Plot: Orders by Day, split by Smoker

sns.countplot(data=tips, x="day", hue="smoker", palette="dark")
plt.title("Count Plot: Orders by Day and Smoker Status")
plt.show()
```



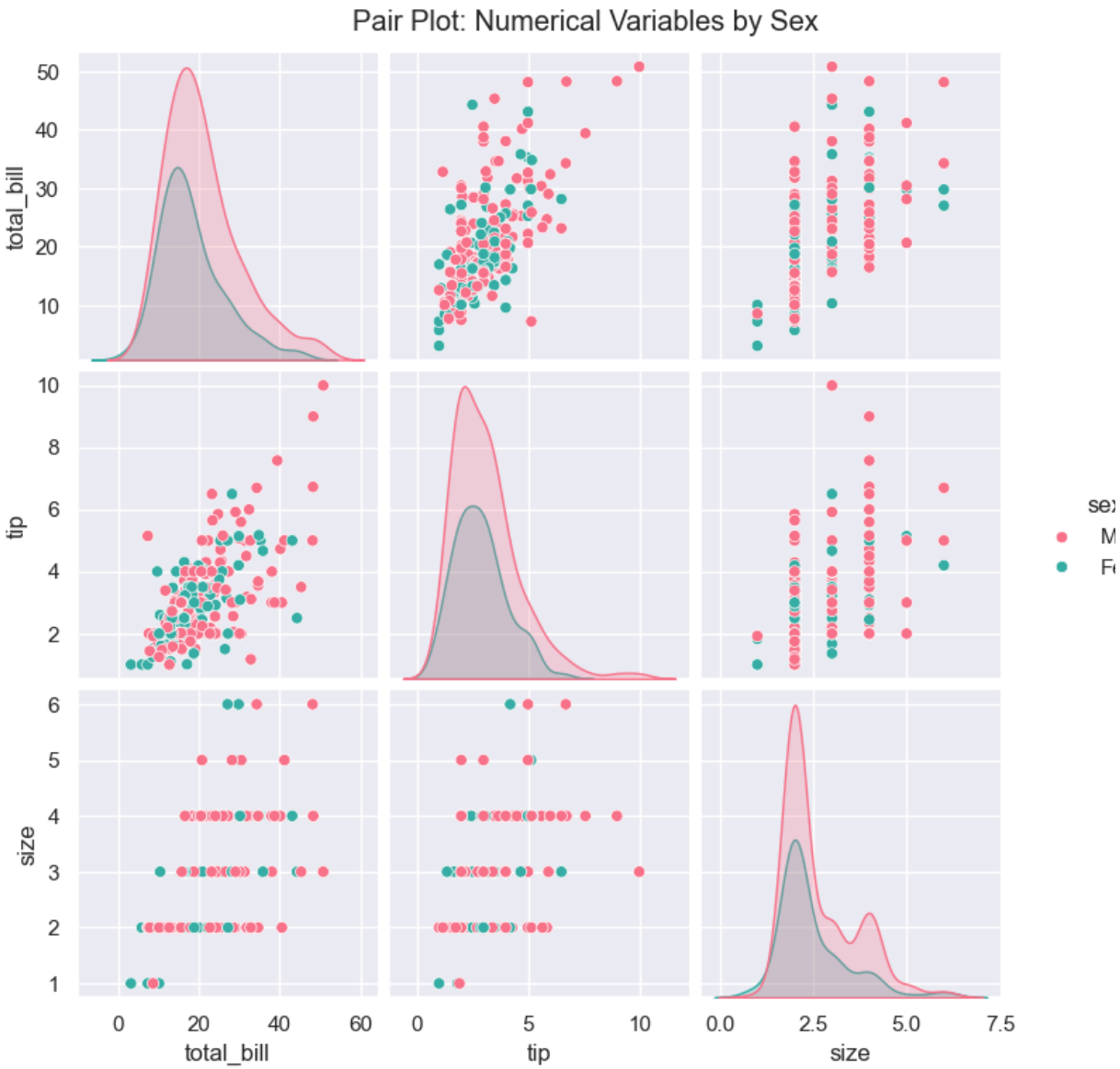

In [22]:
```
# 7. Regression Plot: Total Bill vs Tip with regression line

sns.regplot(data=tips, x="total_bill", y="tip", scatter_kws={"s": 50}, line_kws=
plt.title("Regression Plot: Total Bill vs Tip")
plt.show()
```



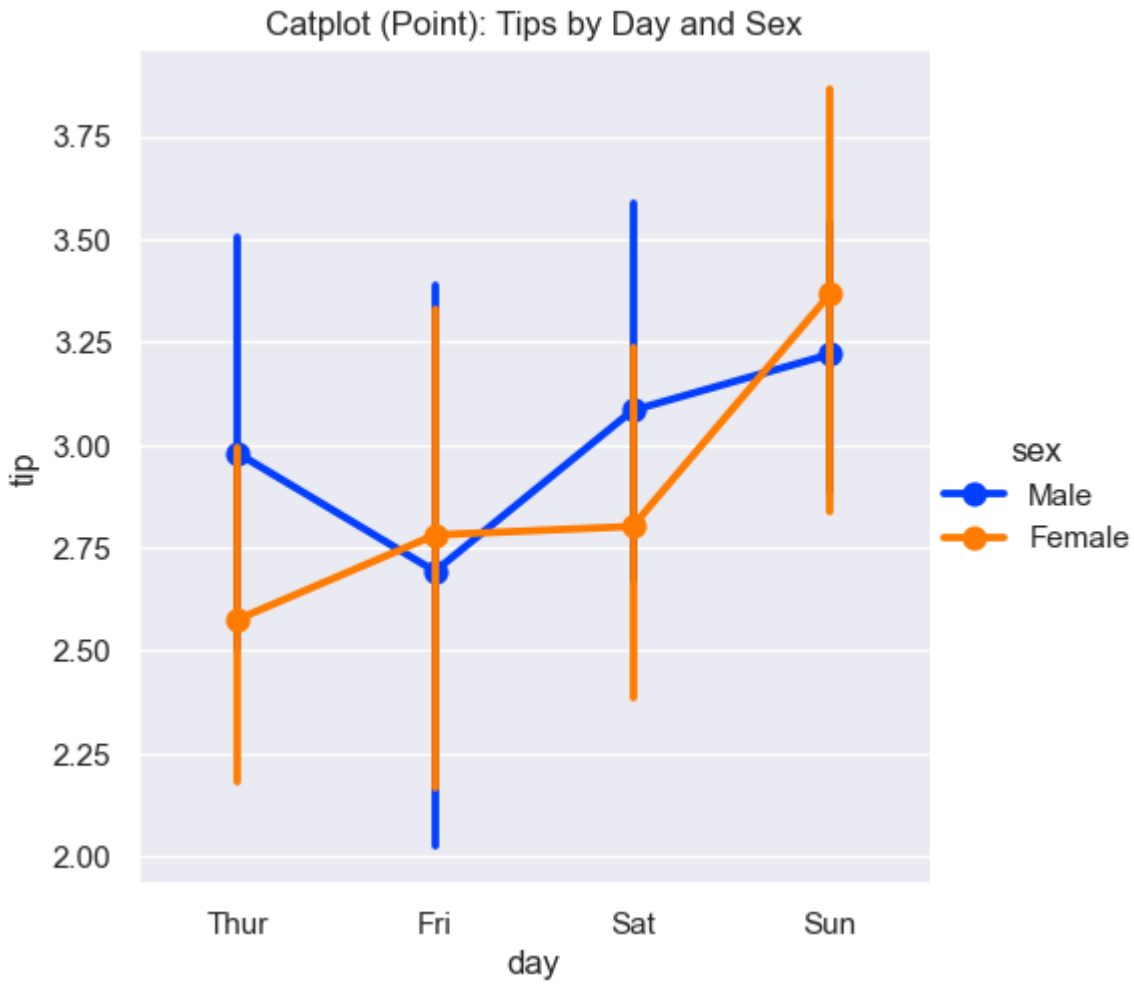

In [23]:
```
#8. Histogram (Distribution Plot): Total Bill with KDE

sns.histplot(data=tips, x="total_bill", kde=True, bins=20, color="blue")
plt.title("Histogram: Distribution of Total Bill")
plt.show()
```



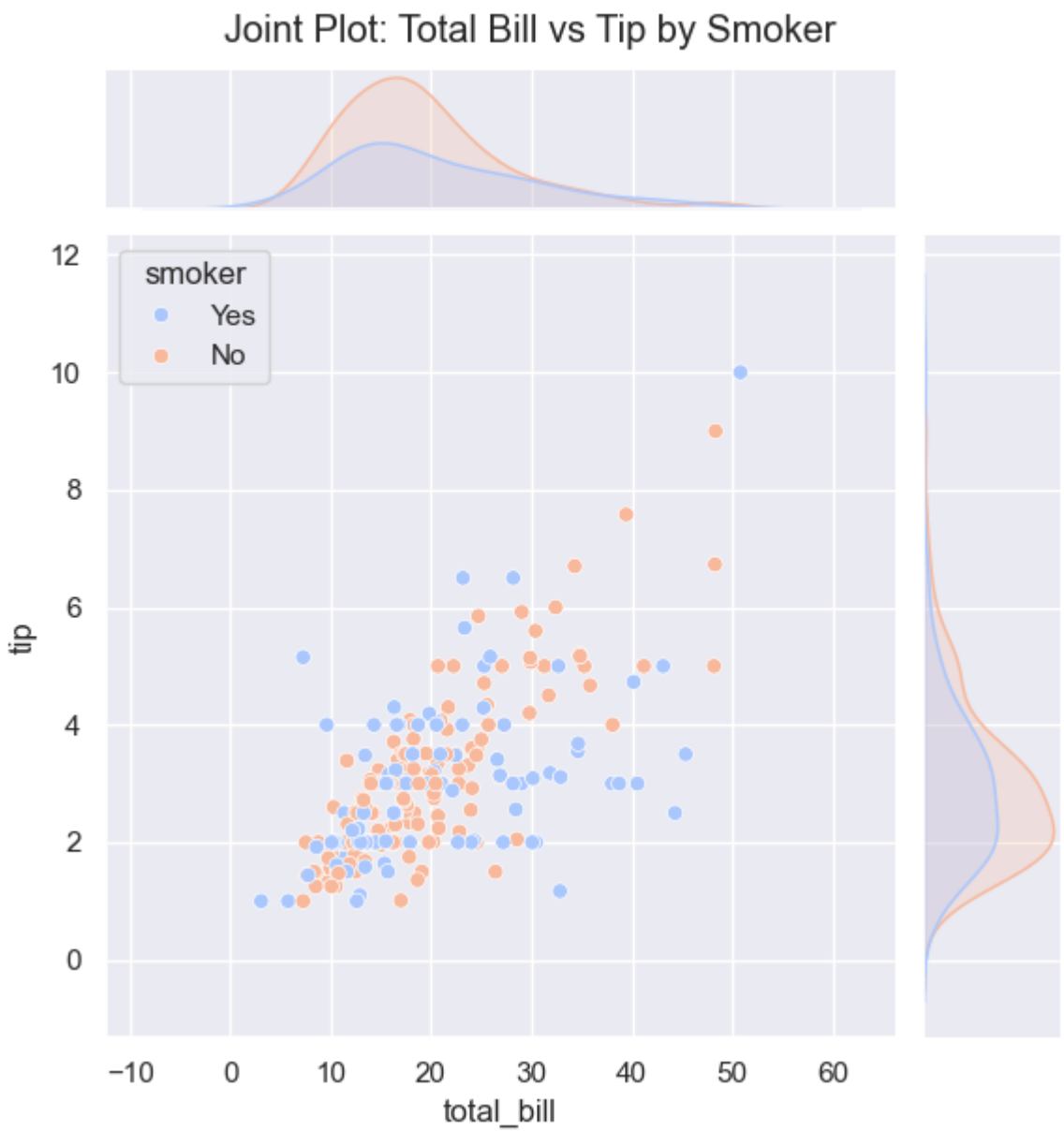

In [24]:
```
#9. Pair Plot: Relationships between numerical variables

sns.pairplot(tips, hue="sex", vars=["total_bill", "tip", "size"], palette="husl"
plt.suptitle("Pair Plot: Numerical Variables by Sex", y=1.02)
plt.show()
```



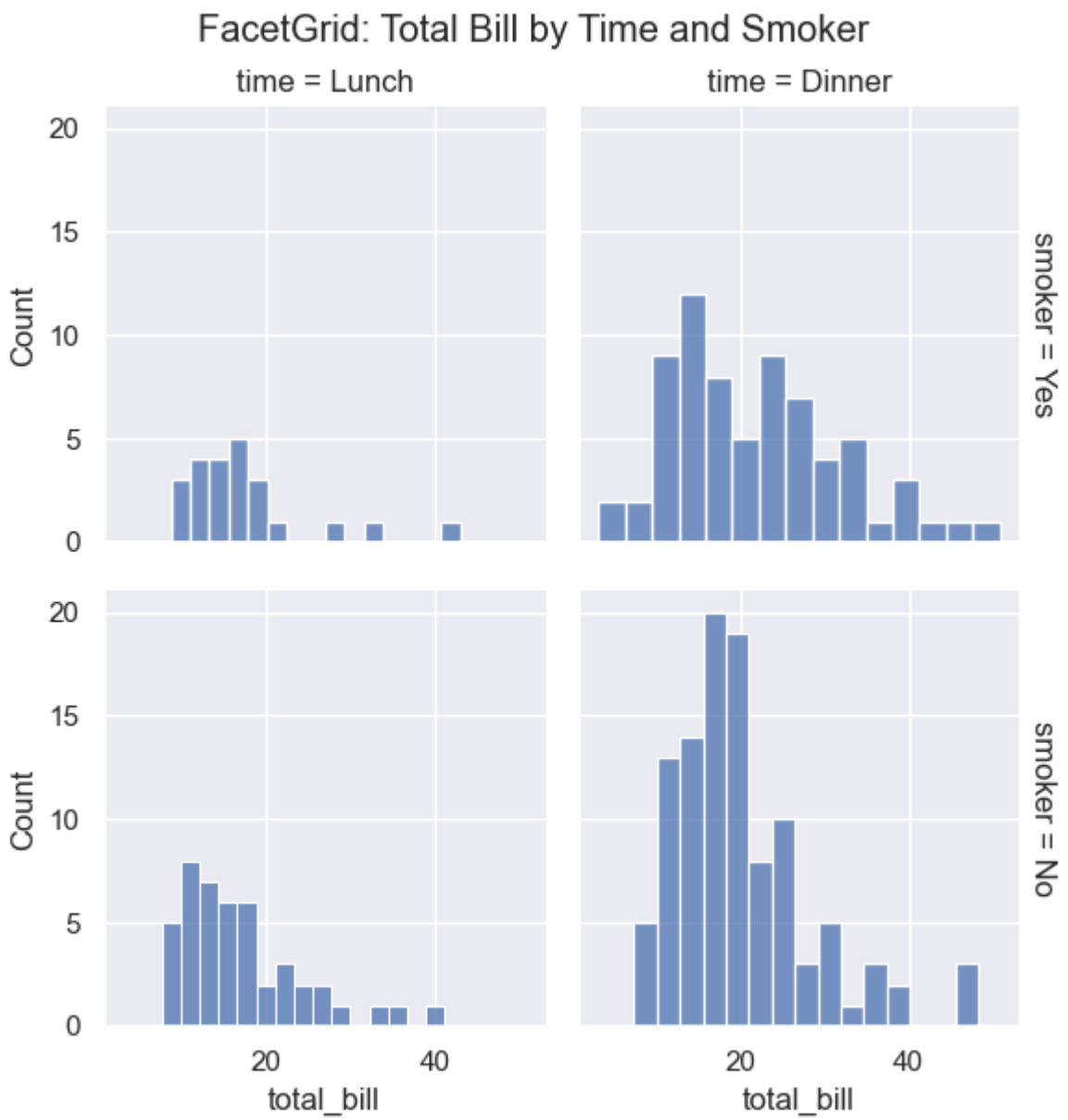

In [25]:
```
# 10. Catplot (Point Plot): Tip by Day and Sex

sns.catplot(data=tips, x="day", y="tip", hue="sex", kind="point", palette="brigh
plt.title("Catplot (Point): Tips by Day and Sex")
plt.show()
```




In [26]:
```
# 11. Joint Plot: Total Bill vs Tip with marginal distributions
sns.jointplot(data=tips, x="total_bill", y="tip", kind="scatter", hue="smoker",
plt.suptitle("Joint Plot: Total Bill vs Tip by Smoker", y=1.02)
plt.show()
```

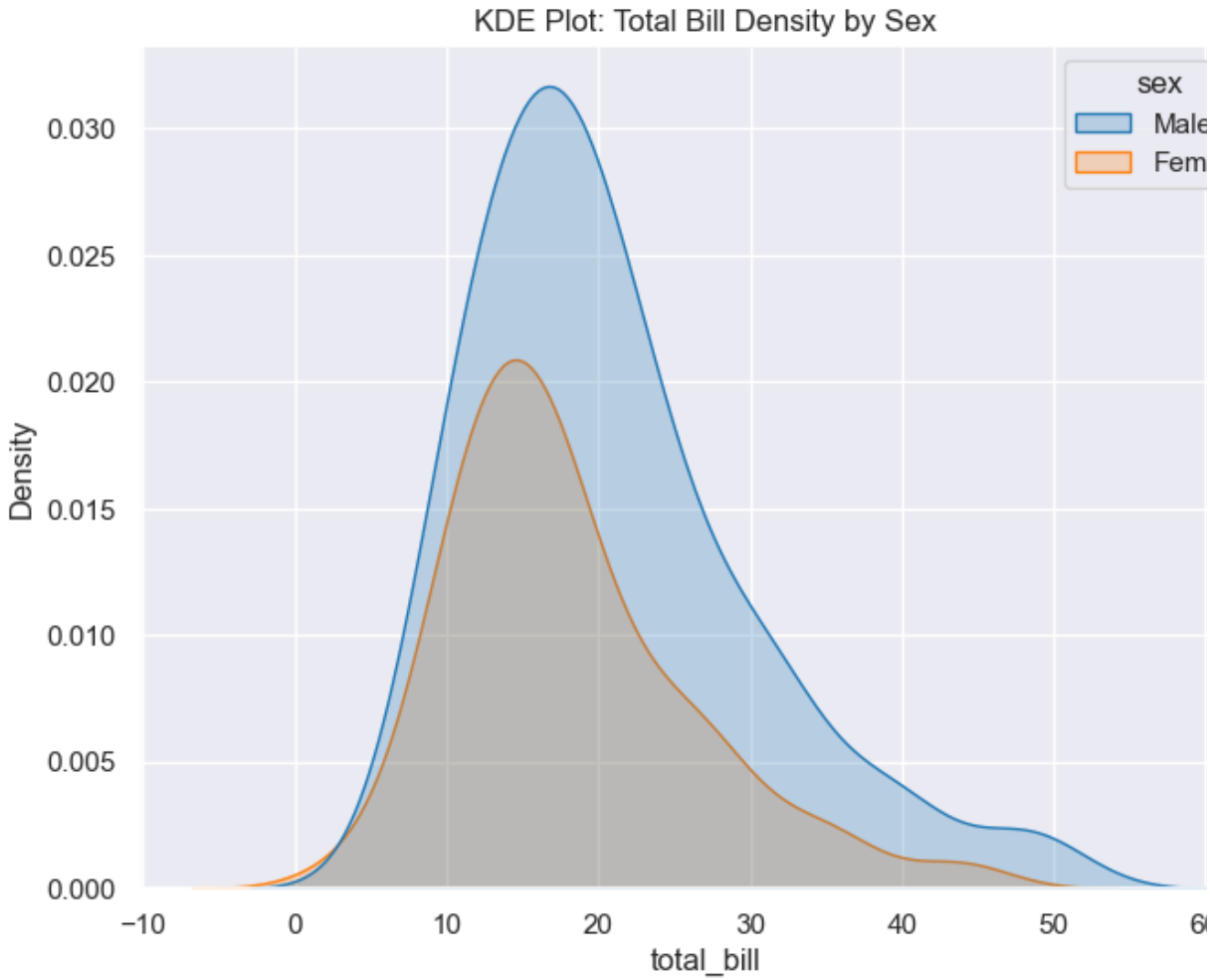



In [27]:
```
# 12. FacetGrid: Total Bill by Day, faceted by Time and Smoker
g = sns.FacetGrid(tips, col="time", row="smoker", margin_titles=True)
g.map(sns.histplot, "total_bill", bins=15)
g.fig.suptitle("FacetGrid: Total Bill by Time and Smoker", y=1.02)
plt.show()
```




In [29]:
```
# 13. Strip Plot: Tips by Day, colored by Sex
plt.figure(figsize=(8, 6))
sns.stripplot(data=tips, x="day", y="tip", hue="sex", palette="Set1", jitter=Tru
plt.title("Strip Plot: Tips by Day and Sex")
plt.show()
```


In [28]:
```
# 14. KDE Plot: Total Bill density by Sex
plt.figure(figsize=(8, 6))
sns.kdeplot(data=tips, x="total_bill", hue="sex", fill=True, palette="tab10")
plt.title("KDE Plot: Total Bill Density by Sex")
plt.show()
```


KDE Plot: Total Bill Density by Sex
sex
Male
Fem
Density
0.030
0.025
0.020
0.015
0.010
0.005
0.000
−10
0
10
20
30
40
50
total_bill