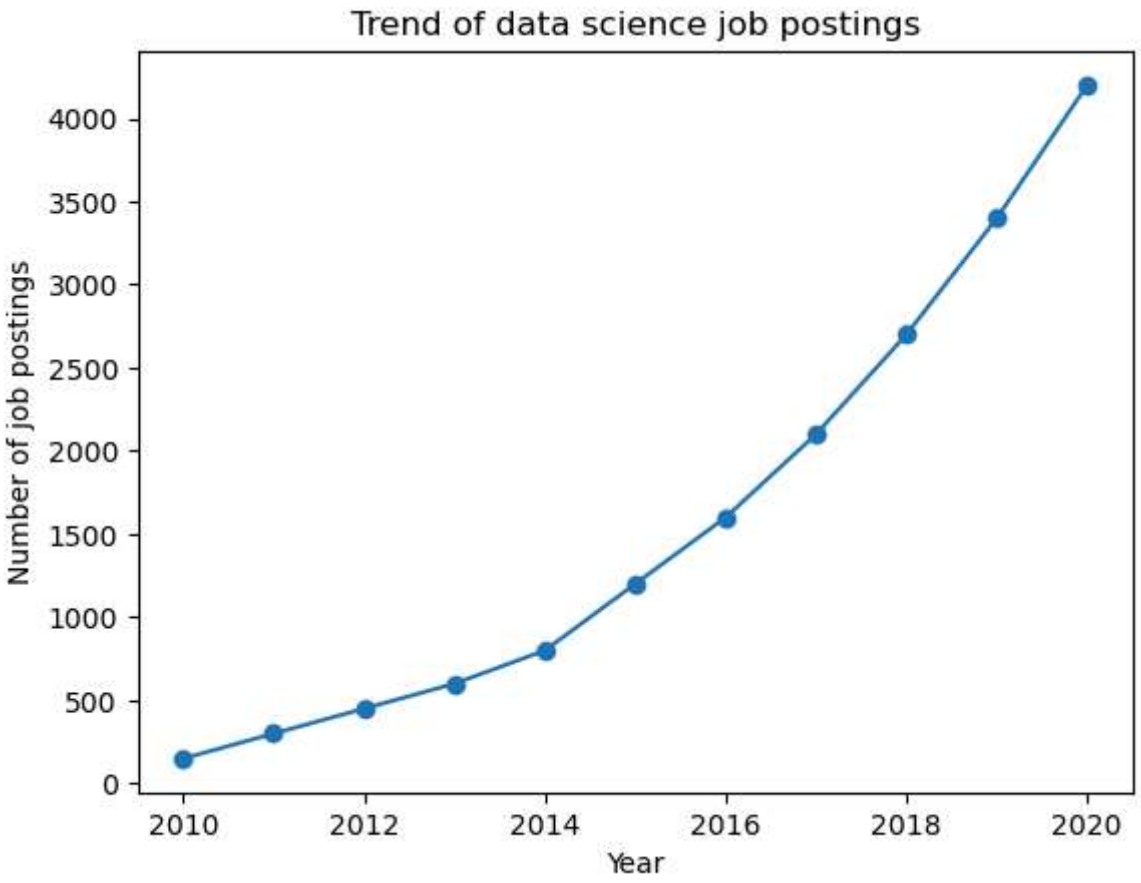
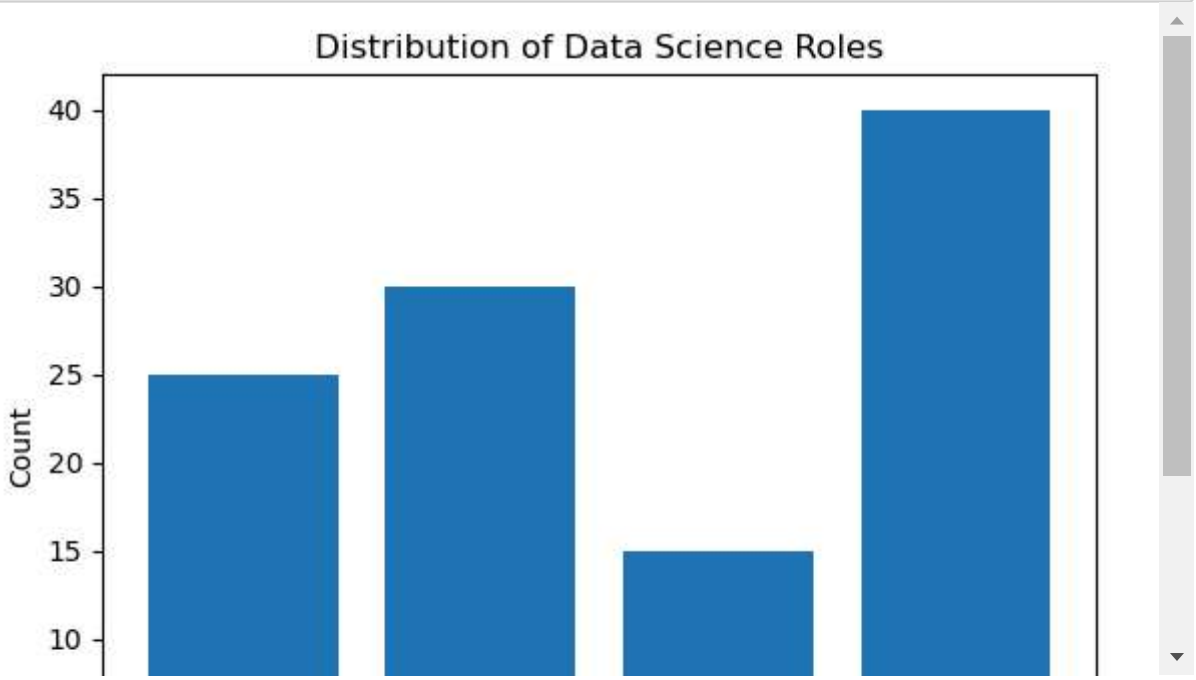
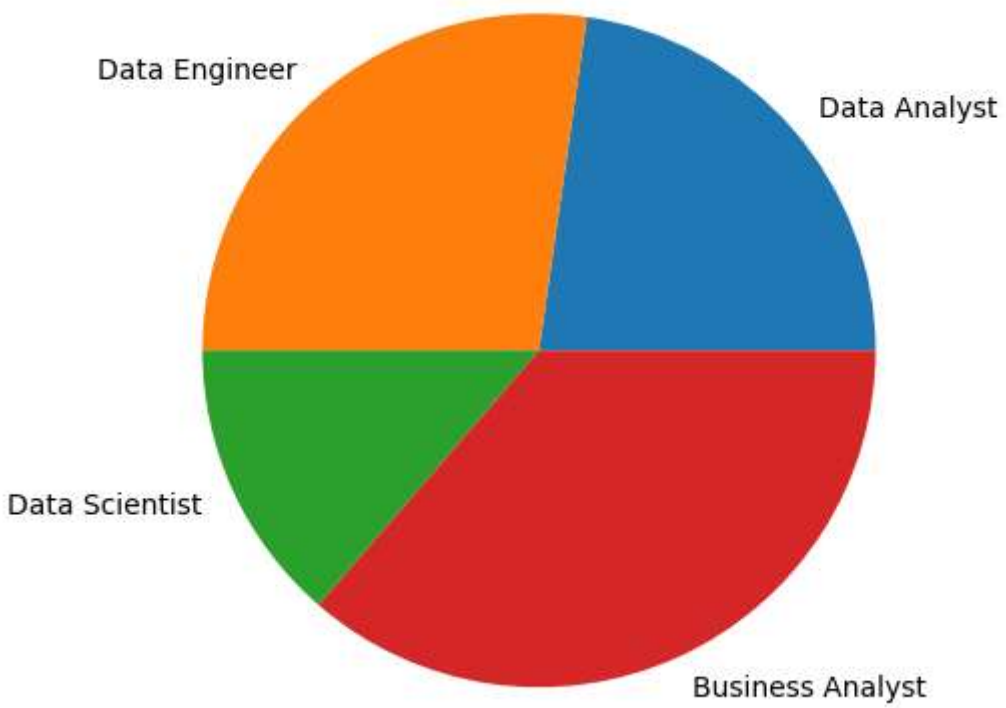
In [2]:
```
import pandas as pd
import matplotlib.pyplot as plt
data = {'Year':list(range(2010,2021)),
        'job posting':[150,300,450,600,800,1200,1600,2100,2700,3400,4200]}

df=pd.DataFrame(data)
plt.plot(df['Year'],df['job posting'],marker='o')
plt.title('Trend of data science job postings')
plt.xlabel('Year')
plt.ylabel('Number of job postings')
plt.show()
```



In [15]:
```
import pandas as pd
import matplotlib.pyplot as plt
roles=['Data Analyst','Data Engineer','Data Scientist','Business Analyst']
count=[25,30,15,40]
plt.bar(roles,count)
plt.title('Distribution of Data Science Roles')
plt.xlabel('Roles')
plt.ylabel('Count')
plt.show()
```



In [11]:
```
import matplotlib.pyplot as plt

roles = ['Data Analyst', 'Data Engineer', 'Data Scientist', 'Business Analyst']
count = [25, 30, 15, 40]
plt.pie(count, labels=roles)
plt.axis('equal')
plt.show()
```



In [12]:
```
import pandas as pd
structured_data = pd.DataFrame({
    'ID':[1,2,3],
    'Name':['Divya','Dinisha','Dhivya'],
    'Age':[18,18,18],
    'Marks':[81,80,82],})
print("Structured data:")
print(structured_data)
```

```
Structured data:
   ID     Name  Age  Marks
0   1    Divya   18     81
1   2  Dinisha   18     80
2   3   Dhivya   18     82
```

In [25]:
```
import pandas as pd
unstructured_data="This is an example of unstructured data. It can be a piece o
print("Unstructured Data:")
print(unstructured_data)
```

```
Unstructured Data:
This is an example of unstructured data. It can be a piece of text, an image,
or a video file.
```

In [24]:
```
semi_structured={'ID':1,'NAme':'Divya','Attributes':{'Age':18,'Marks':81}}
print("Unstructured Data:")
print(semi_structured)
```

```
Unstructured Data:
{'ID': 1, 'NAme': 'Divya', 'Attributes': {'Age': 18, 'Marks': 81}}
```

In [14]:
```
from cryptography.fernet import Fernet
key=Fernet.generate_key()
f=Fernet(key)
token=f.encrypt(b"My name is Divyadharshini K")
token
b'...'
f.decrypt(token)
b'My name is Divyadharshini'
key=Fernet.generate_key()
cipher_suite=Fernet(key)
plain_text=b'My name is Divyadharshini'
cipher_text=cipher_suite.encrypt(plain_text)
decrypt_text=cipher_suite.decrypt(cipher_text)
print("Original Data",plain_text)
print("Encrypted Data",cipher_text)
print("Decrypted Data",decrypt_text)
```

```
Original Data b'My name is Divyadharshini'
Encrypted Data b'gAAAAABmwr_Du53R9UajjHu5i9iaucNWFxkW9pB-eN2hH1_Wtg4NhbOWo1oP
6GExQ0u0jaW24i7sm2zTvxrPY3KUliZ2D_sx0Z5K4WjD1Xxv3mCM881caaY='
Decrypted Data b'My name is Divyadharshini'
```

In [ ]:

In [ ]:

In [3]:
```
import pandas as pd
db = pd.read_csv("Sales_Transactions_Dataset_Weekly.csv")
```

In [4]:
```
db.head()
```

Out[4]:

	Product_Code	W0	W1	W2	W3	W4	W5	W6	W7	W8	...	Normalized 42	Normalized 43	Norma
0	P1	11	12	10	8	13	12	14	21	6	...	0.06	0.22	
1	P2	7	6	3	2	7	1	6	3	3	...	0.20	0.40	
2	P3	7	11	8	9	10	8	7	13	12	...	0.27	1.00	
3	P4	12	8	13	5	9	6	9	13	13	...	0.41	0.47	
4	P5	8	5	13	11	6	7	9	14	9	...	0.27	0.53	

5 rows × 107 columns

In [5]:
```
db.tail()
```

Out[5]:

	Product_Code	W0	W1	W2	W3	W4	W5	W6	W7	W8	...	Normalized 42	Normalized 43	Norr
806	P815	0	0	1	0	0	2	1	0	0	...	0.00	0.33	
807	P816	0	1	0	0	1	2	2	6	0	...	0.43	0.43	
808	P817	1	0	0	0	1	1	2	1	1	...	0.50	0.00	
809	P818	0	0	0	1	0	0	0	0	1	...	0.00	0.00	
810	P819	0	1	0	0	0	0	0	0	0	...	0.00	0.00	

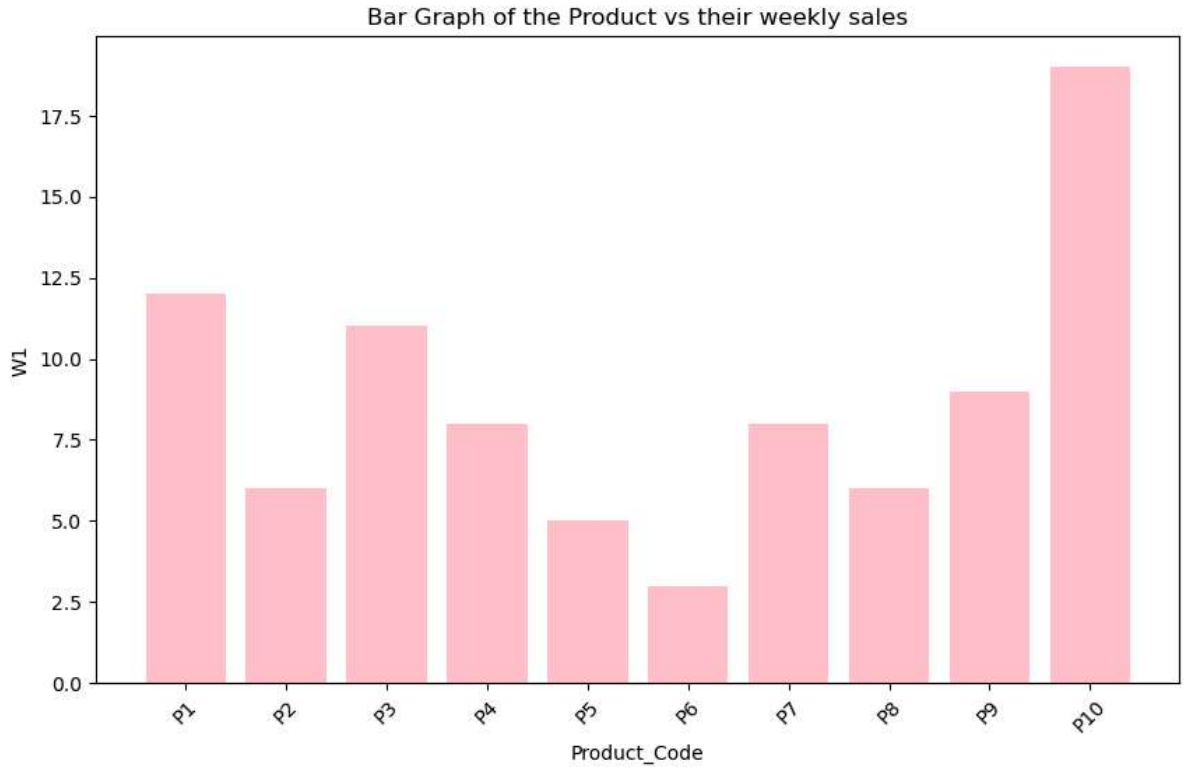
5 rows × 107 columns

In [6]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
df=pd.read_csv('Sales_Transactions_Dataset_Weekly.csv')
print(df.head())
print(df.isnull().sum())
print(df.describe)
```

```
  Product_Code  W0  W1  W2  W3  W4  W5  W6  W7  W8  ...  Normalized 42  \
0           P1  11  12  10   8  13  12  14  21   6  ...          0.06
1           P2   7   6   3   2   7   1   6   3   3  ...          0.20
2           P3   7  11   8   9  10   8   7  13  12  ...          0.27
3           P4  12   8  13   5   9   6   9  13  13  ...          0.41
4           P5   8   5  13  11   6   7   9  14   9  ...          0.27

   Normalized 43  Normalized 44  Normalized 45  Normalized 46  Normalized 47
\
0           0.22           0.28           0.39           0.50           0.00
1           0.40           0.50           0.10           0.10           0.40
2           1.00           0.18           0.18           0.36           0.45
3           0.47           0.06           0.12           0.24           0.35
4           0.53           0.27           0.60           0.20           0.20

   Normalized 48  Normalized 49  Normalized 50  Normalized 51
0           0.22           0.17           0.11           0.39
1           0.50           0.10           0.60           0.00
2           1.00           0.45           0.45           0.36
3           0.71           0.35           0.29           0.35
4           0.13           0.53           0.33           0.40

[5 rows x 107 columns]
Product_Code     0
W0               0
W1               0
W2               0
W3               0
                ..
Normalized 47    0
Normalized 48    0
Normalized 49    0
Normalized 50    0
Normalized 51    0
Length: 107, dtype: int64
<bound method NDFrame.describe of     Product_Code  W0  W1  W2  W3  W4  W5  W
6  W7  W8  ...  Normalized 42  \
0             P1  11  12  10   8  13  12  14  21   6  ...          0.06
1             P2   7   6   3   2   7   1   6   3   3  ...          0.20
2             P3   7  11   8   9  10   8   7  13  12  ...          0.27
3             P4  12   8  13   5   9   6   9  13  13  ...          0.41
4             P5   8   5  13  11   6   7   9  14   9  ...          0.27
..           ...  ..  ..  ..  ..  ..  ..  ..  ..  ..  ...           ...
806         P815   0   0   1   0   0   2   1   0   0  ...          0.00
807         P816   0   1   0   0   1   2   2   6   0  ...          0.43
808         P817   1   0   0   0   1   1   2   1   1  ...          0.50
809         P818   0   0   0   1   0   0   0   0   1  ...          0.00
810         P819   0   1   0   0   0   0   0   0   0  ...          0.00

     Normalized 43  Normalized 44  Normalized 45  Normalized 46  \
0             0.22           0.28           0.39           0.50
1             0.40           0.50           0.10           0.10
2             1.00           0.18           0.18           0.36
3             0.47           0.06           0.12           0.24
4             0.53           0.27           0.60           0.20
..             ...            ...            ...            ...
806           0.33           0.33           0.00           0.00
```

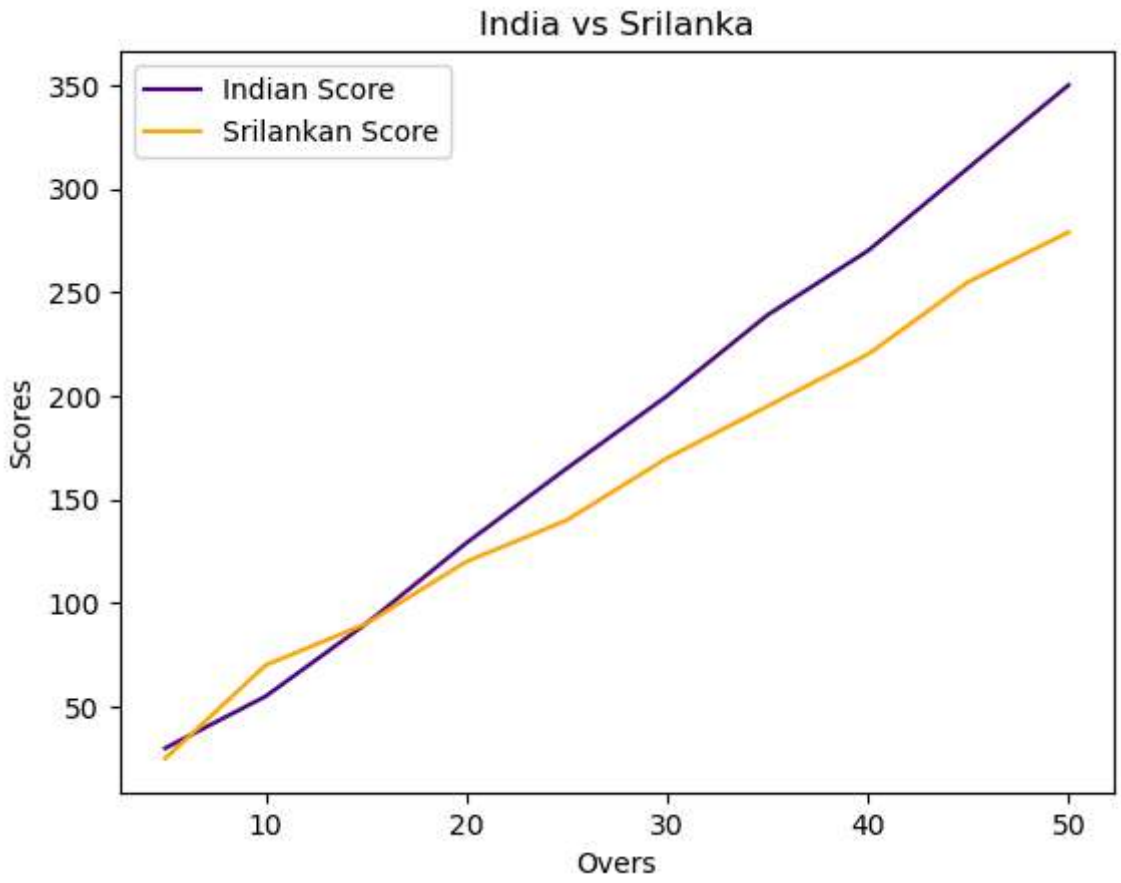
```
807           0.43           0.57           0.29           0.57
808           0.00           0.00           0.50           0.50
809           0.00           0.00           0.50           0.50
810           0.00           0.00           0.00           0.00

     Normalized 47  Normalized 48  Normalized 49  Normalized 50  Normalized 5
1
0             0.00           0.22           0.17           0.11           0.3
9
1             0.40           0.50           0.10           0.60           0.0
0
2             0.45           1.00           0.45           0.45           0.3
6
3             0.35           0.71           0.35           0.29           0.3
5
4             0.20           0.13           0.53           0.33           0.4
0
..             ...            ...            ...            ...
...
806           0.33           0.00           0.00           0.67           0.0
0
807           0.71           0.71           0.71           0.86           0.7
1
808           0.00           0.00           0.00           1.00           0.7
5
809           0.00           0.00           0.00           1.00           0.0
0
810           0.00           0.00           0.00           0.00           0.3
3

[811 rows x 107 columns]>
```

In [3]:
```
import pandas as pd
import matplotlib.pyplot as plt


df = pd.read_csv('Sales_Transactions_Dataset_Weekly.csv')

subset_df = df.head(10)
plt.figure(figsize=(10,6))
plt.bar(subset_df['Product_Code'], subset_df['W1'],color='pink')
plt.xlabel('Product_Code')
plt.ylabel('W1')
plt.title('Bar Graph of the Product vs their weekly sales')
plt.xticks(rotation=45)
plt.show()
```

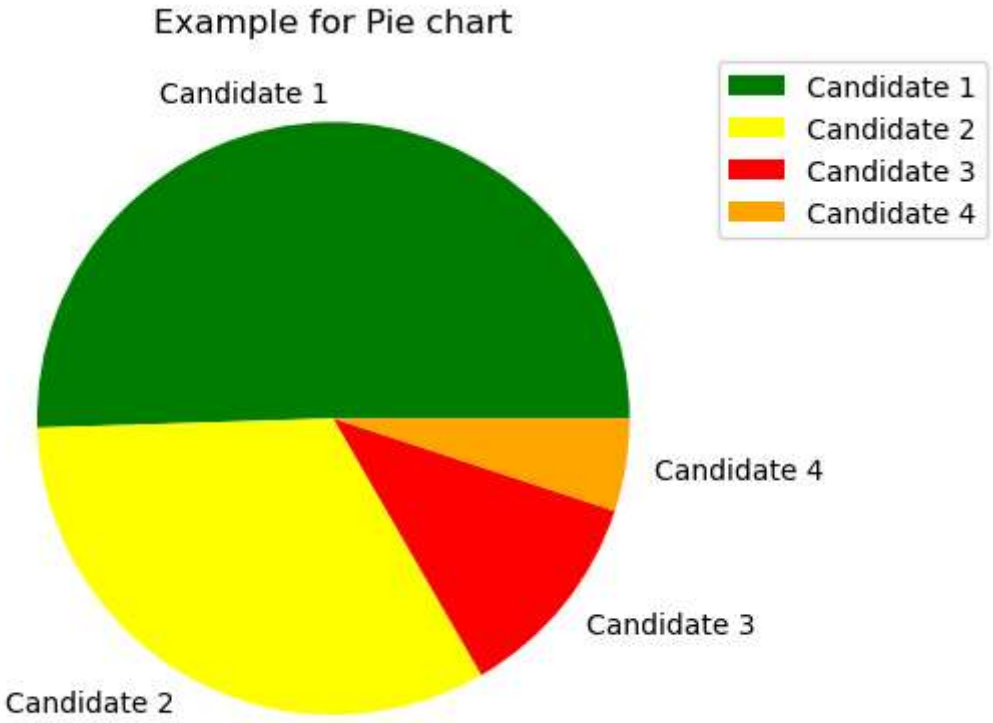


In [ ]:

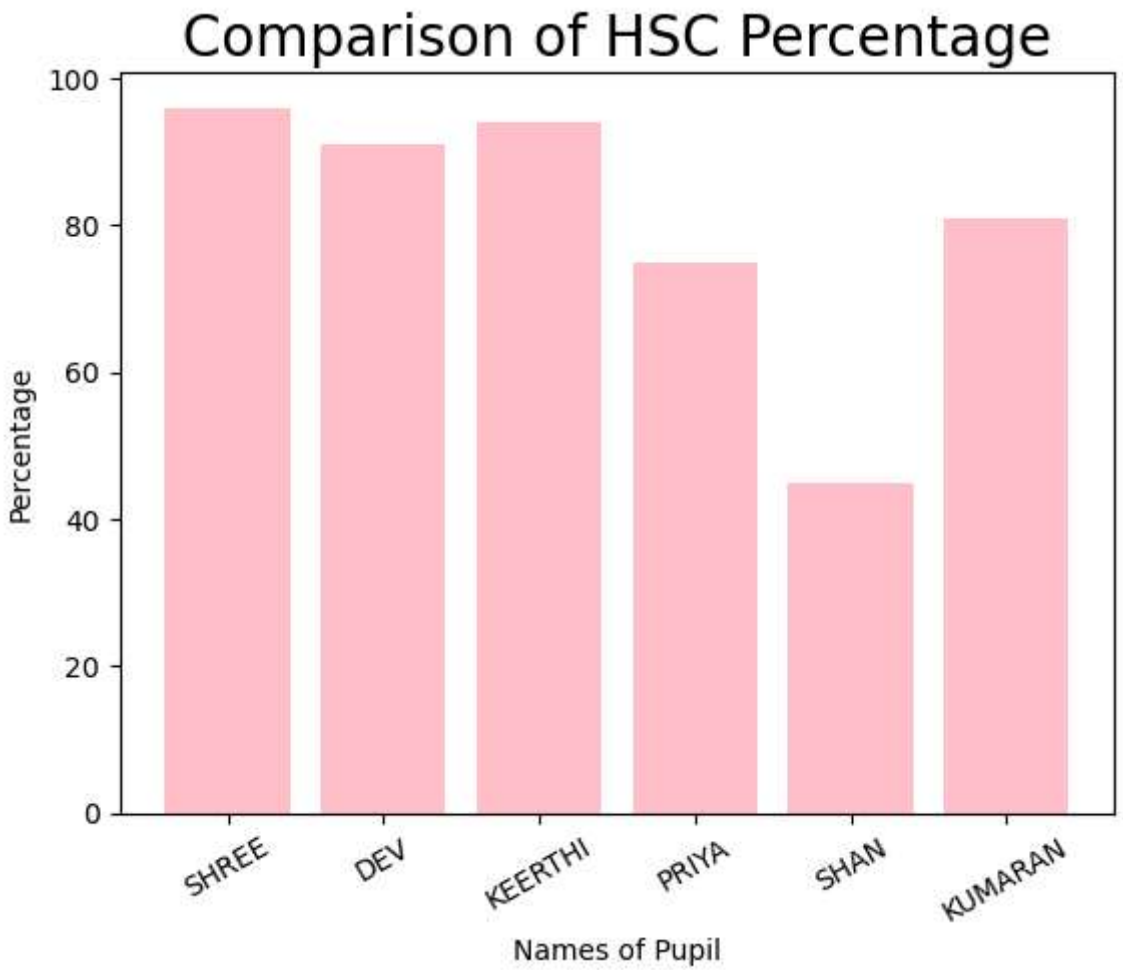
In [11]:
```
import matplotlib.pyplot as cricket
Overs=list(range(5,51,5))
Indian_Score=[30,55,90,129,165,200,239,270,310,350]
Srilankan_Score=[25,70,90,120,140,170,195,220,255,279]
cricket.plot(Overs,Indian_Score,label='Indian Score',color='indigo')
cricket.plot(Overs,Srilankan_Score,label='Srilankan Score',color='orange')
cricket.title("India vs Srilanka")
cricket.xlabel("Overs")
cricket.ylabel("Scores")
cricket.legend()
cricket.show()
```



In [15]:
```
import numpy as np
import matplotlib.pyplot as election
roles=['Candidate 1','Candidate 2','Candidate 3','Candidate 4']
count=np.array([100,65,23,10])
colours = ['green','yellow','red','orange']
election.pie(count,labels=roles,colors=colours)
election.legend(loc="upper left",bbox_to_anchor=(1,1))
election.title("Example for Pie chart")
election.show()
```



In [13]:
```
import matplotlib.pyplot as hscmark
import numpy as np
Names = ['SHREE', 'DEV', 'KEERTHI','PRIYA','SHAN','KUMARAN']
xaxis = np.arange(len(Names))
Percentage_hsc = [96, 91, 94, 75, 45, 81]
hscmark.bar(Names, Percentage_hsc,color='pink')
hscmark.xticks(xaxis, Names, rotation=30)
hscmark.xlabel('Names of Pupil')
hscmark.ylabel('Percentage')
hscmark.title('Comparison of HSC Percentage', fontsize=20, color='black')
hscmark.show()
```



In [ ]:

In [ ]:

In [4]:
```
import nltk
from nltk.tokenize import word_tokenize
from nltk.corpus import gutenberg

# Download necessary data
nltk.download('gutenberg')
nltk.download('punkt')

# Load the raw text from the Gutenberg corpus
sample = gutenberg.raw("austen-emma.txt")

# Tokenize the text
token = word_tokenize(sample)

# Get the first 50 tokens
wlist = []
for i in range(50):
    wlist.append(token[i])

# Compute word frequencies
wordfreq = [wlist.count(w) for w in wlist]

# Print the pairs of words and their frequencies
print("Pairs\n" + str(list(zip(wlist, wordfreq))))
```

```
[nltk_data] Downloading package gutenberg to
[nltk_data]     C:\Users\DELL\AppData\Roaming\nltk_data...
[nltk_data]   Package gutenberg is already up-to-date!
[nltk_data] Downloading package punkt to
[nltk_data]     C:\Users\DELL\AppData\Roaming\nltk_data...
[nltk_data]   Package punkt is already up-to-date!

Pairs
[('[', 1), ('Emma', 2), ('by', 1), ('Jane', 1), ('Austen', 1), ('1816', 1),
(']', 1), ('VOLUME', 1), ('I', 2), ('CHAPTER', 1), ('I', 2), ('Emma', 2), ('Woo
dhouse', 1), (',', 5), ('handsome', 1), (',', 5), ('clever', 1), (',', 5), ('an
d', 3), ('rich', 1), (',', 5), ('with', 2), ('a', 1), ('comfortable', 1), ('hom
e', 1), ('and', 3), ('happy', 1), ('disposition', 1), (',', 5), ('seemed', 1),
('to', 1), ('unite', 1), ('some', 1), ('of', 2), ('the', 2), ('best', 1), ('ble
ssings', 1), ('of', 2), ('existence', 1), (';', 1), ('and', 3), ('had', 1), ('l
ived', 1), ('nearly', 1), ('twenty-one', 1), ('years', 1), ('in', 1), ('the',
2), ('world', 1), ('with', 2)]
```

In [ ]:

```
import pandas as pd
import numpy as np

# Load the data
data = pd.read_csv('50_Startups.csv')



print("First few rows of the dataset:\n", data.head())
```

```
First few rows of the dataset:
      R&D Spend  Administration  Marketing Spend       State     Profit
0  165349.20       136897.80        471784.10    New York  192261.83
1  162597.70       151377.59        443898.53  California  191792.06
2  153441.51       101145.55        407934.54     Florida  191050.39
3  144372.41       118671.85        383199.62    New York  182901.99
4  142107.34        91391.77        366168.42     Florida  166187.94
```

```
print("\nData Information:\n")
print(data.info())
```

```
Data Information:

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 50 entries, 0 to 49
Data columns (total 5 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   R&D Spend        50 non-null     float64
 1   Administration   50 non-null     float64
 2   Marketing Spend  50 non-null     float64
 3   State            50 non-null     object
 4   Profit           50 non-null     float64
dtypes: float64(4), object(1)
memory usage: 2.1+ KB
None
```

```
print("\nSummary Statistics:\n", data.describe())
```

```
Summary Statistics:
             R&D Spend  Administration  Marketing Spend         Profit
count      50.000000       50.000000        50.000000      50.000000
mean    73721.615600   121344.639600    211025.097800  112012.639200
std     45902.256482    28017.802755    122290.310726   40306.180338
min         0.000000    51283.140000         0.000000   14681.400000
25%     39936.370000   103730.875000    129300.132500   90138.902500
50%     73051.080000   122699.795000    212716.240000  107978.190000
75%    101602.800000   144842.180000    299469.085000  139765.977500
max    165349.200000   182645.560000    471784.100000  192261.830000
```

```
rd_mean = np.mean(data['R&D Spend'])
rd_median = np.median(data['R&D Spend'])
rd_mode = data['R&D Spend'].mode()[0]


print("\nR&D Spend - Mean:", rd_mean)
print("R&D Spend - Median:", rd_median)
print("R&D Spend - Mode:", rd_mode)
```

```
R&D Spend - Mean: 73721.6156
R&D Spend - Median: 73051.08
R&D Spend - Mode: 0.0
```

```
Start coding or generate with AI.
```

```
import numpy as np
array=np.random.randint(1,100,16) # randomly generate 16 numbers between 1 to 100
array
```

```
array([22, 48, 70,  7, 46, 92, 25, 31, 38, 12, 92,  4,  5, 55, 70, 61])
```

```
array.mean()
```

```
42.375
```

```
np.percentile(array,25)
```

```
19.5
```

Generate create a dataframe with 2 columns and 10 rows Close

```
np.percentile(array,50)
```

```
42.0
```

```
np.percentile(array,75)
```

```
63.25
```

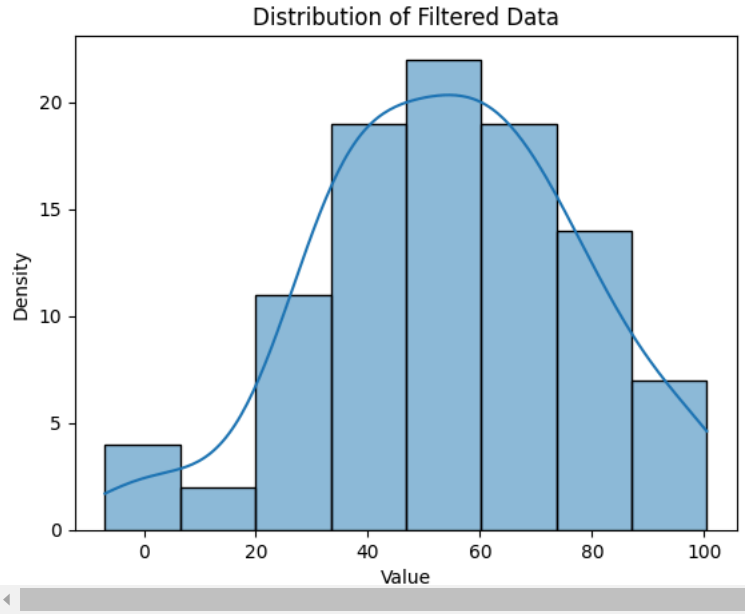
```
np.percentile(array,100)
```

```
92.0
```

```
def outDetection(array):
  array = sorted(array)
  Q1,Q3=np.percentile(array,[25,75])
  IQR=Q3-Q1
  lr=Q1-(1.5*IQR)
  ur=Q3+(1.5*IQR)
  return lr,ur
  lr,ur=outDetection(array)
  print(f"Lower range: {lr}, Upper range: {ur}")

array = np.random.normal(50, 25, 100)  # Example data
lr, ur = outDetection(array)
```

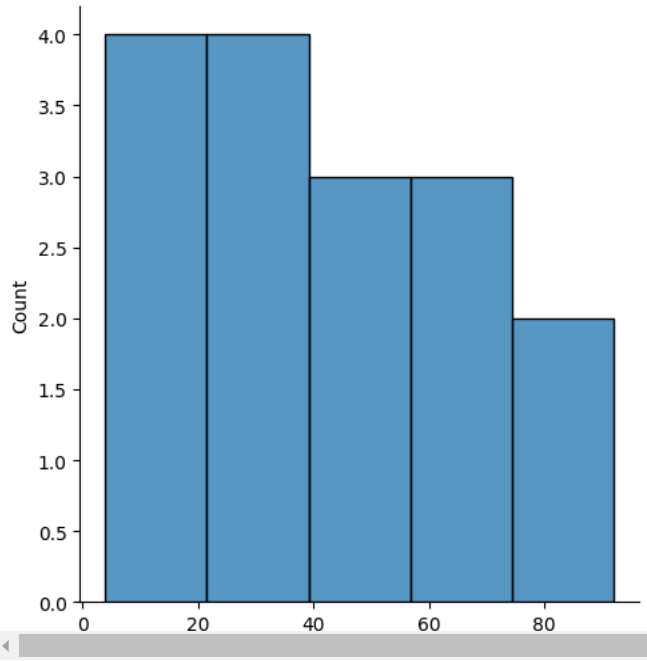
```
new_array = array[(array > lr) & (array < ur)]
```

```
sns.histplot(new_array, kde=True)
plt.xlabel("Value")
plt.ylabel("Density")
plt.title("Distribution of Filtered Data")
plt.show()
```




```
import seaborn as sns
%matplotlib inline
sns.displot(array)
```

```
<seaborn.axisgrid.FacetGrid at 0x7d0420ce9720>
```




```
new_array=array[(array>lr) & (array<ur)]
new_array
```

```
array([ 51.85014358,  34.83238679,  77.04117029,  99.26725507,
        26.25845082,  36.55006652,  29.2200325 ,   0.50667154,
        92.68224723,  68.30384579,  85.22523265,  55.66082601,
        17.78219061,  30.61821963,  40.97552024,  38.12614615,
        65.53605085,  72.35388289,  35.05798932,  65.28154547,
        61.81971967,  32.88327386,  76.46605909,  78.38958672,
         5.3214148 ,  42.68977065,  35.26354792,  35.57908961,
        63.13906371,  30.39185285,  52.19093272,  59.33087816,
        32.95300973,  44.81792357,  66.60719456,  64.22163439,
        57.54990457,  74.23770306,  48.42495291,  83.83619692,
        67.54061757,  78.38961525,  74.7177832 ,  61.91326406,
        27.28447422,  99.22865942,   1.20433312,  64.77780984,
        58.48901255,  99.43959417,  25.34749132,  60.67309344,
        40.39807124,  88.98561119,  56.66616456,  76.25656706,
        14.30884977,  42.29200712,  57.87269478,  46.95598493,
        -6.92314481,  31.07105886,  43.14610168,  60.6575837 ,
        43.99197508,  51.06009871,  67.72425833,  57.53197055,
        69.21108884, 100.49349834,  57.58021145,  56.38544687,
        85.59862204,  53.43489242,  47.31269244,  45.15913115,
        47.64678649,  37.9176987 ,  46.88784929,  65.72125821,
```

```
              31.95537796,  72.94356225,  86.22206455,  38.10331451,
              74.79789395,  53.18122882,  23.71646192,  37.42530255,
              55.99624825,  48.16180217,  72.39876339,  85.0479005 ,
              34.62866742,  70.10360734,  99.4590022 ,  43.74685633,
              84.41366831,  50.21390904])
```

```
lr1,ur1=outDetection(new_array)
lr1,ur1
```

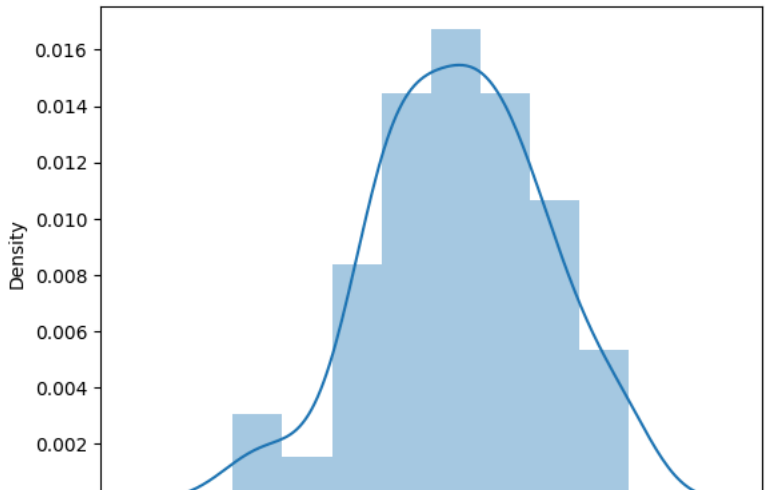
```
(-9.910459929045743, 117.75504029782823)
```

```
final_array=new_array[(new_array>lr1) & (new_array<ur1)]
final_array
```

```
array([ 51.85014358,  34.83238679,  77.04117029,  99.26725507,
              26.25845082,  36.55006652,  29.2200325 ,   0.50667154,
              92.68224723,  68.30384579,  85.22523265,  55.66082601,
              17.78219061,  30.61821963,  40.97552024,  38.12614615,
              65.53605085,  72.35388289,  35.05798932,  65.28154547,
              61.81971967,  32.88327386,  76.46605909,  78.38958672,
               5.3214148 ,  42.68977065,  35.26354792,  35.57908961,
              63.13906371,  30.39185285,  52.19093272,  59.33087816,
              32.95300973,  44.81792357,  66.60719456,  64.22163439,
              57.54990457,  74.23770306,  48.42495291,  83.83619692,
              67.54061757,  78.38961525,  74.7177832 ,  61.91326406,
              27.28447422,  99.22865942,   1.20433312,  64.77780984,
              58.48901255,  99.43959417,  25.34749132,  60.67309344,
              40.39807124,  88.98561119,  56.66616456,  76.25656706,
              14.30884977,  42.29200712,  57.87269478,  46.95598493,
              -6.92314481,  31.07105886,  43.14610168,  60.6575837 ,
              43.99197508,  51.06009871,  67.72425833,  57.53197055,
              69.21108884, 100.49349834,  57.58021145,  56.38544687,
              85.59862204,  53.43489242,  47.31269244,  45.15913115,
              47.64678649,  37.9176987 ,  46.88784929,  65.72125821,
              31.95537796,  72.94356225,  86.22206455,  38.10331451,
              74.79789395,  53.18122882,  23.71646192,  37.42530255,
              55.99624825,  48.16180217,  72.39876339,  85.0479005 ,
              34.62866742,  70.10360734,  99.4590022 ,  43.74685633,
              84.41366831,  50.21390904])
```

```
sns.distplot(final_array)
```

```
<ipython-input-28-7ba96ada5b76>:1: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

  sns.distplot(final_array)
<Axes: ylabel='Density'>
```



```
import numpy as np
import pandas as pd
df=pd.read_csv("Hotel_Dataset.csv")
print(df)
```

```
    CustomerID Age_Group  Rating(1-5)      Hotel FoodPreference  Bill  \
0            1     20-25            4       Ibis            veg  1300
1            2     30-35            5  LemonTree        Non-Veg  2000
2            3     25-30            6     RedFox            Veg  1322
3            4     20-25           -1  LemonTree            Veg  1234
4            5       35+            3       Ibis     Vegetarian   989
5            6       35+            3       Ibys        Non-Veg  1909
6            7       35+            4     RedFox     Vegetarian  1000
7            8     20-25            7  LemonTree            Veg  2999
8            9     25-30            2       Ibis        Non-Veg  3456
9            9     25-30            2       Ibis        Non-Veg  3456
10          10     30-35            5     RedFox        non-Veg -6755

    NoOfPax  EstimatedSalary Age_Group.1
0         2           40000       20-25
1         3           59000       30-35
2         2           30000       25-30
3         2          120000       20-25
4         2           45000         35+
5         2          122220         35+
6        -1           21122         35+
7       -10          345673       20-25
8         3          -99999       25-30
9         3          -99999       25-30
10        4           87777       30-35
```

```
df.duplicated()
```

	0
0	False
1	False
2	False
3	False
4	False
5	False
6	False
7	False
8	False
9	True
10	False

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11 entries, 0 to 10
Data columns (total 9 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   CustomerID       11 non-null     int64
 1   Age_Group        11 non-null     object
 2   Rating(1-5)      11 non-null     int64
 3   Hotel            11 non-null     object
 4   FoodPreference   11 non-null     object
 5   Bill             11 non-null     int64
 6   NoOfPax          11 non-null     int64
 7   EstimatedSalary  11 non-null     int64
 8   Age_Group.1      11 non-null     object
dtypes: int64(5), object(4)
memory usage: 920.0+ bytes
```

```
df.drop_duplicates(inplace=True)
df
```

	CustomerID	Age_Group	Rating(1-5)	Hotel	FoodPreference	Bill	NoOfPax	EstimatedSalary	Age_Group.1
0	1	20-25	4	Ibis	veg	1300	2	40000	20-25
1	2	30-35	5	LemonTree	Non-Veg	2000	3	59000	30-35
2	3	25-30	6	RedFox	Veg	1322	2	30000	25-30
3	4	20-25	-1	LemonTree	Veg	1234	2	120000	20-25
4	5	35+	3	Ibis	Vegetarian	989	2	45000	35+
5	6	35+	3	Ibys	Non-Veg	1909	2	122220	35+
6	7	35+	4	RedFox	Vegetarian	1000	-1	21122	35+
7	8	20-25	7	LemonTree	Veg	2999	-10	345673	20-25
8	9	25-30	2	Ibis	Non-Veg	3456	3	-99999	25-30
10	10	30-35	5	RedFox	non-Veg	-6755	4	87777	30-35

Next steps: Generate code with df View recommended plots New interactive sheet

```
len(df)
```

```
10
```

```
index=np.array(list(range(0,len(df))))
df.set_index(index,inplace=True)
index
```

```
array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])
```

```
print(df.columns)
```

```
Index(['CustomerID', 'Rating(1-5)', 'Hotel', 'FoodPreference', 'Bill',
       'NoOfPax', 'EstimatedSalary'],
      dtype='object')
```

```
import numpy as np

df.loc[df.CustomerID < 0, 'CustomerID'] = np.nan
df.loc[df.Bill < 0, 'Bill'] = np.nan
df.loc[df.EstimatedSalary < 0, 'EstimatedSalary'] = np.nan
df
```

	CustomerID	Age_Group	Rating(1-5)	Hotel	FoodPreference	Bill	NoOfPax	EstimatedSalary
0	1.0	20-25	4	Ibis	veg	1300.0	2	40000.0
1	2.0	30-35	5	LemonTree	Non-Veg	2000.0	3	59000.0
2	3.0	25-30	6	RedFox	Veg	1322.0	2	30000.0
3	4.0	20-25	-1	LemonTree	Veg	1234.0	2	120000.0
4	5.0	35+	3	Ibis	Vegetarian	989.0	2	45000.0
5	6.0	35+	3	Ibys	Non-Veg	1909.0	2	122220.0
6	7.0	35+	4	RedFox	Vegetarian	1000.0	-1	21122.0
7	8.0	20-25	7	LemonTree	Veg	2999.0	-10	345673.0
8	9.0	25-30	2	Ibis	Non-Veg	3456.0	3	NaN
9	10.0	30-35	5	RedFox	non-Veg	NaN	4	87777.0

Next steps: Generate code with df View recommended plots New interactive sheet

```
df['NoOfPax'].loc[(df['NoOfPax']<1) | (df['NoOfPax']>20)]=np.nan
df
```

```
<ipython-input-13-55d18ab59348>:1: FutureWarning: ChainedAssignmentError: behaviour will change in pandas 3.0!
You are setting values through chained assignment. Currently this works in certain cases, but when using Copy-on-Write (which will b
A typical example is when you are setting values in a column of a DataFrame, like:

df["col"][row_indexer] = value

Use `df.loc[row_indexer, "col"] = values` instead, to perform the assignment in a single step and ensure this keeps updating the ori

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus

  df['NoOfPax'].loc[(df['NoOfPax']<1) | (df['NoOfPax']>20)]=np.nan
<ipython-input-13-55d18ab59348>:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus
  df['NoOfPax'].loc[(df['NoOfPax']<1) | (df['NoOfPax']>20)]=np.nan
```

	CustomerID	Age_Group	Rating(1-5)	Hotel	FoodPreference	Bill	NoOfPax	EstimatedSalary
0	1.0	20-25	4	Ibis	veg	1300.0	2.0	40000.0
1	2.0	30-35	5	LemonTree	Non-Veg	2000.0	3.0	59000.0
2	3.0	25-30	6	RedFox	Veg	1322.0	2.0	30000.0
3	4.0	20-25	-1	LemonTree	Veg	1234.0	2.0	120000.0
4	5.0	35+	3	Ibis	Vegetarian	989.0	2.0	45000.0
5	6.0	35+	3	Ibys	Non-Veg	1909.0	2.0	122220.0
6	7.0	35+	4	RedFox	Vegetarian	1000.0	NaN	21122.0
7	8.0	20-25	7	LemonTree	Veg	2999.0	NaN	345673.0
8	9.0	25-30	2	Ibis	Non-Veg	3456.0	3.0	NaN
9	10.0	30-35	5	RedFox	non-Veg	NaN	4.0	87777.0

Next steps: Generate code with df | View recommended plots | New interactive sheet

```
df.Age_Group.unique()
```

```
array(['20-25', '30-35', '25-30', '35+'], dtype=object)
```

```
df.Hotel.unique()
```

```
array(['Ibis', 'LemonTree', 'RedFox', 'Ibys'], dtype=object)
```

```
df.Hotel.replace(['Ibys'],'Ibis',inplace=True)
print(df.FoodPreference.unique)
```

```
<bound method Series.unique of 0        Veg
1    Non-Veg
2        Veg
3        Veg
4        Veg
5    Non-Veg
6        Veg
7        Veg
8    Non-Veg
9    Non-Veg
Name: FoodPreference, dtype: object>
```

```
df.EstimatedSalary.fillna(round(df.EstimatedSalary.mean()),inplace=True)
df.NoOfPax.fillna(round(df.NoOfPax.median()),inplace=True)
df['Rating(1-5)'].fillna(round(df['Rating(1-5)'].median()), inplace=True)
df.Bill.fillna(round(df.Bill.mean()),inplace=True)
df
```

```
<ipython-input-19-9197dedb9332>:1: FutureWarning: A value is trying to be set on a copy of a DataFrame or Series through chained ass
The behavior will change in pandas 3.0. This inplace method will never work because the intermediate object on which we are setting

For example, when doing 'df[col].method(value, inplace=True)', try using 'df.method({col: value}, inplace=True)' or df[col] = df[col

  df.EstimatedSalary.fillna(round(df.EstimatedSalary.mean()),inplace=True)
<ipython-input-19-9197dedb9332>:2: FutureWarning: A value is trying to be set on a copy of a DataFrame or Series through chained ass
The behavior will change in pandas 3.0. This inplace method will never work because the intermediate object on which we are setting

For example, when doing 'df[col].method(value, inplace=True)', try using 'df.method({col: value}, inplace=True)' or df[col] = df[col

  df.NoOfPax.fillna(round(df.NoOfPax.median()),inplace=True)
<ipython-input-19-9197dedb9332>:3: FutureWarning: A value is trying to be set on a copy of a DataFrame or Series through chained ass
The behavior will change in pandas 3.0. This inplace method will never work because the intermediate object on which we are setting

For example, when doing 'df[col].method(value, inplace=True)', try using 'df.method({col: value}, inplace=True)' or df[col] = df[col

  df['Rating(1-5)'].fillna(round(df['Rating(1-5)'].median()), inplace=True)
<ipython-input-19-9197dedb9332>:4: FutureWarning: A value is trying to be set on a copy of a DataFrame or Series through chained ass
The behavior will change in pandas 3.0. This inplace method will never work because the intermediate object on which we are setting

For example, when doing 'df[col].method(value, inplace=True)', try using 'df.method({col: value}, inplace=True)' or df[col] = df[col

  df.Bill.fillna(round(df.Bill.mean()),inplace=True)
```

	CustomerID	Age_Group	Rating(1-5)	Hotel	FoodPreference	Bill	NoOfPax	EstimatedSalary
0	1.0	20-25	4	Ibis	Veg	1300.0	2.0	40000.0
1	2.0	30-35	5	LemonTree	Non-Veg	2000.0	3.0	59000.0
2	3.0	25-30	6	RedFox	Veg	1322.0	2.0	30000.0
3	4.0	20-25	-1	LemonTree	Veg	1234.0	2.0	120000.0
4	5.0	35+	3	Ibis	Veg	989.0	2.0	45000.0
5	6.0	35+	3	Ibis	Non-Veg	1909.0	2.0	122220.0
6	7.0	35+	4	RedFox	Veg	1000.0	2.0	21122.0
7	8.0	20-25	7	LemonTree	Veg	2999.0	2.0	345673.0
8	9.0	25-30	2	Ibis	Non-Veg	3456.0	3.0	96755.0
9	10.0	30-35	5	RedFox	Non-Veg	1801.0	4.0	87777.0

Next steps: Generate code with df | View recommended plots | New interactive sheet

```
df.FoodPreference.replace(['Vegetarian','veg'],'Veg',inplace=True)
df.FoodPreference.replace(['non-Veg'],'Non-Veg',inplace=True)
```

```
import numpy as np
import pandas as pd
df=pd.read_csv("/content/pre-process_datasample.csv")
df
```

	Country	Age	Salary	Purchased
0	France	44.0	72000.0	No
1	Spain	27.0	48000.0	Yes
2	Germany	30.0	54000.0	No
3	Spain	38.0	61000.0	No
4	Germany	40.0	NaN	Yes
5	France	35.0	58000.0	Yes
6	Spain	NaN	52000.0	No
7	France	48.0	79000.0	Yes
8	NaN	50.0	83000.0	No
9	France	37.0	67000.0	Yes

Double-click (or enter) to edit

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10 entries, 0 to 9
Data columns (total 4 columns):
 #   Column     Non-Null Count  Dtype  
---  ------     --------------  -----  
 0   Country    9 non-null      object 
 1   Age        9 non-null      float64
 2   Salary     9 non-null      float64
 3   Purchased  10 non-null     object 
dtypes: float64(2), object(2)
memory usage: 448.0+ bytes
```

```
df.Country.mode()
```

	Country
0	France

```
df.Country.mode()[0]
```

```
type(df.Country.mode())
```

```
pandas.core.series.Series
def __init__(data=None, index=None, dtype: Dtype | None=None, name=None, copy: bool | None=None,
fastpath: bool=False) -> None
    index is not None, the resulting Series is reindexed with the index values.
dtype : str, numpy.dtype, or ExtensionDtype, optional
    Data type for the output Series. If not specified, this will be
    inferred from `data`.
    See the :ref:`user guide <basics.dtypes>` for more usages.
name : Hashable, default None
    The name to give to the Series.
```

```
df.Country.fillna(df.Country.mode()[0],inplace=True)
```

```
df.Age.fillna(df.Age.median(),inplace=True)
```

```
df.Salary.fillna(round(df.Salary.mean()),inplace=True)
```

```
df
```

	Country	Age	Salary	Purchased
0	France	44.0	72000.0	No
1	Spain	27.0	48000.0	Yes
2	Germany	30.0	54000.0	No
3	Spain	38.0	61000.0	No
4	Germany	40.0	63778.0	Yes
5	France	35.0	58000.0	Yes
6	Spain	38.0	52000.0	No
7	France	48.0	79000.0	Yes
8	France	50.0	83000.0	No
9	France	37.0	67000.0	Yes

```
pd.get_dummies(df.Country)
```

	France	Germany	Spain
0	True	False	False
1	False	False	True
2	False	True	False
3	False	False	True
4	False	True	False
5	True	False	False
6	False	False	True
7	True	False	False
8	True	False	False
9	True	False	False

```
updated_dataset=pd.concat([pd.get_dummies(df.Country),df.iloc[:,[1,2,3]]],axis=1)
```

```
updated_dataset
```

	France	Germany	Spain	Age	Salary	Purchased
0	True	False	False	44.0	72000.0	No
1	False	False	True	27.0	48000.0	Yes
2	False	True	False	30.0	54000.0	No
3	False	False	True	38.0	61000.0	No
4	False	True	False	40.0	63778.0	Yes
5	True	False	False	35.0	58000.0	Yes
6	False	False	True	38.0	52000.0	No
7	True	False	False	48.0	79000.0	Yes
8	True	False	False	50.0	83000.0	No
9	True	False	False	37.0	67000.0	Yes

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10 entries, 0 to 9
Data columns (total 4 columns):
 #   Column     Non-Null Count  Dtype  
---  ------     --------------  -----  
 0   Country    10 non-null     object 
 1   Age        10 non-null     float64
 2   Salary     10 non-null     float64
 3   Purchased  10 non-null     object 
dtypes: float64(2), object(2)
memory usage: 448.0+ bytes
```

```
updated_dataset.Purchased.replace(['No','Yes'],[0,1],inplace=True)
```

```
updated_dataset
```

	France	Germany	Spain	Age	Salary	Purchased
0	True	False	False	44.0	72000.0	0
1	False	False	True	27.0	48000.0	1
2	False	True	False	30.0	54000.0	0
3	False	False	True	38.0	61000.0	0
4	False	True	False	40.0	63778.0	1
5	True	False	False	35.0	58000.0	1
6	False	False	True	38.0	52000.0	0
7	True	False	False	48.0	79000.0	1
8	True	False	False	50.0	83000.0	0
9	True	False	False	37.0	67000.0	1

Start coding or generate with AI.

Start coding or generate with AI.

Generate print hello world using rot13 Close

Focus the last run cell

```
import seaborn as sns
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
tips=sns.load_dataset('tips')
```

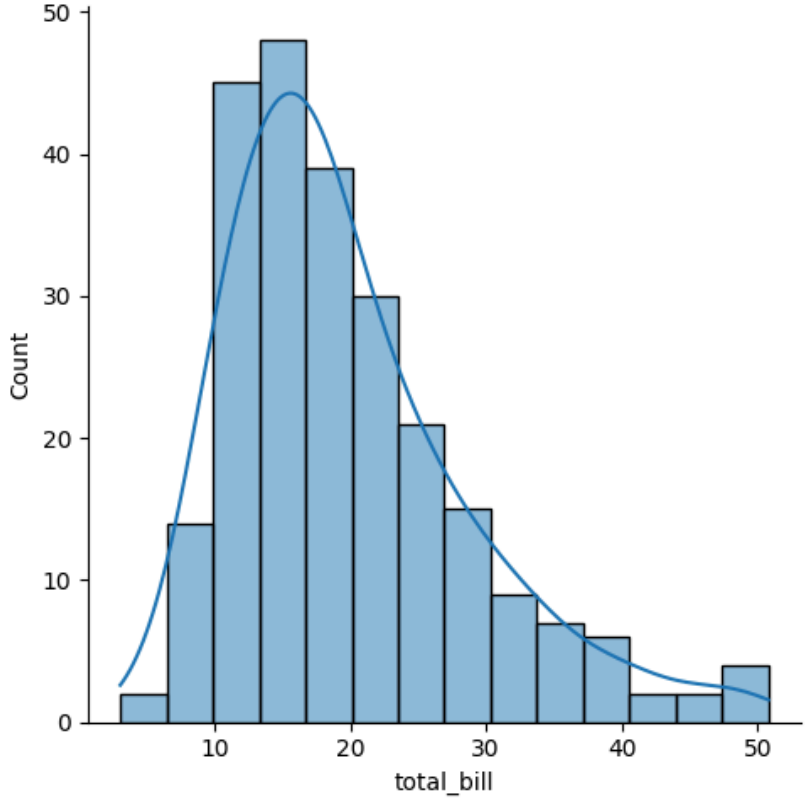
```
tips.head()
```

	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

Next steps: Generate code with tips View recommended plots New interactive sheet

```
sns.displot(tips.total_bill,kde=True)
```

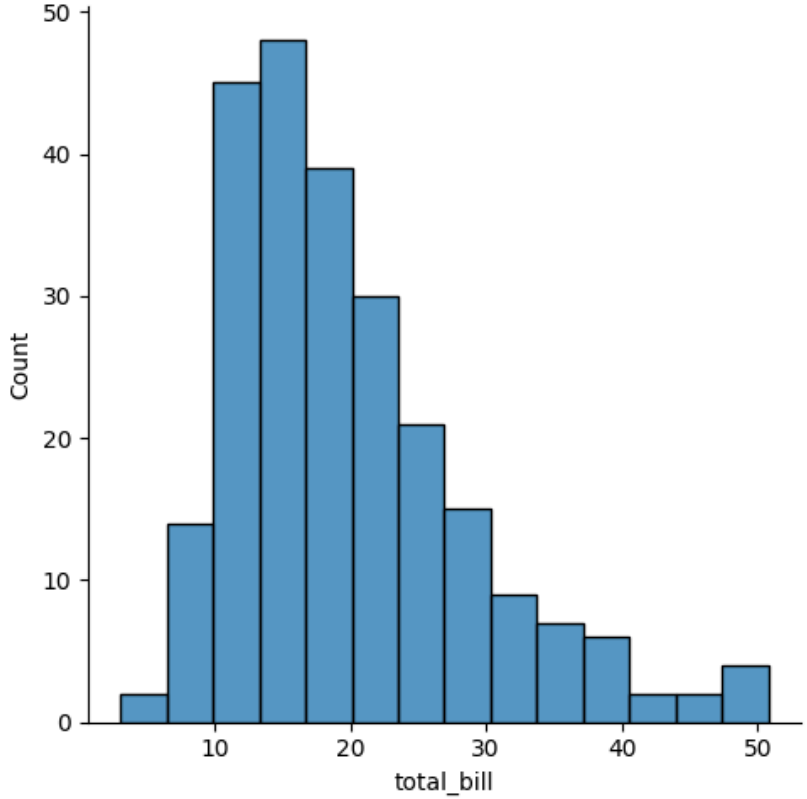
```
<seaborn.axisgrid.FacetGrid at 0x7ed92f79f8b0>
```



Focus the last run cell

```
sns.displot(tips.total_bill,kde=False)
```

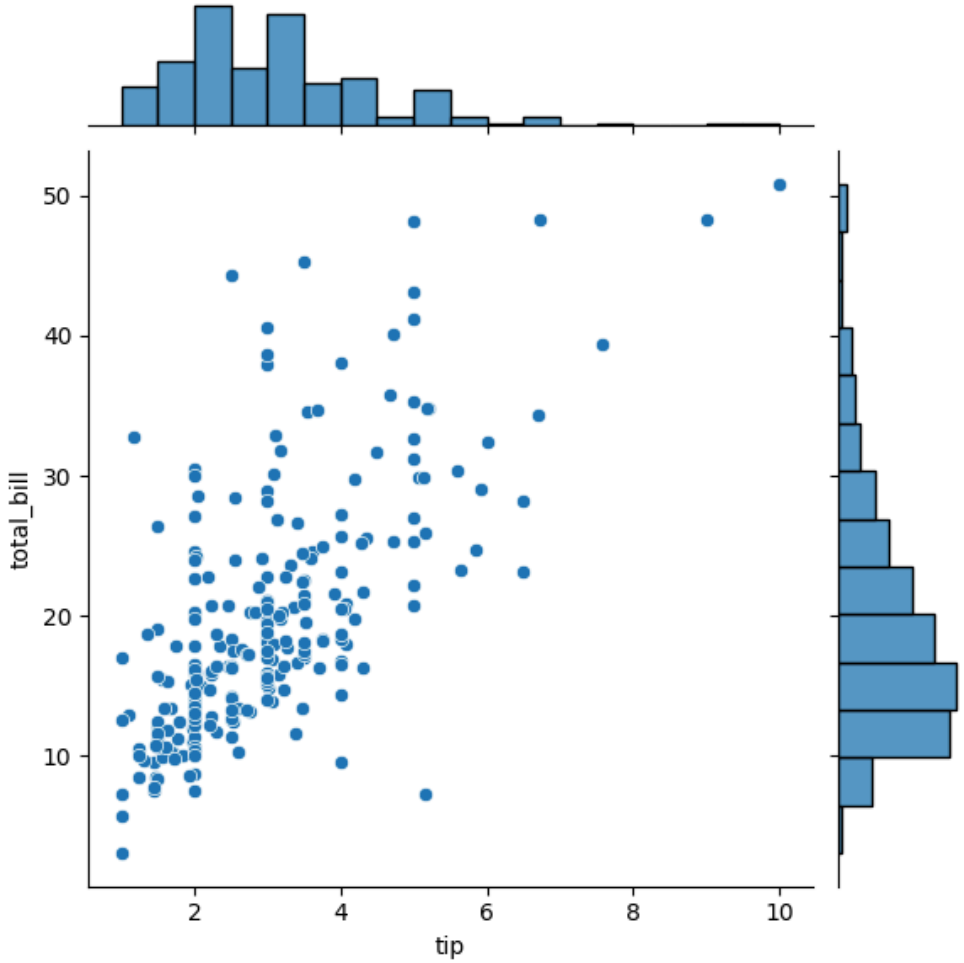
```
<seaborn.axisgrid.FacetGrid at 0x7ed96b8ad2d0>
```



Focus the last run cell

```
sns.jointplot(x=tips.tip,y=tips.total_bill)
```

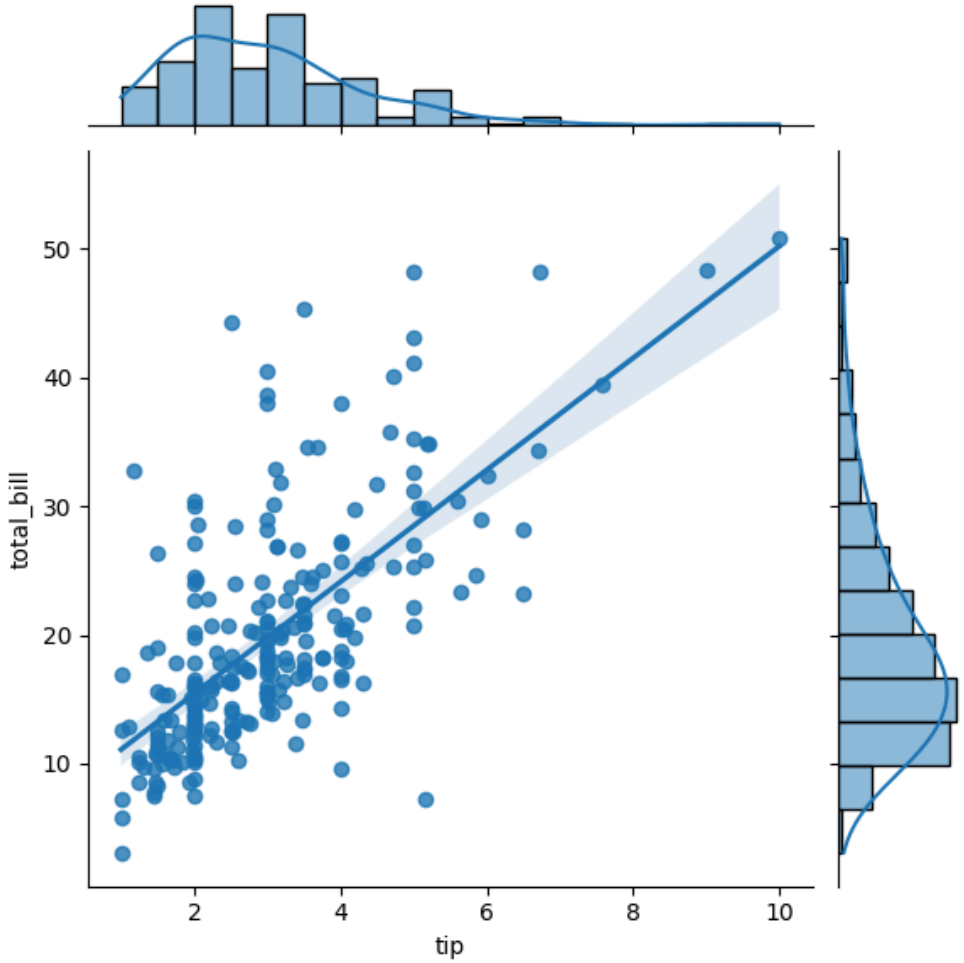
```
<seaborn.axisgrid.JointGrid at 0x7ed92e7d1750>
```



Focus the last run cell

```
sns.jointplot(x=tips.tip,y=tips.total_bill,kind="reg")
```

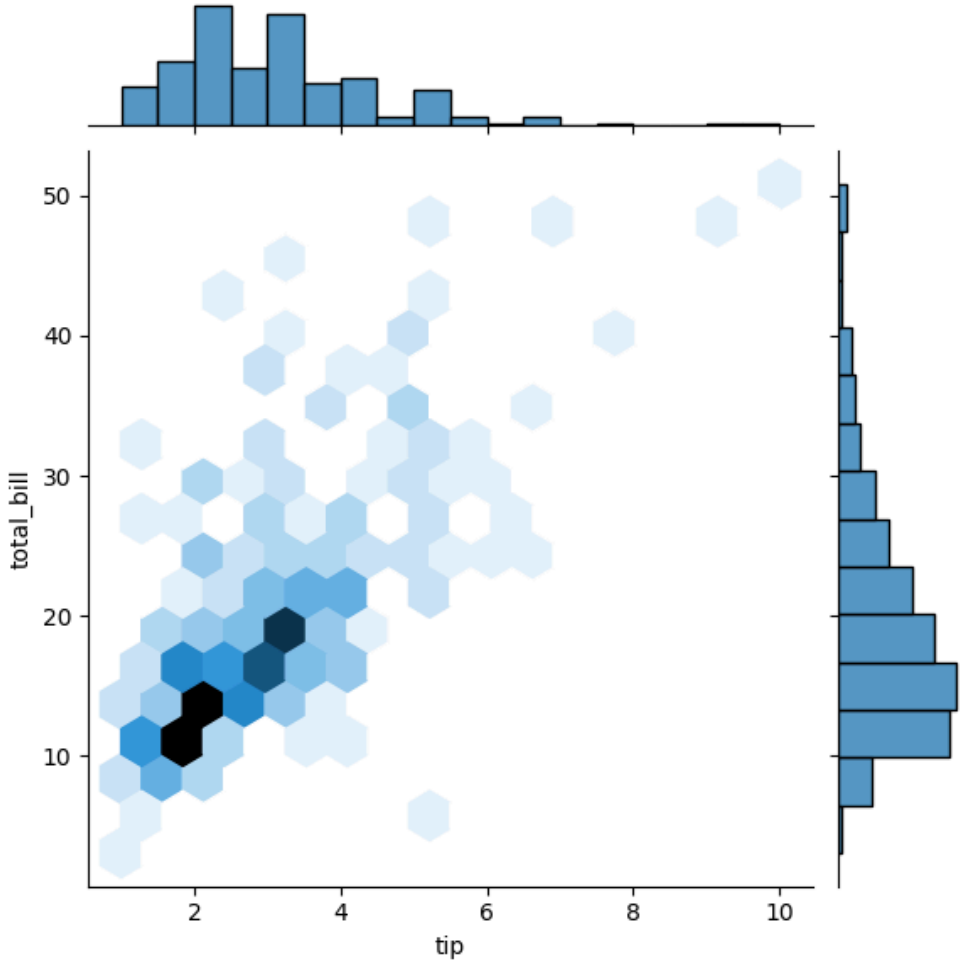
```
<seaborn.axisgrid.JointGrid at 0x7ed92e7d16c0>
```



Focus the last run cell

```
sns.jointplot(x=tips.tip,y=tips.total_bill,kind="hex")
```

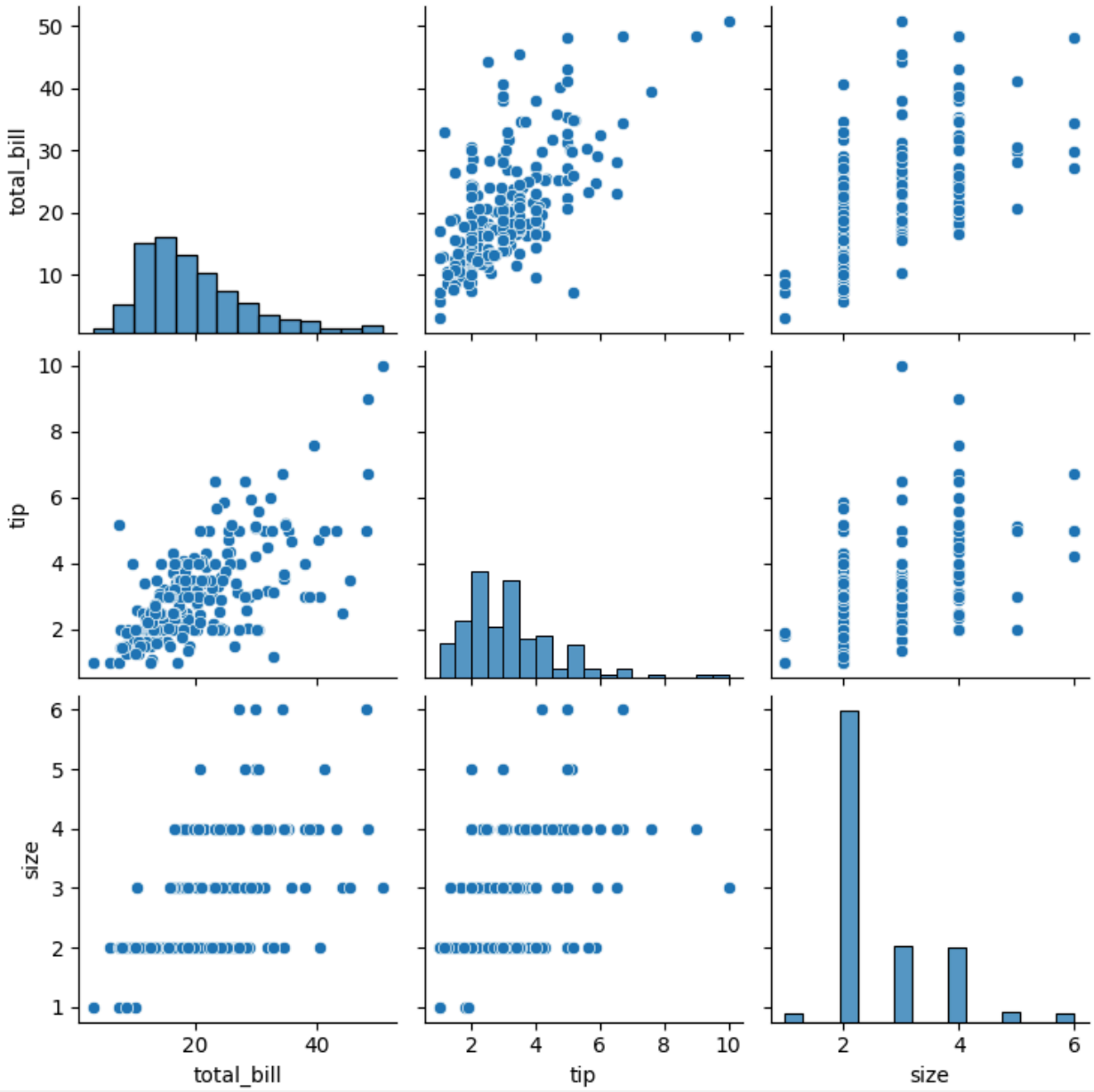
```
<seaborn.axisgrid.JointGrid at 0x7ed92be52860>
```



Focus the last run cell

```
sns.pairplot(tips)
```

```
<seaborn.axisgrid.PairGrid at 0x7ed92b44c2e0>
```



Focus the last run cell

```
tips.time.value_counts()
```

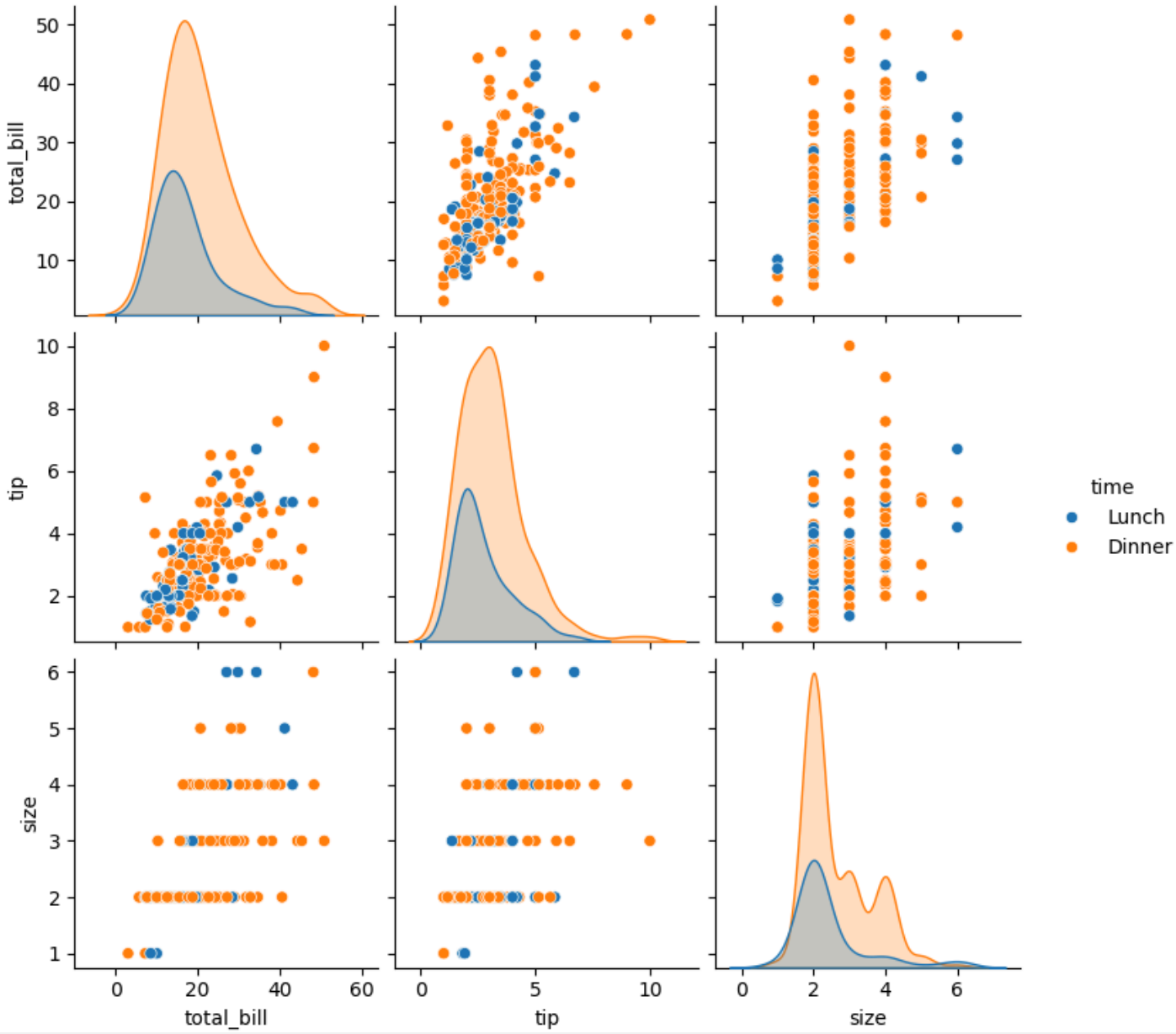
time	count
Dinner	176
Lunch	68

dtype: int64

Focus the last run cell

```
sns.pairplot(tips,hue='time')
```

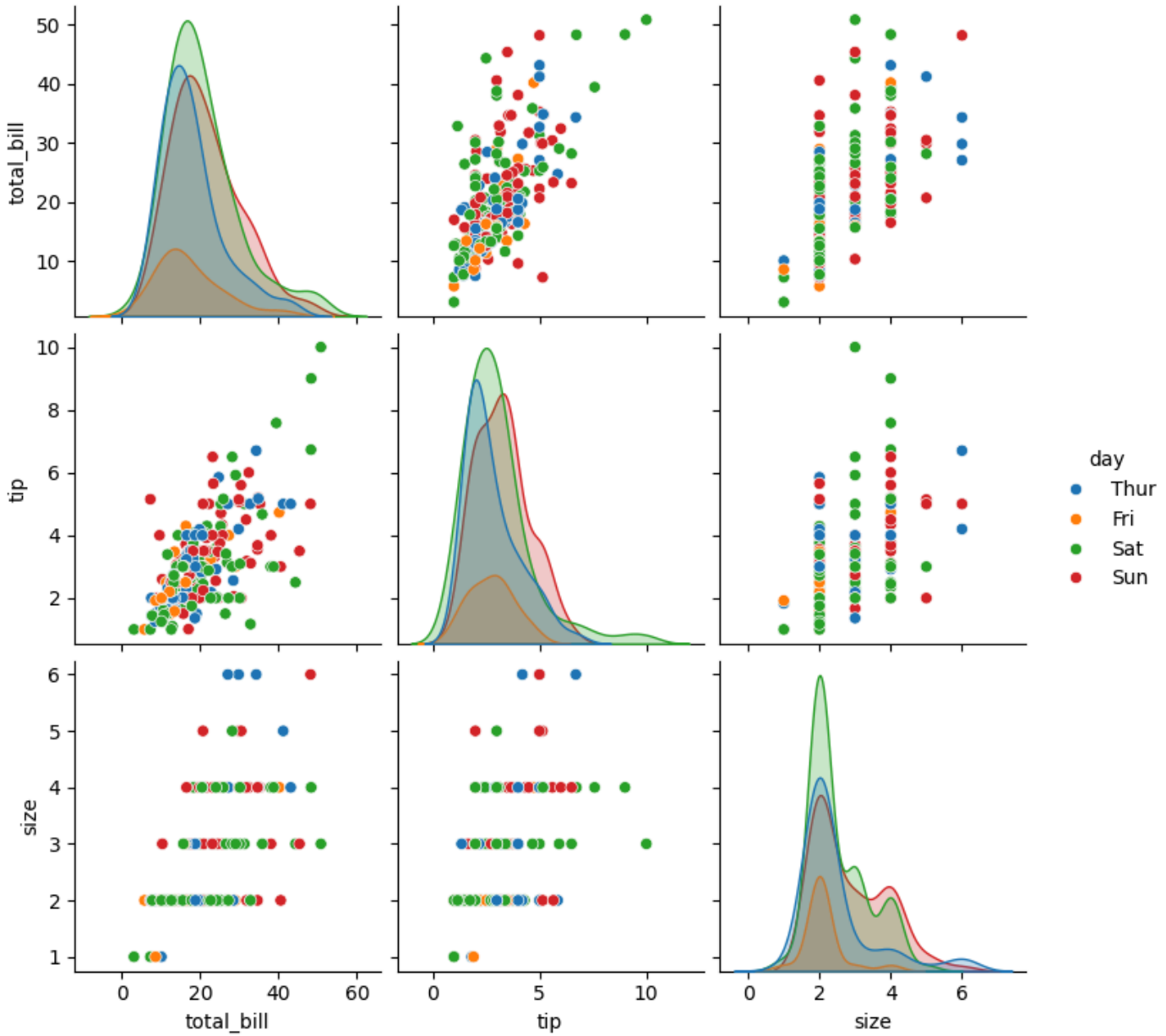
```
<seaborn.axisgrid.PairGrid at 0x7ed92ab86f80>
```



Focus the last run cell

```
sns.pairplot(tips,hue='day')
```

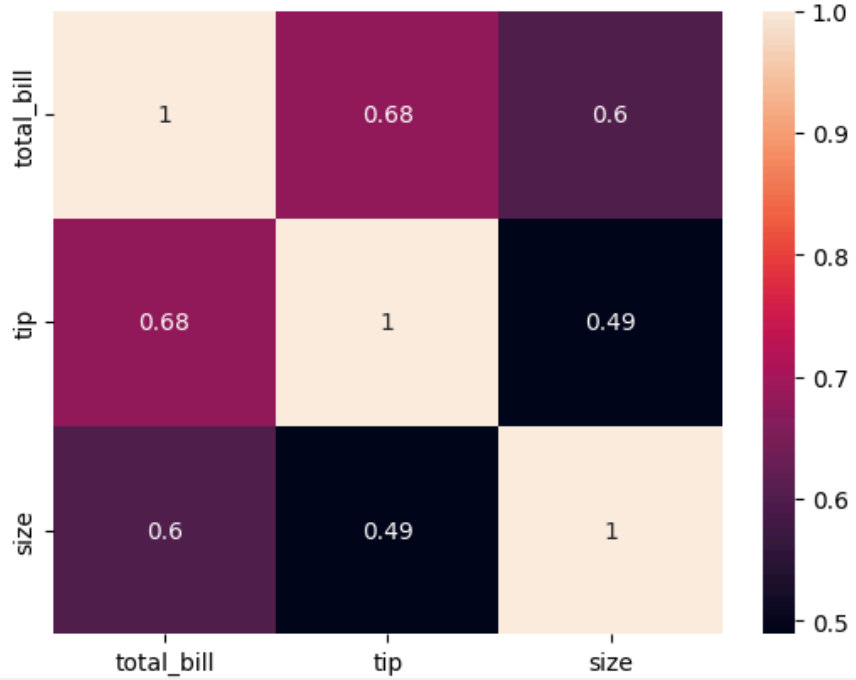
```
<seaborn.axisgrid.PairGrid at 0x7ed92a836a40>
```



Focus the last run cell

```
sns.heatmap(tips.corr(numeric_only=True),annot=True)
```

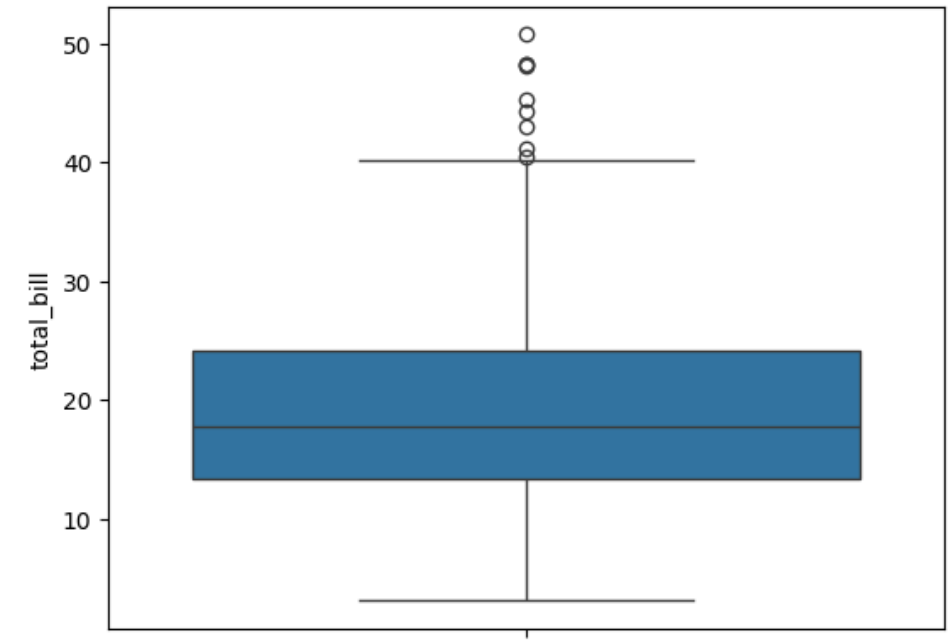
<Axes: >



Focus the last run cell

```
sns.boxplot(tips.total_bill)
```

```
<Axes: ylabel='total_bill'>
```



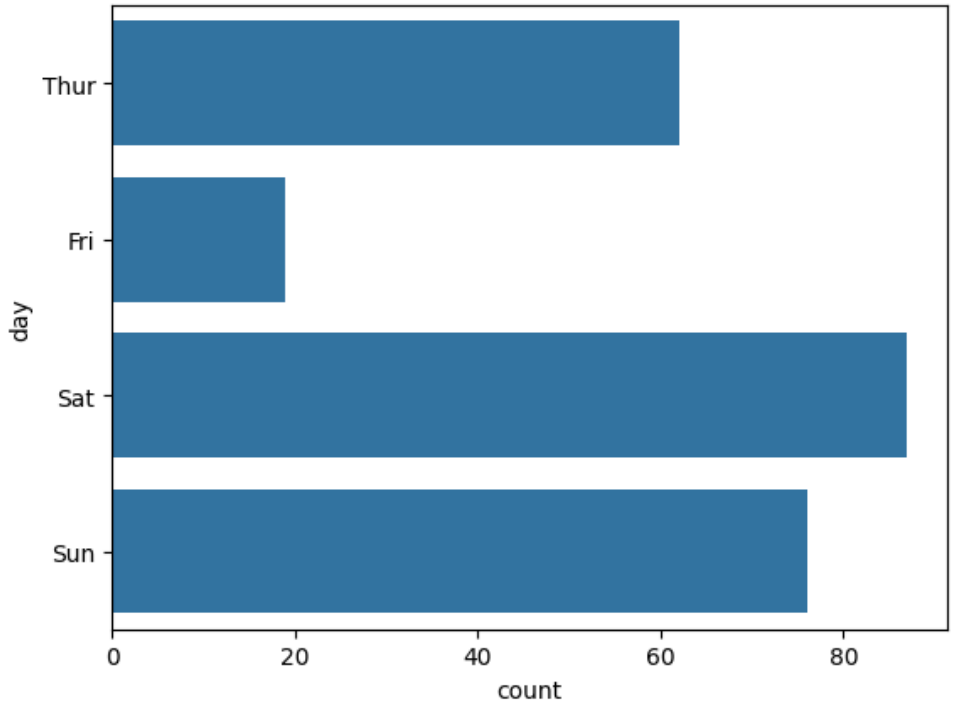
Focus the last run cell

```
sns.boxplot(tips.tip)
```

```
<Axes: ylabel='tip'>
```


```
sns.countplot(tips.day)
```

```
<Axes: xlabel='count', ylabel='day'>
```



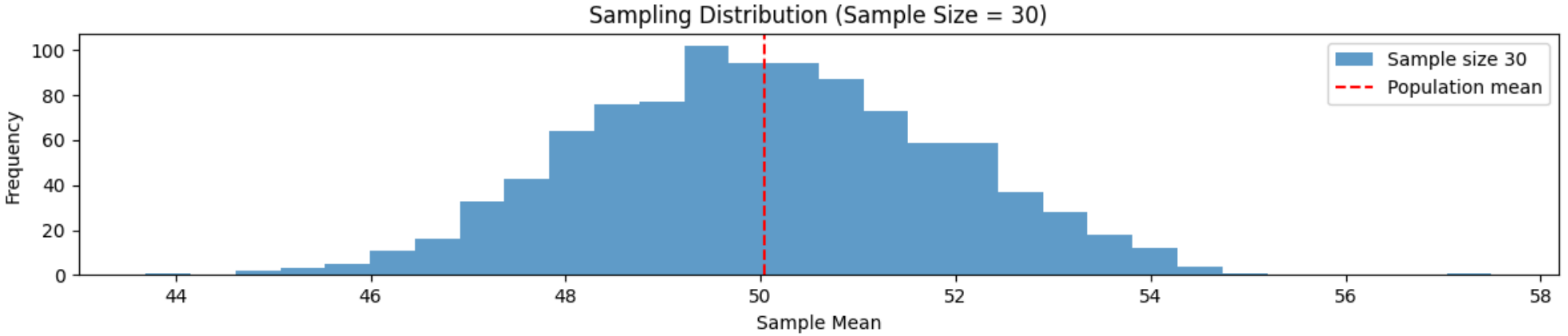
Focus the last run cell

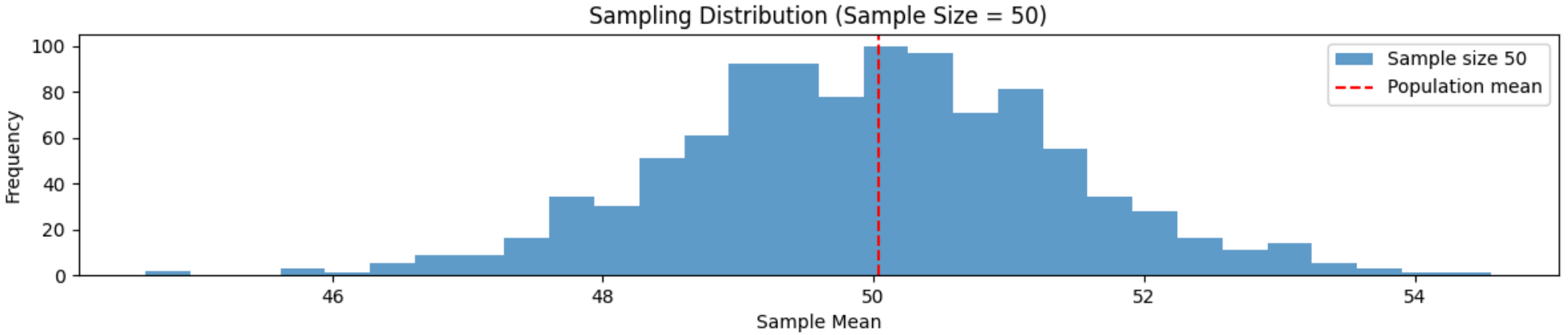
```
sns.countplot(tips.sex)
```

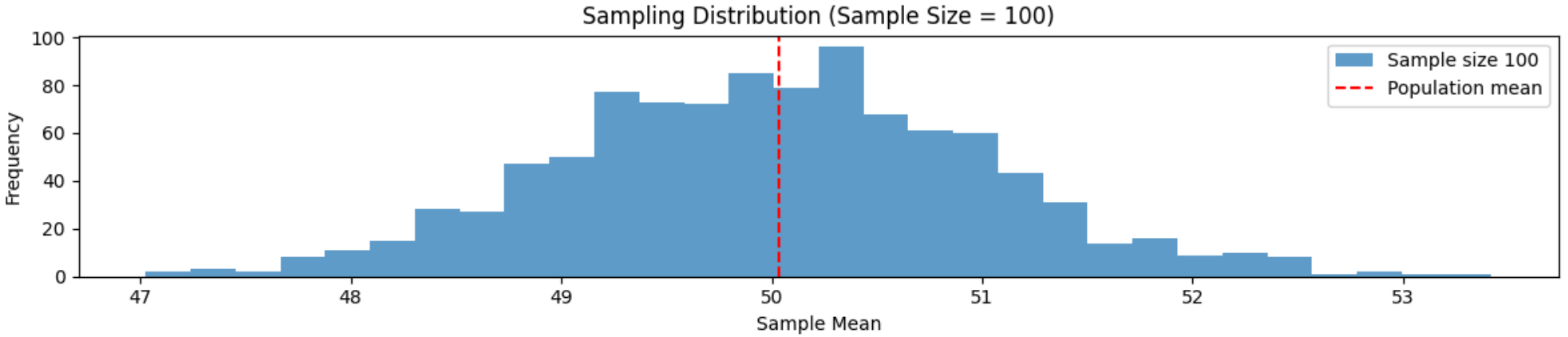
```
<Axes: xlabel='count', ylabel='sex'>
```

Start coding or generate with AI.

```
import numpy as np
import matplotlib.pyplot as plt

# Parameters for the population
population_mean = 50
population_std = 10
population_size = 100000

# Generate the population
population = np.random.normal(population_mean, population_std, population_size)

# Define sample sizes and number of samples
sample_sizes = [30, 50, 100]
num_samples = 1000

# Dictionary to store sample means
sample_means = {size: [] for size in sample_sizes}

# Generate sampling distributions
for size in sample_sizes:
    for _ in range(num_samples):
        sample = np.random.choice(population, size=size, replace=False)
        sample_means[size].append(np.mean(sample))

# Plotting the histograms
plt.figure(figsize=(12, 8))

for i, size in enumerate(sample_sizes, start=1):
    plt.subplot(len(sample_sizes), 1, i)
    plt.hist(sample_means[size], bins=30, alpha=0.7, label=f'Sample size {size}')
    plt.axvline(np.mean(population), color='red', linestyle='dashed', linewidth=1.5, label='Population mean')
    plt.title(f'Sampling Distribution (Sample Size = {size})')
    plt.xlabel('Sample Mean')
    plt.ylabel('Frequency')
    plt.legend()

plt.tight_layout()
plt.show()
```


Sampling Distribution (Sample Size = 30)
Frequency
Sample Mean
Sample size 30
Population mean


Sampling Distribution (Sample Size = 50)
Frequency
Sample Mean
Sample size 50
Population mean


Sampling Distribution (Sample Size = 100)
Frequency
Sample Mean
Sample size 100
Population mean

```
Start coding or generate with AI.
```

```
import numpy as np
import scipy.stats as stats

# Define the sample data (hypothetical weights in grams)
sample_data = np.array([
    152, 148, 151, 149, 147, 153, 150, 148, 152, 149,
    151, 150, 149, 152, 151, 148, 150, 152, 149, 150,
    148, 153, 151, 150, 149, 152, 148, 151, 150, 153
])

# Population mean under the null hypothesis
population_mean = 150

# Calculate sample statistics
sample_mean = np.mean(sample_data)  # Sample mean
sample_std = np.std(sample_data, ddof=1)  # Sample standard deviation with Bessel's correction
n = len(sample_data)  # Number of observations

# Calculate the Z-statistic
z_statistic = (sample_mean - population_mean) / (sample_std / np.sqrt(n))

# Calculate the p-value for a two-tailed test
p_value = 2 * (1 - stats.norm.cdf(np.abs(z_statistic)))

# Print results
print(f"Sample Mean: {sample_mean:.2f}")
print(f"Sample Standard Deviation: {sample_std:.2f}")
print(f"Z-Statistic: {z_statistic:.4f}")
print(f"P-Value: {p_value:.4f}")

# Decision based on the significance level
alpha = 0.05
if p_value < alpha:
    print("Reject the null hypothesis: The average weight is significantly different from 150 grams.")
else:
    print("Fail to reject the null hypothesis: No significant difference from 150 grams.")
```

```
Sample Mean: 150.20
Sample Standard Deviation: 1.71
Z-Statistic: 0.6406
```

```
P-Value: 0.5218
Fail to reject the null hypothesis: No significant difference from 150 grams.
```

Start coding or generate with AI.

Generate print hello world using rot13 Close

```
import numpy as np
import scipy.stats as stats
# Set a random seed for reproducibility
np.random.seed(42)
# Generate hypothetical sample data (IQ scores)
sample_size = 25
sample_data = np.random.normal(loc=102, scale=15,
size=sample_size) # Mean IQ of 102, SD of 15
# Population mean under the null hypothesis
population_mean = 100
# Calculate sample statistics
sample_mean = np.mean(sample_data)
sample_std = np.std(sample_data, ddof=1) # Using sample standard deviation
# Number of observations
n = len(sample_data)
# Calculate the T-statistic and p-value
t_statistic, p_value = stats.ttest_1samp(sample_data,
population_mean)
# Print results
print(f"Sample Mean: {sample_mean:.2f}")
print(f"T-Statistic: {t_statistic:.4f}")
print(f"P-Value: {p_value:.4f}")
# Decision based on the significance level
alpha = 0.05
if p_value < alpha:
  print("Reject the null hypothesis: The average IQ score is significantly different from 100.")
else:
  print("Fail to reject the null hypothesis: There is no significant difference in average IQ score from 100.")
```

```
Sample Mean: 99.55
T-Statistic: -0.1577
P-Value: 0.8760
Fail to reject the null hypothesis: There is no significant difference in average IQ score from 100.
```

Start coding or generate with AI.

Generate | print hello world using rot13 | Close

```
import numpy as np
import scipy.stats as stats
# Set a random seed for reproducibility
np.random.seed(42)
# Generate hypothetical growth data for three treatments (A, B, C)
n_plants = 25
growth_A = np.random.normal(loc=10, scale=2, size=n_plants)
growth_B = np.random.normal(loc=12, scale=3, size=n_plants)
growth_C = np.random.normal(loc=15, scale=2.5, size=n_plants)
# Combine all data into one array
all_data = np.concatenate([growth_A, growth_B, growth_C])
# Treatment labels for each group
treatment_labels = ['A'] * n_plants + ['B'] * n_plants + ['C'] * n_plants
# Perform one-way ANOVA
f_statistic, p_value = stats.f_oneway(growth_A, growth_B, growth_C)
# Print results
print("Treatment A Mean Growth:", np.mean(growth_A))
print("Treatment B Mean Growth:", np.mean(growth_B))
print("Treatment C Mean Growth:", np.mean(growth_C))
print()
print(f"F-Statistic: {f_statistic:.4f}")
print(f"P-Value: {p_value:.4f}")
# Decision based on the significance level
alpha = 0.05
if p_value < alpha:
  print("Reject the null hypothesis: There is a significant difference in mean growth rates among the three treatments.")
else:
  print("Fail to reject the null hypothesis: There is no significant difference in mean growth rates among the three treatments.")
# Additional: Post-hoc analysis (Tukey's HSD) if ANOVA is significant
if p_value < alpha:
  from statsmodels.stats.multicomp import pairwise_tukeyhsd
  tukey_results = pairwise_tukeyhsd(all_data, treatment_labels,
alpha=0.05)
print("\nTukey's HSD Post-hoc Test:")
print(tukey_results)
```

```
Treatment A Mean Growth: 9.672983882683818
Treatment B Mean Growth: 11.137680744437432
```

```
Treatment C Mean Growth: 15.265234904828972

F-Statistic: 36.1214
P-Value: 0.0000
Reject the null hypothesis: There is a significant difference in mean growth rates among the three treatments.

Tukey's HSD Post-hoc Test:
Multiple Comparison of Means - Tukey HSD, FWER=0.05
=================================================
group1 group2 meandiff p-adj   lower  upper  reject
-------------------------------------------------
     A      B   1.4647 0.0877 -0.1683 3.0977  False
     A      C   5.5923    0.0  3.9593 7.2252   True
     B      C   4.1276    0.0  2.4946 5.7605   True
-------------------------------------------------
```

Start coding or generate with AI.

Generate | 10 random numbers using numpy | Close

```
import pandas as pd
from sklearn.preprocessing import StandardScaler


dataset = pd.read_csv('Social_Network_Ads.csv')


print(dataset.head())
```

```
    User ID  Gender  Age  EstimatedSalary  Purchased
0  15624510    Male   19            19000          0
1  15810944    Male   35            20000          0
2  15668575  Female   26            43000          0
3  15603246  Female   27            57000          0
4  15804002    Male   19            76000          0
```

```
X = dataset[['Age', 'EstimatedSalary']]
y = dataset['Purchased']


scaler = StandardScaler()
X_scaled = scaler.fit_transform(X)



X_scaled_df = pd.DataFrame(X_scaled, columns=['Age_scaled', 'EstimatedSalary_scaled'])



print(X_scaled_df.head())
```

```
   Age_scaled  EstimatedSalary_scaled
0   -1.781797               -1.490046
1   -0.253587               -1.460681
2   -1.113206               -0.785290
3   -1.017692               -0.374182
4   -1.781797                0.183751
```

Start coding or generate with AI.

```
import numpy as np
import pandas as pd
df=pd.read_csv('Salary_data.csv')
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 30 entries, 0 to 29
Data columns (total 2 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   YearsExperience  30 non-null     float64
 1   Salary           30 non-null     int64
dtypes: float64(1), int64(1)
memory usage: 608.0 bytes
```

```
df.dropna(inplace=True)
```

Generate randomly select 5 items from a list Close

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 30 entries, 0 to 29
Data columns (total 2 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   YearsExperience  30 non-null     float64
 1   Salary           30 non-null     int64
dtypes: float64(1), int64(1)
memory usage: 608.0 bytes
```

```
df.describe()
```

	YearsExperience	Salary
count	30.000000	30.000000
mean	5.313333	76003.000000
std	2.837888	27414.429785
min	1.100000	37731.000000
25%	3.200000	56720.750000
50%	4.700000	65237.000000
75%	7.700000	100544.750000
max	10.500000	122391.000000

Generate a slider using jupyter widgets Close

```
features=df.iloc[:,[0]].values
label=df.iloc[:,[1]].values


from sklearn.model_selection import train_test_split

x_train, x_test, y_train, y_test = train_test_split(features, label, test_size=0.2, random_s
```

Generate print hello world using rot13 Close

```
from sklearn.linear_model import LinearRegression
model=LinearRegression()
model.fit(x_train,y_train)
```

```
LinearRegression()
```

```
model.score(x_train,y_train)
```

```
0.9645401573418146
```

```
model.score(x_test,y_test)
```

```
0.9024461774180497
```

```
model.coef_
```

```
array([[9423.81532303]])
```

Generate a slider using jupyter widgets Close

```
model.intercept_
```

```
array([25321.58301178])
```

Generate a slider using jupyter widgets Close

```
import pickle
pickle.dump(model,open('SalaryPred.model','wb'))


model=pickle.load(open('SalaryPred.model','rb'))


yr_of_exp=float(input("Enter Years of Experience: "))
yr_of_exp_NP=np.array([[yr_of_exp]])
Salary=model.predict(yr_of_exp_NP)
```

```
Enter Years of Experience: 25
```

```
print("Estimated Salary for {} years of experience is: {}".format(yr_of_exp, Salary))
```

```
Estimated Salary for 25.0 years of experience is: [[260916.96608755]]
```

Start coding or generate with AI.

Generate | 10 random numbers using numpy | Close

```
import numpy as np
import pandas as pd
df=pd.read_csv('Social_Network_Ads.csv')
```

Generate | a slider using jupyter widgets | Close

```
df.head()
```

	User ID	Gender	Age	EstimatedSalary	Purchased
0	15624510	Male	19	19000	0
1	15810944	Male	35	20000	0
2	15668575	Female	26	43000	0
3	15603246	Female	27	57000	0
4	15804002	Male	19	76000	0

Next steps: Generate code with df | View recommended plots | New interactive sheet

Generate | print hello world using rot13 | Close

```
features=df.iloc[:,[2,3]].values
label=df.iloc[:,4].values
features
```

```
array([[    19,  19000],
       [    35,  20000],
       [    26,  43000],
       [    27,  57000],
       [    19,  76000],
       [    27,  58000],
       [    27,  84000],
       [    32, 150000],
       [    25,  33000],
       [    35,  65000],
       [    26,  80000],
       [    26,  52000],
       [    20,  86000],
       [    32,  18000],
       [    18,  82000],
       [    29,  80000],
       [    47,  25000],
       [    45,  26000],
       [    46,  28000],
       [    48,  29000],
       [    45,  22000],
       [    47,  49000],
       [    48,  41000],
       [    45,  22000],
       [    46,  23000],
       [    47,  20000],
       [    49,  28000],
       [    47,  30000],
       [    29,  43000],
       [    31,  18000],
       [    31,  74000],
       [    27, 137000],
       [    21,  16000],
       [    28,  44000],
       [    27,  90000],
       [    35,  27000],
       [    33,  28000],
       [    30,  49000],
       [    26,  72000],
       [    27,  31000],
       [    27,  17000],
       [    33,  51000],
       [    35, 108000],
       [    30,  15000],
       [    28,  84000],
       [    23,  20000],
       [    25,  79000],
```

```
            [    27,  54000],
            [    30, 135000],
            [    31,  89000],
            [    24,  32000],
            [    18,  44000],
            [    29,  83000],
            [    35,  23000],
            [    27,  58000],
            [    24,  55000],
            [    23,  48000],
            [    28,  79000]
```

Generate print hello world using rot13 Close

```
label
```

```
array([0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0,
       0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0,
       0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 1, 0, 0, 0, 1, 0, 0, 0, 1,
       0, 1, 1, 1, 0, 0, 1, 1, 0, 1, 1, 0, 1, 1, 0, 1, 0, 0, 0, 1, 1, 0,
       1, 1, 0, 1, 0, 1, 0, 1, 0, 0, 1, 1, 0, 1, 0, 0, 1, 1, 0, 1, 1, 0,
       1, 1, 0, 0, 1, 0, 0, 1, 1, 1, 1, 1, 0, 1, 1, 1, 1, 0, 1, 1, 0, 1,
       0, 1, 0, 1, 1, 1, 1, 0, 0, 0, 1, 1, 0, 1, 1, 1, 1, 1, 0, 0, 0, 1,
       1, 0, 0, 1, 0, 1, 0, 1, 1, 0, 1, 0, 1, 1, 0, 1, 1, 0, 0, 0, 1, 1,
       0, 1, 0, 0, 1, 0, 1, 0, 0, 1, 1, 0, 0, 1, 1, 0, 1, 1, 0, 0, 1, 0,
       1, 0, 1, 1, 1, 0, 1, 0, 1, 1, 1, 0, 1, 1, 1, 1, 0, 1, 1, 1, 0, 1,
       0, 1, 0, 0, 1, 1, 0, 1, 1, 1, 1, 1, 1, 0, 1, 1, 1, 1, 1, 1, 0, 1,
       1, 1, 0, 1])
```

```
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
```

```
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression

for i in range(1, 401):
    x_train, x_test, y_train, y_test = train_test_split(features, label, test_size=0.3, random_state=i)
    model = LogisticRegression()
    model.fit(x_train, y_train)
    train_score = model.score(x_train, y_train)
    test_score = model.score(x_test, y_test)

    if test_score > train_score:
        print("Test: {:.2f}, Train: {:.2f}, Random State: {}".format(test_score, train_score, i))
```

```
Test: 0.86, Train: 0.83, Random State: 319
Test: 0.87, Train: 0.84, Random State: 321
Test: 0.91, Train: 0.83, Random State: 322
Test: 0.86, Train: 0.84, Random State: 331
Test: 0.85, Train: 0.84, Random State: 333
Test: 0.90, Train: 0.84, Random State: 336
Test: 0.87, Train: 0.84, Random State: 337
Test: 0.88, Train: 0.83, Random State: 343
Test: 0.90, Train: 0.84, Random State: 351
Test: 0.87, Train: 0.83, Random State: 352
Test: 0.90, Train: 0.82, Random State: 354
Test: 0.87, Train: 0.84, Random State: 357
Test: 0.87, Train: 0.84, Random State: 358
Test: 0.85, Train: 0.85, Random State: 361
Test: 0.88, Train: 0.83, Random State: 362
Test: 0.93, Train: 0.82, Random State: 363
Test: 0.88, Train: 0.83, Random State: 366
Test: 0.89, Train: 0.85, Random State: 369
Test: 0.89, Train: 0.84, Random State: 371
Test: 0.90, Train: 0.83, Random State: 376
Test: 0.91, Train: 0.81, Random State: 377
Test: 0.88, Train: 0.84, Random State: 378
Test: 0.88, Train: 0.84, Random State: 379
Test: 0.86, Train: 0.84, Random State: 381
Test: 0.86, Train: 0.83, Random State: 382
Test: 0.88, Train: 0.85, Random State: 386
Test: 0.84, Train: 0.84, Random State: 388
Test: 0.86, Train: 0.85, Random State: 390
Test: 0.88, Train: 0.82, Random State: 394
Test: 0.88, Train: 0.85, Random State: 399
Test: 0.88, Train: 0.84, Random State: 400
```

```
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression

# Splitting the data into training and testing sets
x_train, x_test, y_train, y_test = train_test_split(features, label, test_size=0.2, random_state=42)

# Initializing and fitting the logistic regression model
finalModel = LogisticRegression()
finalModel.fit(x_train, y_train)
```

```
LogisticRegression()
```

```
print(finalModel.score(x_train,y_train))
print(finalModel.score(x_test,y_test))
```

```
0.8375
0.8875
```

Generate 10 random numbers using numpy Close

```
from sklearn.metrics import classification_report
print(classification_report(label,finalModel.predict(features)))
```

```
              precision    recall  f1-score   support

           0       0.85      0.93      0.89       257
           1       0.85      0.70      0.77       143

    accuracy                           0.85       400
   macro avg       0.85      0.81      0.83       400
weighted avg       0.85      0.85      0.84       400
```

Start coding or generate with AI.