```
In [24]: import pandas as pd
         import numpy as np
         import matplotlib.pyplot as plt
         import plotly.express as px
         import plotly.graph_objects as go
```

```
In [25]: data = pd.read_csv("D:/Softwares/R/Class Material/Mall_Customers.csv")
```

```
In [26]: data.head()
```

Out[26]:

	Customer ID	Gender	Age	Annual Income (k$)	Spending Score (1-100)
0	1	Male	19	15	39
1	2	Male	21	15	81
2	3	Female	20	16	6
3	4	Female	23	16	77
4	5	Female	31	17	40

```
In [27]: print(data.head())
```

```
   Customer ID  Gender  Age  Annual Income (k$)  Spending Score (1-100)
0            1    Male   19                  15                      39
1            2    Male   21                  15                      81
2            3  Female   20                  16                       6
3            4  Female   23                  16                      77
4            5  Female   31                  17                      40
```

```
In [28]: print(data.isnull().sum())
```

```
Customer ID             0
Gender                  0
Age                     0
Annual Income (k$)      0
Spending Score (1-100)  0
dtype: int64
```

```
In [29]: data.describe()
```

Out[29]:

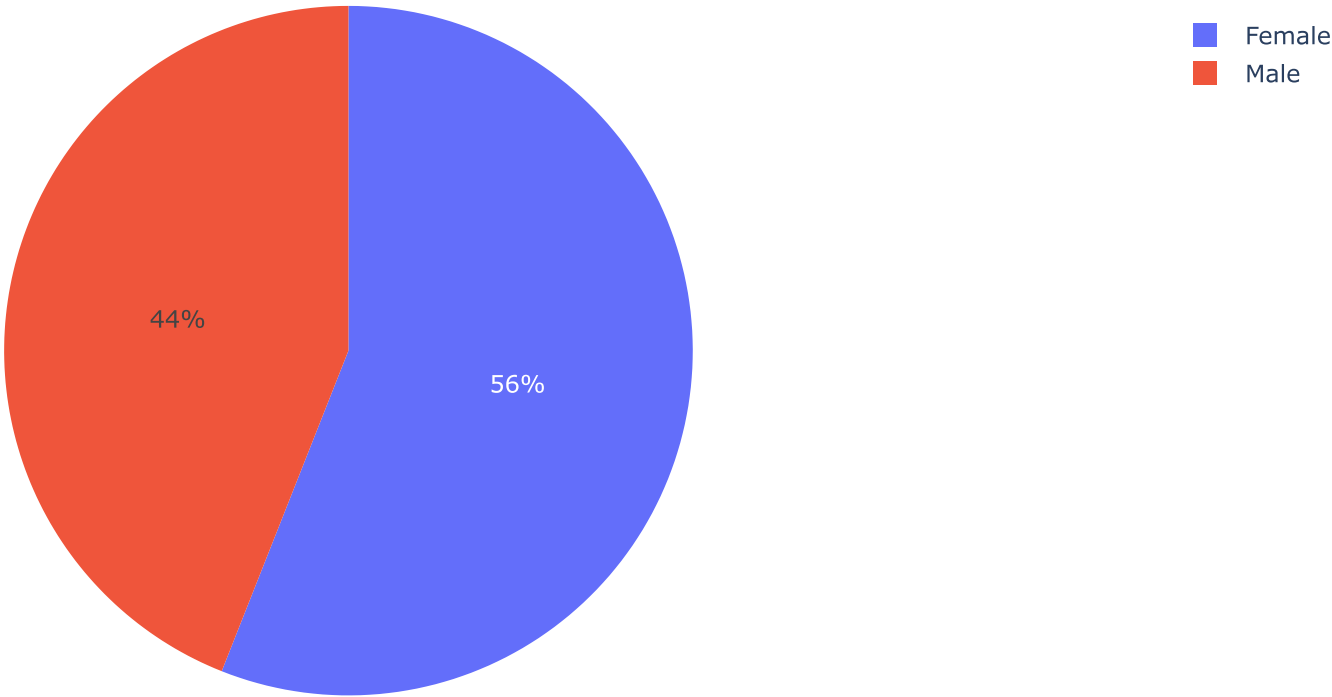|	Customer ID	Age	Annual Income (k$)	Spending Score (1-100)
count	200.000000	200.000000	200.000000	200.000000
mean	100.500000	38.850000	60.560000	50.200000
std	57.879185	13.969007	26.264721	25.823522
min	1.000000	18.000000	15.000000	1.000000
25%	50.750000	28.750000	41.500000	34.750000
50%	100.500000	36.000000	61.500000	50.000000
75%	150.250000	49.000000	78.000000	73.000000
max	200.000000	70.000000	137.000000	99.000000

In [30]:
```python
figure = px.scatter(data, x = 'Age', y = "Spending Score (1-100)", size = "Annual Income (k$)", trendline = 'ols',
                    title = "Relation Btw Spending Score & Income")
figure.show()
```

Relation Btw Spending Score & Income
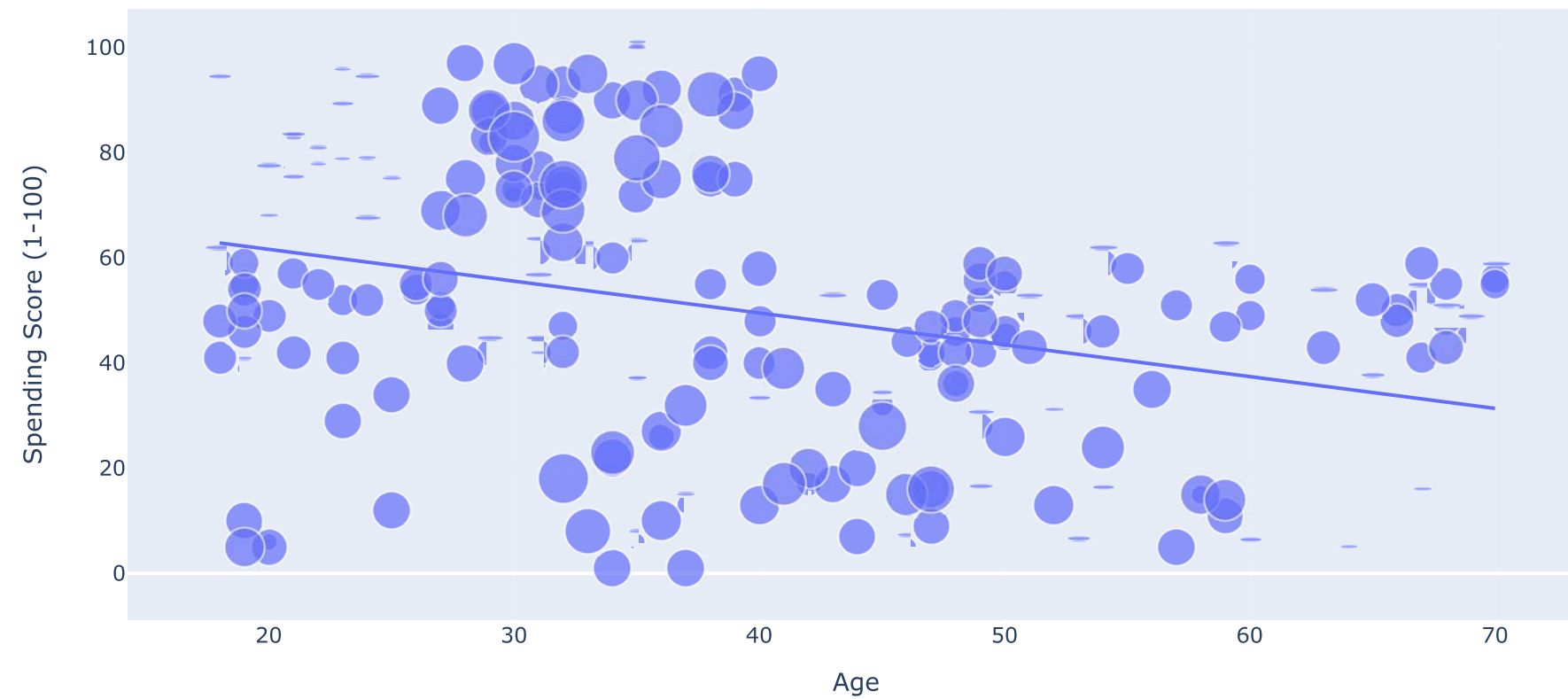
In [31]:
```python
gender = data["Gender"].value_counts()
label = gender.index
counts = gender.values
fig = go.Figure(data =[go.Pie(labels = label, values = counts)])
fig.update_layout(title = "Gender Distribution")
fig.show()
```

Gender Distribution

In [ ]:

In [ ]: