# EDA on Flights Data

In this project, we are going to perforn EDA on Flights Sample Data from Seaborn library

In [54]:

```
## Importing neccessary libraries
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [55]:

```
## Loading the sample Dataset from Seaborn
df = sns.load_dataset("flights")
```

In [56]:

```
df.head()
```

Out[56]:

| | year | month | passengers |
|---|---|---|---|
| **0** | 1949 | Jan | 112 |
| **1** | 1949 | Feb | 118 |
| **2** | 1949 | Mar | 132 |
| **3** | 1949 | Apr | 129 |
| **4** | 1949 | May | 121 |

In [57]:

```
## Distribution of number of passengers Monthwise
Month_wise_passengers = df.groupby("month")["passengers"].sum().reset_index()
Month_wise_passengers
```

```
C:\Users\balus\AppData\Local\Temp\ipykernel_30692\1016505803.py:2: FutureWarning: The default of observed=False
is deprecated and will be changed to True in a future version of pandas. Pass observed=False to retain current b
ehavior or observed=True to adopt the future default and silence this warning.
  Month_wise_passengers = df.groupby("month")["passengers"].sum().reset_index()
```

Out[57]:

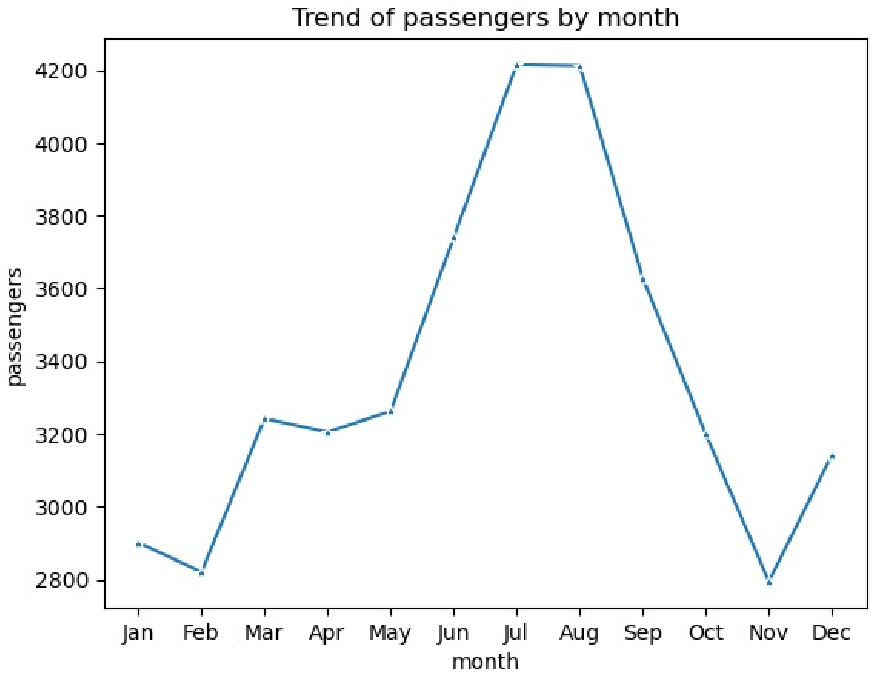
| | month | passengers |
|---|---|---|
| **0** | Jan | 2901 |
| **1** | Feb | 2820 |
| **2** | Mar | 3242 |
| **3** | Apr | 3205 |
| **4** | May | 3262 |
| **5** | Jun | 3740 |
| **6** | Jul | 4216 |
| **7** | Aug | 4213 |
| **8** | Sep | 3629 |
| **9** | Oct | 3199 |
| **10** | Nov | 2794 |
| **11** | Dec | 3142 |

In [58]:

```
sns.lineplot(x="month",y="passengers",data=Month_wise_passengers,marker="*")
plt.title("Trend of passengers by month")
'''Jul & Aug are the months where highest number of passengers have travelled'''
```

Out[58]:

```
'Jul & Aug are the months where highest number of passengers have travelled'
```



In [59]:

```
## Distribution of number of passengers Yearwise
Year_wise_passengers = df.groupby("year")["passengers"].sum().reset_index()
Year_wise_passengers
```

Out[59]:

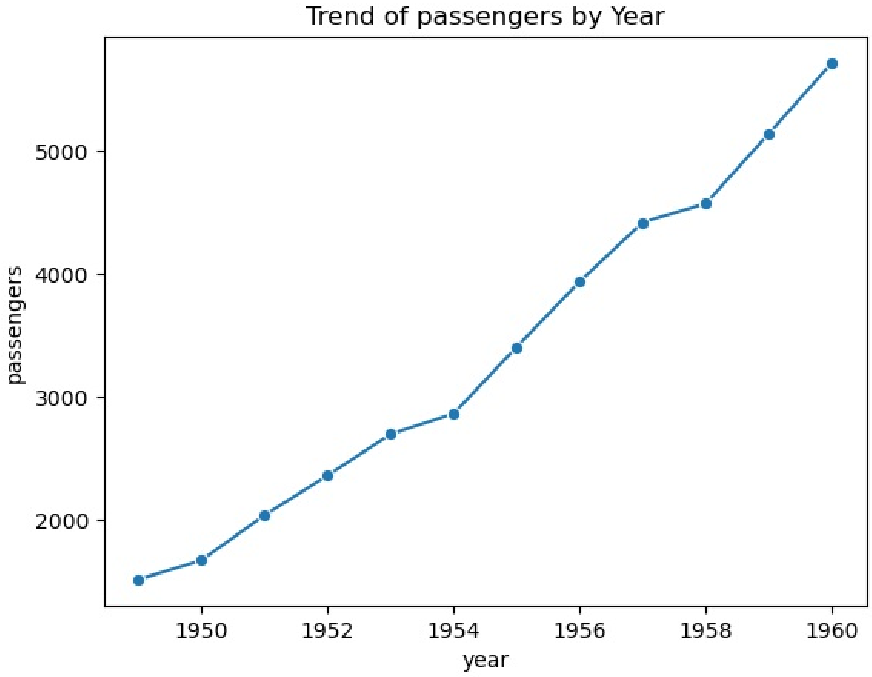
|  | year | passengers |
|---|---|---|
| **0** | 1949 | 1520 |
| **1** | 1950 | 1676 |
| **2** | 1951 | 2042 |
| **3** | 1952 | 2364 |
| **4** | 1953 | 2700 |
| **5** | 1954 | 2867 |
| **6** | 1955 | 3408 |
| **7** | 1956 | 3939 |
| **8** | 1957 | 4421 |
| **9** | 1958 | 4572 |
| **10** | 1959 | 5140 |
| **11** | 1960 | 5714 |

In [60]:

```
sns.lineplot(x="year",y="passengers",data=Year_wise_passengers,marker="o")
plt.title("Trend of passengers by Year")
'''The number of passengers have increased every year'''
```

Out[60]:

```
'The number of passengers have increased every year'
```



In [61]:
```
# Calculate YoY growth (% change from previous year)
Year_wise_passengers["YOY Growth %"] = (Year_wise_passengers["passengers"].\
pct_change()*100).round(2)
```

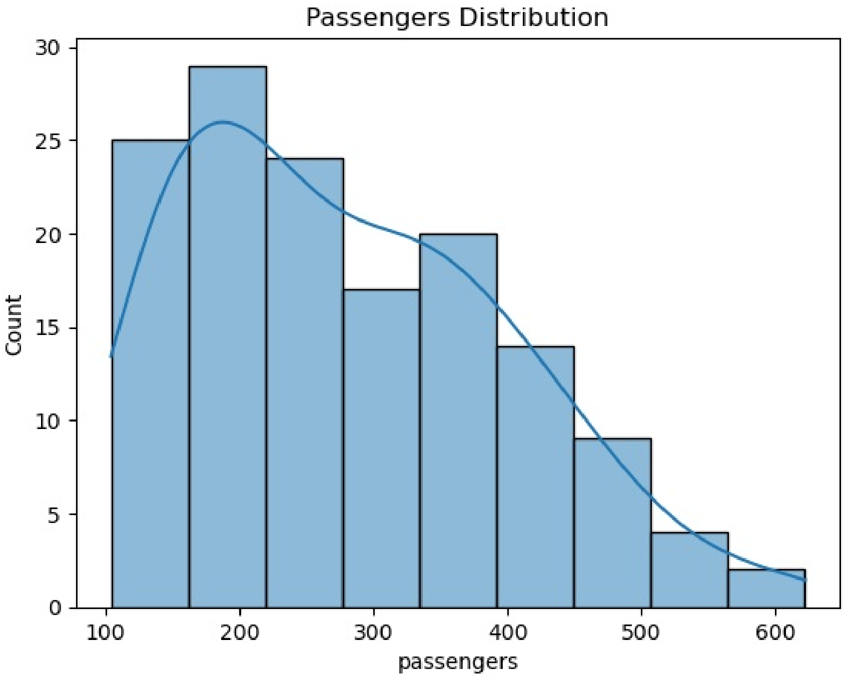
In [62]:
```
'''Highest YOY growth was from 1950 to 1951 (21.84)
Least YOY growth was from 1957 to 1958 (3.42)'''
Year_wise_passengers
```

Out[62]:

| | year | passengers | YOY Growth % |
|---|---|---|---|
| **0** | 1949 | 1520 | NaN |
| **1** | 1950 | 1676 | 10.26 |
| **2** | 1951 | 2042 | 21.84 |
| **3** | 1952 | 2364 | 15.77 |
| **4** | 1953 | 2700 | 14.21 |
| **5** | 1954 | 2867 | 6.19 |
| **6** | 1955 | 3408 | 18.87 |
| **7** | 1956 | 3939 | 15.58 |
| **8** | 1957 | 4421 | 12.24 |
| **9** | 1958 | 4572 | 3.42 |
| **10** | 1959 | 5140 | 12.42 |
| **11** | 1960 | 5714 | 11.17 |

In [63]:
```
## Plotting histogram of Passengers
sns.histplot(x="passengers",data=df,kde=True)
plt.title("Passengers Distribution")
'''Passengers follow right Skewed distribution -
 More number of flights have taken less number of passengers'''
```

Out[63]:
```
'Passengers follow right Skewed distribution -\n More number of flights have taken less number of passengers'
```



In [64]:

```
## Distribution of passengers by Month & year
passengers_by_Year_Month = df.pivot_table(values="passengers",index="year",columns="month")
passengers_by_Year_Month
```

```
C:\Users\balus\AppData\Local\Temp\ipykernel_30692\2497274895.py:2: FutureWarning: The default value of observed=
False is deprecated and will change to observed=True in a future version of pandas. Specify observed=False to si
lence this warning and retain the current behavior
  passengers_by_Year_Month = df.pivot_table(values="passengers",index="year",columns="month")
```

Out[64]:

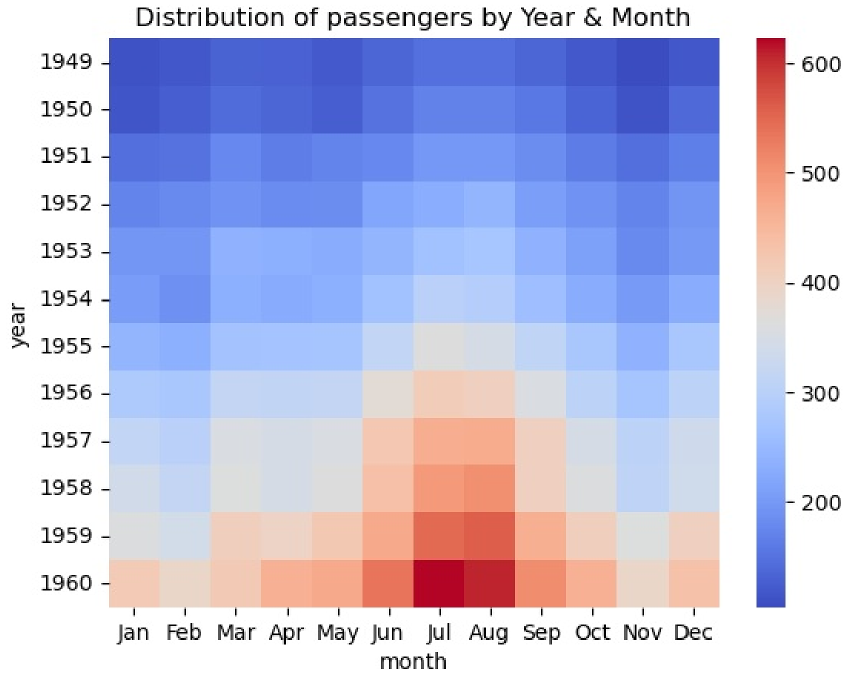
| month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| year | | | | | | | | | | | | |
| **1949** | 112.0 | 118.0 | 132.0 | 129.0 | 121.0 | 135.0 | 148.0 | 148.0 | 136.0 | 119.0 | 104.0 | 118.0 |
| **1950** | 115.0 | 126.0 | 141.0 | 135.0 | 125.0 | 149.0 | 170.0 | 170.0 | 158.0 | 133.0 | 114.0 | 140.0 |
| **1951** | 145.0 | 150.0 | 178.0 | 163.0 | 172.0 | 178.0 | 199.0 | 199.0 | 184.0 | 162.0 | 146.0 | 166.0 |
| **1952** | 171.0 | 180.0 | 193.0 | 181.0 | 183.0 | 218.0 | 230.0 | 242.0 | 209.0 | 191.0 | 172.0 | 194.0 |
| **1953** | 196.0 | 196.0 | 236.0 | 235.0 | 229.0 | 243.0 | 264.0 | 272.0 | 237.0 | 211.0 | 180.0 | 201.0 |
| **1954** | 204.0 | 188.0 | 235.0 | 227.0 | 234.0 | 264.0 | 302.0 | 293.0 | 259.0 | 229.0 | 203.0 | 229.0 |
| **1955** | 242.0 | 233.0 | 267.0 | 269.0 | 270.0 | 315.0 | 364.0 | 347.0 | 312.0 | 274.0 | 237.0 | 278.0 |
| **1956** | 284.0 | 277.0 | 317.0 | 313.0 | 318.0 | 374.0 | 413.0 | 405.0 | 355.0 | 306.0 | 271.0 | 306.0 |
| **1957** | 315.0 | 301.0 | 356.0 | 348.0 | 355.0 | 422.0 | 465.0 | 467.0 | 404.0 | 347.0 | 305.0 | 336.0 |
| **1958** | 340.0 | 318.0 | 362.0 | 348.0 | 363.0 | 435.0 | 491.0 | 505.0 | 404.0 | 359.0 | 310.0 | 337.0 |
| **1959** | 360.0 | 342.0 | 406.0 | 396.0 | 420.0 | 472.0 | 548.0 | 559.0 | 463.0 | 407.0 | 362.0 | 405.0 |
| **1960** | 417.0 | 391.0 | 419.0 | 461.0 | 472.0 | 535.0 | 622.0 | 606.0 | 508.0 | 461.0 | 390.0 | 432.0 |

In [65]:

```
'''Jul & Aug months of 1960 have the hoghest number of passengers'''
sns.heatmap(data=passengers_by_Year_Month,cmap="coolwarm")
plt.title("Distribution of passengers by Year & Month")
```

Out[65]:

```
Text(0.5, 1.0, 'Distribution of passengers by Year & Month')
```


Distribution of passengers by Year & Month
year
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960
month
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
600
500
400
300
200

Thank you