1. **Write a Python Program to Read 'WorldCup.csv' File. Sample Contents of 'WorldCup.csv' File Is Given Below. Plot Bar Chart to Display the Number of Times a Country Has Won Football WorldCup.**

| Year	Country	Winner	Runners-Up
1930	Uruguay	Uruguay	Argentina
1934	Italy	Italy	Czechoslovakia
1938	France	Italy	Hungary
1950	Brazil	Uruguay	Brazil
1954	Switzerlan	Germany F	Hungary
1958	Sweden	Brazil	Sweden

Program:

```
import pandas as pd
import altair as alt

worldcup_df = pd.read_csv('WorldCup.csv')
winning_countries = worldcup_df['Winner'].value_counts()
winners_total_df = pd.DataFrame({'Country': winning_countries.index.tolist(),
                'Number_of_Wins': winning_countries.values.tolist()})

chart = alt.Chart(winners_total_df).mark_bar().encode(
    alt.X('Country:N'),
    alt.Y('Number_of_Wins:Q'),
    alt.Color('Country:N')).properties(
    title="Football WorldCup Winners")

chart.save('WorldCup_Winners.json')
# chart.show()
```

Output-
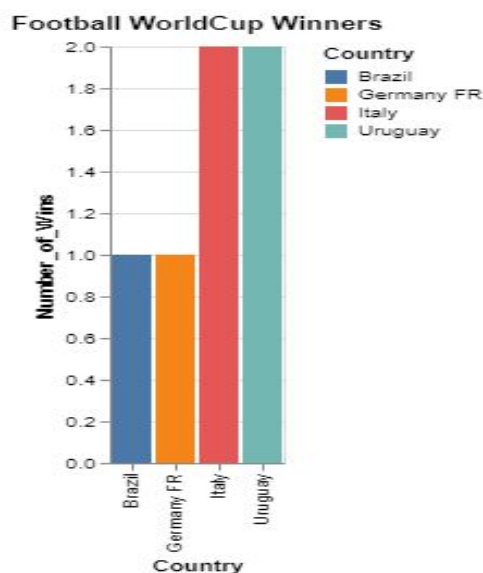
2. Write a Python Program to Read 'Endangered_Species.csv' File. Sample Contents of 'Endangered_Species.csv' File Is Given Below. Plot Grouped Bar Chart to Display the Population Growth of These Endangered Species.

| Species	Population	Year
Bengal Tiger	1201	2000
Bengal Tiger	1411	2005
Polar Bear	8832	2000
Polar Bear	14753	2005
African Lion	21690	2000
African Lion	28431	2005

Program:

```
import altair as alt
import pandas as pd

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

chart = alt.Chart(df).mark_bar().encode(
        alt.X('Species:N'),
        alt.Y('Population:Q'),
        alt.Column('Year'),
        alt.Color('Species:N')).properties(title="Endangered Species Population")

chart.save('Endangered_Species_Population.json')
# chart.show()
```

Output-
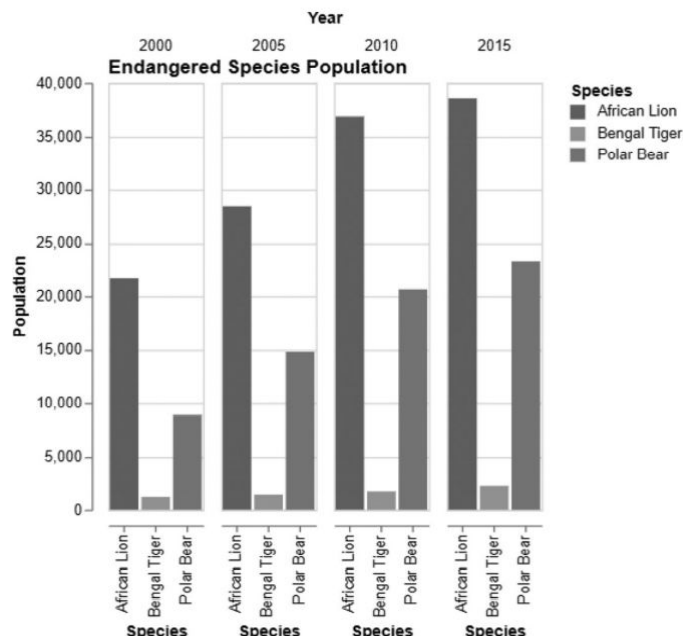
3. Write a Python Program to Read 'Company_Annual_Net_Income.csv' File. Sample Contents of 'Company_Annual_Net_Income.csv' File is Given Below. Plot Line Chart to Display the Annual Net Income of These Companies.

Year	Company	Profit
2010	Microsoft	18.76
2011	Microsoft	23.15
2010	Alphabet	8.372
2011	Alphabet	9.706
2010	Amazon	1.152
2011	Amazon	0.631

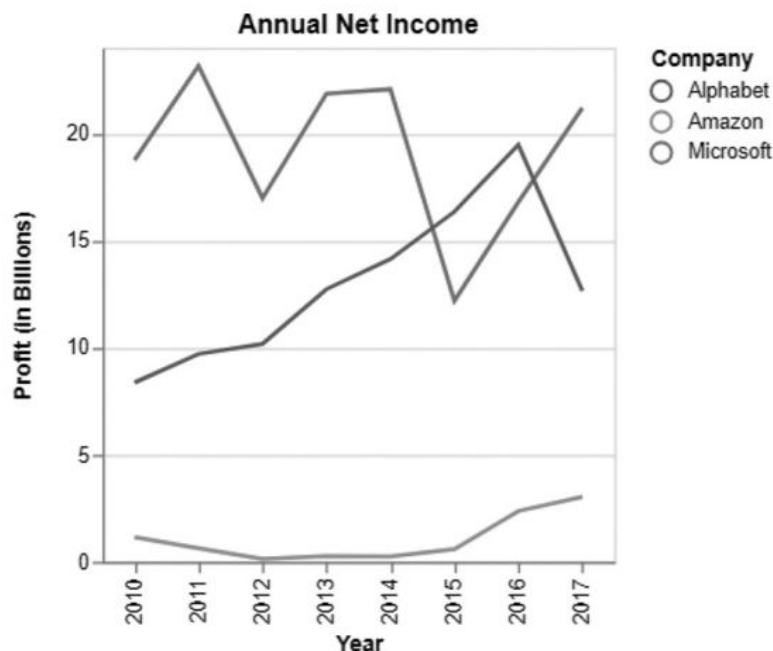## Program:

```
import altair as alt
import pandas as pd

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

chart = alt.Chart(df).mark_line().encode(alt.X('Species:N'),
                    alt.Y('Population:Q'),
                    alt.Column('Year'),
                    alt.Color('Species:N'))
              .properties(title="Endangered Species Population")

chart.save('Endangered_Species_Population.json')
# chart.show()
```

Output-

4. Write a Python Program to read the 'Height_Weight_Ratio.csv' file. Sample contents of 'Height_Weight_Ratio.csv' file is given below. Using the Scatterplot, display the relation between height and weight in adult male and females.

```
Height_Weight_Ratio.csv ✖
1  Sex,Height,Weight
2  Female,5.0,50
3  Female,5.1,53
4  Female,5.2,55
5  Male,5.0,53
6  Male,5.1,56
7  Male,5.2,60
```

Program:

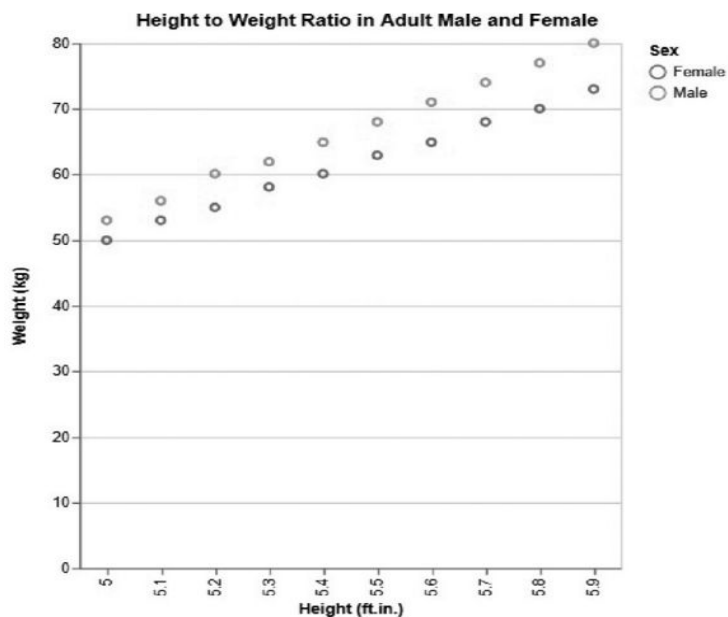
```
import altair as alt
import pandas as pd

df = pd.read_csv('Height_Weight_Ratio.csv')
chart = alt.Chart(df).mark_point().encode(alt.X('Height:N', axis=alt.Axis(title='Height (ft.in.)')),
                alt.Y('Weight:Q', axis=alt.Axis(title='Weight (kg)')),
                alt.Color('Sex:N')).properties(
                                title="Height to Weight Ratio in Adult Male and
Female",
                                width=350, height=400)

chart.save('Height_Weight_Ratio.json')
```

Output-

5. Write a Python Program to read 'Tennis_Summary.csv' file. Sample contents of 'Tennis_Summary.csv' file is given below. Using the Heatmap, display the number of Grand Slam Tournaments won by different players.

```
 Tennis_Summary.csv 

 1   Tennis_Player,Grand_Slam_Tournaments,Wins
 2   Roger_Federer,Australian_Open,6
 3   Roger_Federer,Roland_Garros,1
 4   Rafael_Nadal,Wimbledon,2
 5   Rafael_Nadal,US_Open,3
 6   Pete_Sampras,Wimbledon,7
 7   Pete_Sampras,US_Open,5
 8   Andre_Agassi,Australian_Open,4
 9   Andre_Agassi,Roland Garros,1
```
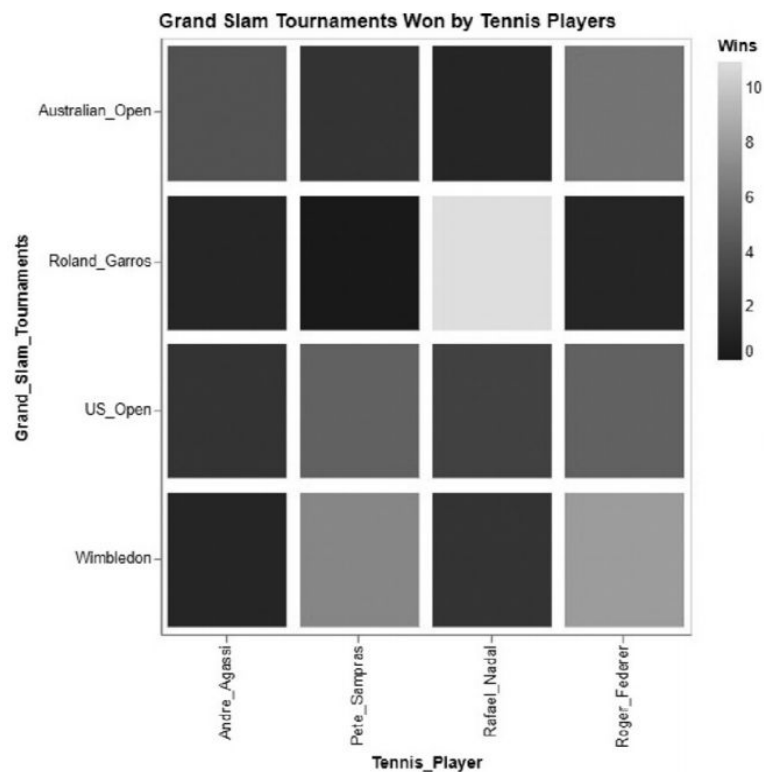
Program:

---

import altair as alt
import pandas as pd
df = pd.read_csv('Tennis_Summary.csv')

chart = alt.Chart(df).mark_rect().encode(alt.X('Tennis_Player:N'),
*   alt.Y('Grand_Slam_Tournaments:N'),*
*   alt.Color('Wins:Q')).properties(*
*   title="Grand Slam Tournaments Won by Tennis Players",*
*   width=350, height=400)*

chart.save('Tennis.json')

OUTPUT

6. Write a Python Program to read the 'Dinosaurs.csv' file. Sample contents of 'Dinosaurs.csv' file is given below. Create a Histogram displaying the length of different Dinosaurs.

```
Dinosaurs.csv ☒
 1  Dinosaur,Length
 2  Acrocanthosaurus (top-spined lizard),12.2
 3  Albertosaurus (Alberta lizard),9.1
 4  Allosaurus (other lizard,12.2
 5  Apatosaurus (deceptive lizard),22.9
 6  Archaeopteryx (ancient wing),0.9
 7  Argentinosaurus (Argentina lizard),36.6
 8  Baryonyx (heavy claws),9.1
 9  Brachiosaurus (arm lizard),30.5
10  Ceratosaurus (horned lizard),6.1
11  Coelophysis (hollow form),2.7
```
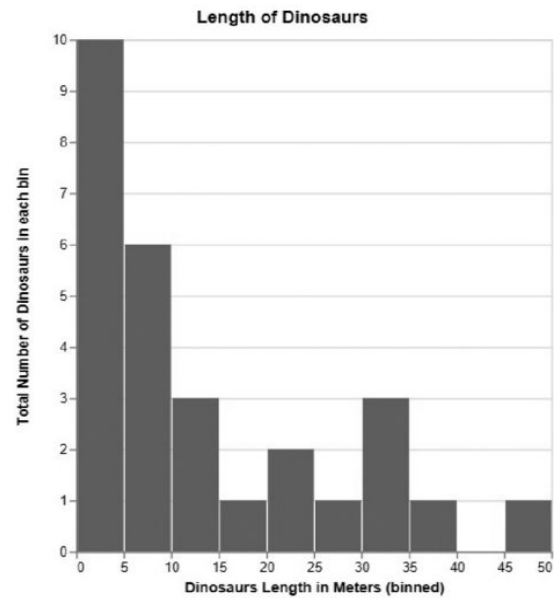
Program:

```
import altair as alt
import pandas as pd
df = pd.read_csv('Dinosaurs.csv')

chart = alt.Chart(df).mark_bar().encode(alt.X('Length:Q', bin=True,
axis=alt.Axis(title='Dinosaurs Length in Meters(binned)')),
              alt.Y('count():Q', axis=alt.Axis(title='Total Number of Dinosaurs in each
bin'))
              .properties(title="Length of Dinosaurs",
                      width=350, height=400))

chart.save("Dinosaurs.json")
```

Length of Dinosaurs

Links:

- https://vega.github.io/editor/

- Copy the contents created in the directory of your program and visit the link above and paste the copied contents on the left side of the vega editor. You will see the chart on the right side of the editor.