```
import pandas as pd

import numpy as np

url =
"https://docs.google.com/spreadsheets/d/1VP9BE_eI2yl6uUHSm4mGiiwjRdoqCqnkcIjsv5Q2ex4/export?format=csv"

df = pd.read_csv(url)

np.random.seed(42)

df['height'] = np.random.randint(150, 181, size=len(df))

print(df.isnull().sum())
```

```
Name          0
Team          0
Number        0
Position      0
Age           0
Height        0
Weight        0
College      84
Salary       11
height        0
dtype: int64
```

```
print(df.dtypes)
```

```
Name          object
Team          object
Number         int64
Position      object
Age            int64
Height        object
Weight         int64
College       object
Salary       float64
height         int32
dtype: object
```

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

```
Index(['Name', 'Team', 'Number', 'Position', 'Age', 'Height',
'Weight',
       'College', 'Salary'],
      dtype='object')
```

```
df.columns = df.columns.str.strip().str.lower()  # Remove spaces and
convert to lowercase
print(df.columns)
```

```
Index(['name', 'team', 'number', 'position', 'age', 'height',
'weight',
       'college', 'salary'],
      dtype='object')

print(df.head())

             name            team  number position  age  height  weight
\
0  Avery Bradley  Boston Celtics       0       PG   25  06-Feb     180

1    Jae Crowder  Boston Celtics      99       SF   25  06-Jun     235

2   John Holland  Boston Celtics      30       SG   27  06-May     205

3    R.J. Hunter  Boston Celtics      28       SG   22  06-May     185

4  Jonas Jerebko  Boston Celtics       8       PF   29  06-Oct     231


              college     salary
0               Texas  7730337.0
1           Marquette  6796117.0
2  Boston University        NaN
3      Georgia State  1148640.0
4                 NaN  5000000.0

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print(df.columns)

Index(['Name', 'Team', 'Number', 'Position', 'Age', 'Height',
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       'College', 'Salary'],
      dtype='object')

df.columns = df.columns.str.strip().str.lower()
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Index(['name', 'team', 'number', 'position', 'age', 'height',
'weight',
       'college', 'salary'],
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```

```
print(df.head())
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```
             name            team  number position  age  height  weight
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4                 NaN  5000000.0
```

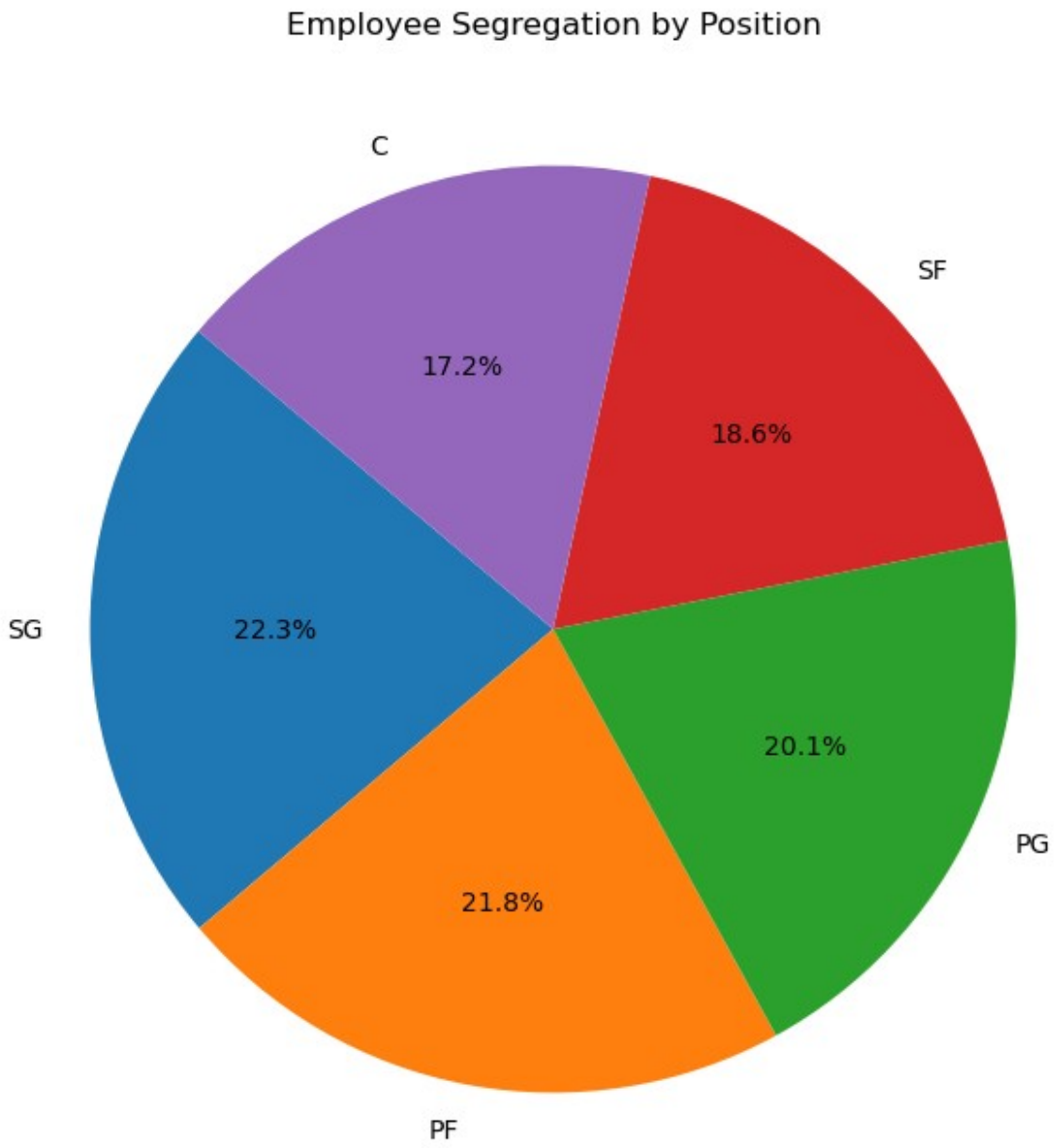
```
# Task 2: Segregation Based on Positions
position_counts = df['position'].value_counts()

# Display the results
print("Employee Segregation by Position:")
print(position_counts)

# Visualization: Pie chart for positions
import matplotlib.pyplot as plt

plt.figure(figsize=(8, 8))
position_counts.plot(kind='pie', autopct='%1.1f%%', startangle=140)
plt.title("Employee Segregation by Position")
plt.ylabel('')
plt.show()
```

```
Employee Segregation by Position:
position
SG    102
PF    100
PG     92
SF     85
C      79
Name: count, dtype: int64
```




```
age_bins = [20, 30, 40, 50, 60]

age_labels = ['20-30', '31-40', '41-50', '51-60']

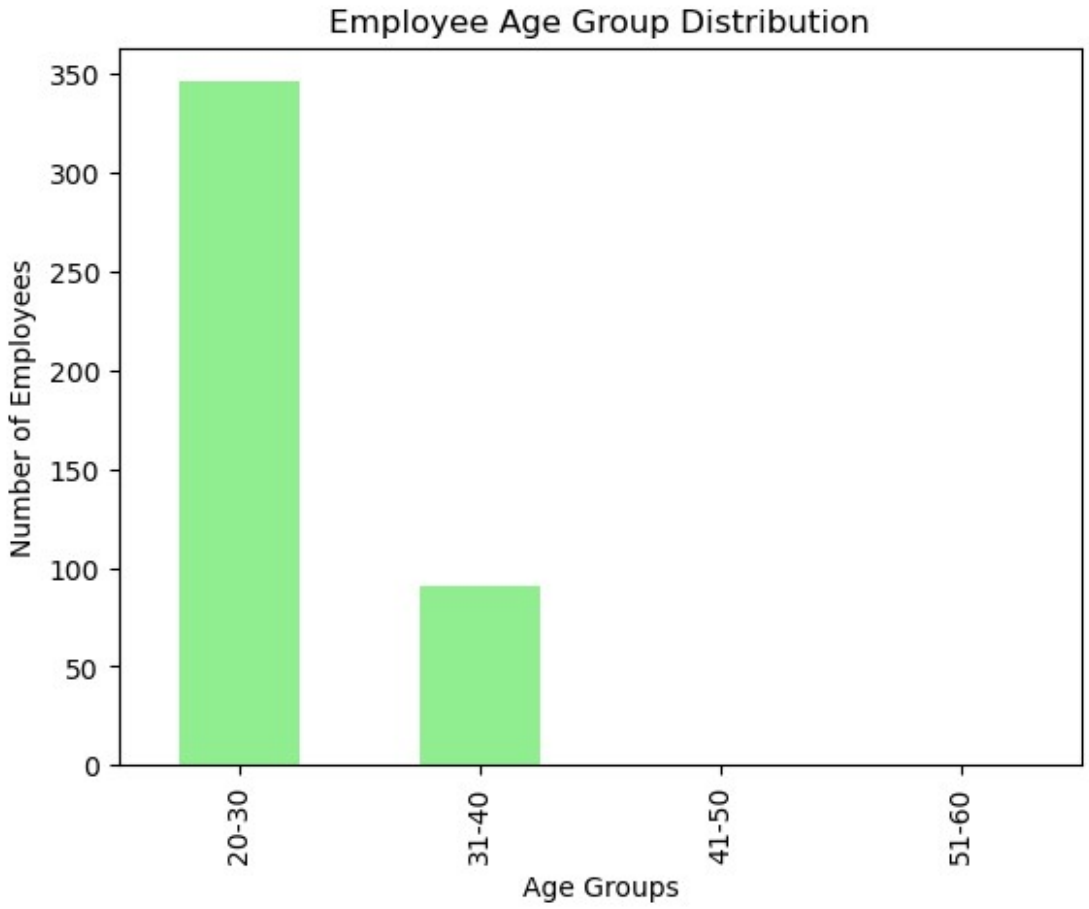
age_bins = [20, 30, 40, 50, 60]  # Age ranges
age_labels = ['20-30', '31-40', '41-50', '51-60']

df['age_group'] = pd.cut(df['age'], bins=age_bins, labels=age_labels)
age_group_counts = df['age_group'].value_counts()

print("Predominant Age Group:")
print(age_group_counts)
```

```
Predominant Age Group:
age_group
20-30    346
31-40     91
41-50      0
51-60      0
Name: count, dtype: int64
```

```
age_group_counts.plot(kind='bar', color='lightgreen', title="Employee
Age Group Distribution")
plt.xlabel("Age Groups")
plt.ylabel("Number of Employees")
plt.show()
```




```
salary_by_team = df.groupby('team')
['salary'].sum().sort_values(ascending=False)
salary_by_position = df.groupby('position')
['salary'].sum().sort_values(ascending=False)

print("Team with Highest Salary Expenditure:")
print(salary_by_team.head(1))
```

```
Team with Highest Salary Expenditure:
team
Cleveland Cavaliers    106988689.0
Name: salary, dtype: float64
```

```
print("Position with Highest Salary Expenditure:")
print(salary_by_position.head(1))
```

```
Position with Highest Salary Expenditure:
position
C    466377332.0
Name: salary, dtype: float64
```

```
correlation = df['age'].corr(df['salary'])
print(f"Correlation between Age and Salary: {correlation}")
```

```
Correlation between Age and Salary: 0.21400941226570974
```

```
plt.figure(figsize=(8, 6))
plt.scatter(df['age'], df['salary'], color='orange', alpha=0.6)
plt.title("Correlation Between Age and Salary")
plt.xlabel("Age")
plt.ylabel("Salary")
plt.show()
```


```
team_counts = df['team'].value_counts()
team_percentage = (team_counts / len(df)) * 100

print("Employee Distribution by Team:")
print(team_counts)
print("Percentage Split:")
print(team_percentage)
```

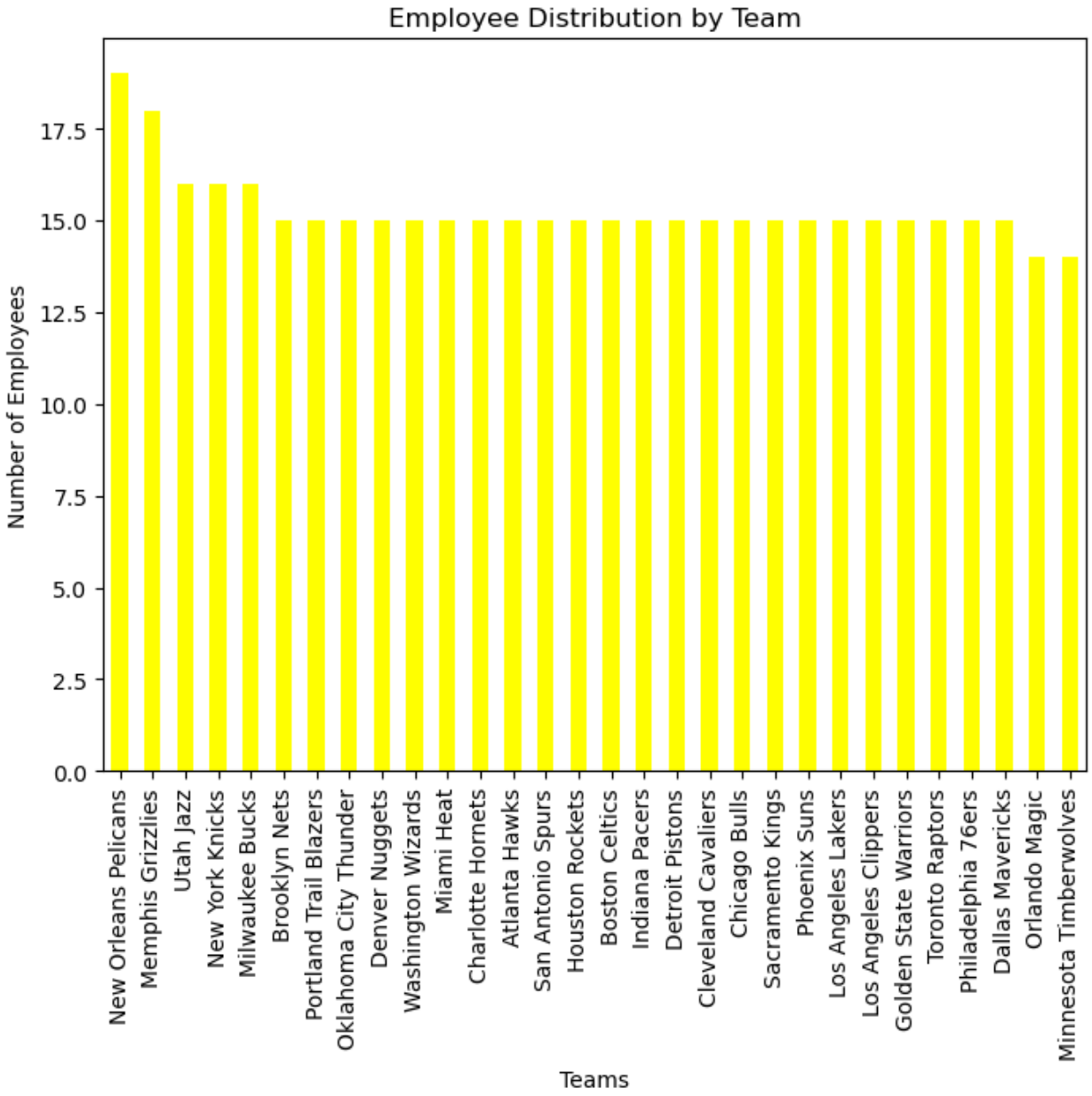
```
Employee Distribution by Team:
team
New Orleans Pelicans      19
Memphis Grizzlies         18
Utah Jazz                 16
New York Knicks           16
Milwaukee Bucks           16
Brooklyn Nets             15
Portland Trail Blazers    15
Oklahoma City Thunder     15
Denver Nuggets            15
Washington Wizards        15
```

```
Miami Heat                 15
Charlotte Hornets          15
Atlanta Hawks              15
San Antonio Spurs          15
Houston Rockets            15
Boston Celtics             15
Indiana Pacers             15
Detroit Pistons            15
Cleveland Cavaliers        15
Chicago Bulls              15
Sacramento Kings           15
Phoenix Suns               15
Los Angeles Lakers         15
Los Angeles Clippers       15
Golden State Warriors      15
Toronto Raptors            15
Philadelphia 76ers         15
Dallas Mavericks           15
Orlando Magic              14
Minnesota Timberwolves     14
Name: count, dtype: int64
Percentage Split:
team
New Orleans Pelicans       4.148472
Memphis Grizzlies          3.930131
Utah Jazz                  3.493450
New York Knicks            3.493450
Milwaukee Bucks            3.493450
Brooklyn Nets              3.275109
Portland Trail Blazers     3.275109
Oklahoma City Thunder      3.275109
Denver Nuggets             3.275109
Washington Wizards         3.275109
Miami Heat                 3.275109
Charlotte Hornets          3.275109
Atlanta Hawks              3.275109
San Antonio Spurs          3.275109
Houston Rockets            3.275109
Boston Celtics             3.275109
Indiana Pacers             3.275109
Detroit Pistons            3.275109
Cleveland Cavaliers        3.275109
Chicago Bulls              3.275109
Sacramento Kings           3.275109
Phoenix Suns               3.275109
Los Angeles Lakers         3.275109
Los Angeles Clippers       3.275109
Golden State Warriors      3.275109
Toronto Raptors            3.275109
```

```
Philadelphia 76ers        3.275109
Dallas Mavericks          3.275109
Orlando Magic             3.056769
Minnesota Timberwolves    3.056769
Name: count, dtype: float64
```

```
import matplotlib.pyplot as plt

plt.figure(figsize=(8, 6))
team_counts.plot(kind='bar', color='yellow')
plt.title("Employee Distribution by Team")
plt.xlabel("Teams")
plt.ylabel("Number of Employees")
plt.show()
```

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print(position_counts)
```

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