In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns

## 1.  Correct the data in the "height" column by replacing it with random numbers between 150 and 180.

file_path = 'C:/Users/97155/Downloads/New folder/myexcel.xlsx'
df = pd.read_excel(file_path)


df['Height']=np.random.randint(150, 180,size=458)

df.head()
```

Out[1]:

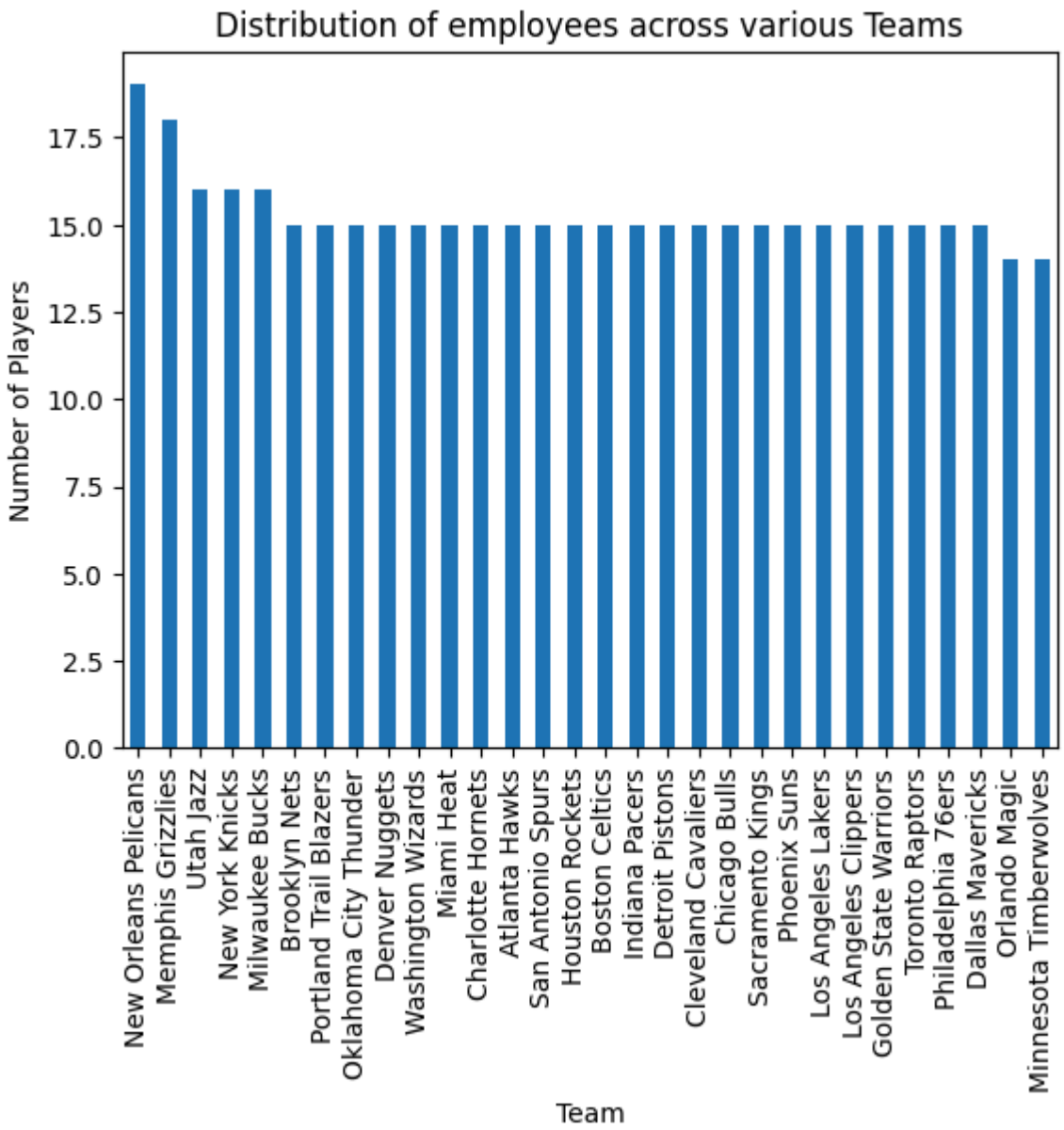
	Name	Team	Number	Position	Age	Height	Weight	College	Salary	height
0	Avery Bradley	Boston Celtics	0	PG	25	175	180	Texas	7730337.0	170
1	Jae Crowder	Boston Celtics	99	SF	25	156	235	Marquette	6796117.0	177
2	John Holland	Boston Celtics	30	SG	27	179	205	Boston University	NaN	175
3	R.J. Hunter	Boston Celtics	28	SG	22	153	185	Georgia State	1148640.0	178
4	Jonas Jerebko	Boston Celtics	8	PF	29	166	231	NaN	5000000.0	173

In [2]:
```
## 2.  Determine the distribution of employees across each team and calculate the percentage split relative to the total numbe
team_distribution = df['Team'].value_counts()
total_employees = len(df)
team_percentage = (team_distribution / total_employees) * 100


team_distribution_df = pd.DataFrame({
    'count': team_distribution,
    'percentage': team_percentage
})

print(team_distribution_df)
```

Team	count	percentage
New Orleans Pelicans	19	4.148472
Memphis Grizzlies	18	3.930131
Utah Jazz	16	3.493450
New York Knicks	16	3.493450
Milwaukee Bucks	16	3.493450
Brooklyn Nets	15	3.275109
Portland Trail Blazers	15	3.275109
Oklahoma City Thunder	15	3.275109
Denver Nuggets	15	3.275109
Washington Wizards	15	3.275109
Miami Heat	15	3.275109
Charlotte Hornets	15	3.275109
Atlanta Hawks	15	3.275109
San Antonio Spurs	15	3.275109
Houston Rockets	15	3.275109
Boston Celtics	15	3.275109
Indiana Pacers	15	3.275109
Detroit Pistons	15	3.275109
Cleveland Cavaliers	15	3.275109
Chicago Bulls	15	3.275109
Sacramento Kings	15	3.275109
Phoenix Suns	15	3.275109
Los Angeles Lakers	15	3.275109
Los Angeles Clippers	15	3.275109
Golden State Warriors	15	3.275109
Toronto Raptors	15	3.275109
Philadelphia 76ers	15	3.275109
Dallas Mavericks	15	3.275109
Orlando Magic	14	3.056769
Minnesota Timberwolves	14	3.056769

In [3]:
```
Employees_in_each_Team =df.value_counts('Team')
Percentage_Split_Relative = Employees_in_each_Team/Employees_in_each_Team.sum()*100
Percentage_Split_Relative

counts = df['Team'].value_counts()
counts.plot(kind='bar')
plt.xlabel('Team')
plt.ylabel('Number of Players')
```

```
plt.title('Distribution of employees across various Teams')
plt.show()
```



In [4]:
```python
#3 . Segregate employees based on their positions within the company. (2 marks)\

positions = df['Position'].unique()

position_groups = {position: df[df['Position'] == position] for position in positions}


for position, group in position_groups.items():
    print(f"Position: {position}, Number of Employees: {len(group)}")
```

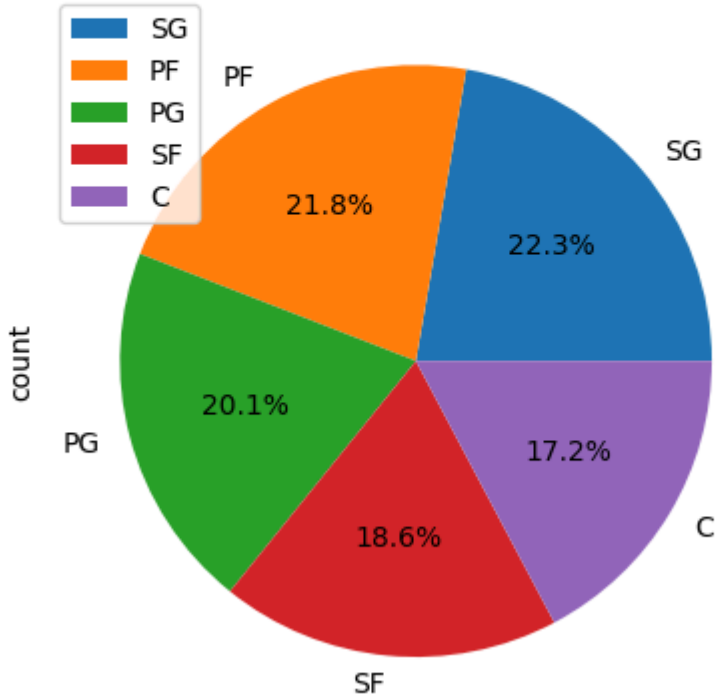
```
Position: PG, Number of Employees: 92
Position: SF, Number of Employees: 85
Position: SG, Number of Employees: 102
Position: PF, Number of Employees: 100
Position: C, Number of Employees: 79
```

In [5]:
```python
Empolyees_Sort_Position = df.sort_values(by="Position",ascending=False)
Empolyees_Sort_Position.value_counts('Position')
```

Out[5]:
```
Position
SG    102
PF    100
PG     92
SF     85
C      79
Name: count, dtype: int64
```

In [15]:
```python
Empolyees_Sort_Position.value_counts('Position').plot(kind="pie",autopct='%1.1f%%')
plt.title('Segregate employees based on their positions within the company\n\n\n\n')
plt.legend() # shows label
plt.show()
```

Segregate employees based on their positions within the company



In [6]:
```
## 3) Identify the predominant age group among employees. (2 marks)

Predominant_Age = df.value_counts('Age')
Predominant_Age
```

Out[6]:
```
Age
24    47
25    46
27    41
23    41
26    36
30    31
28    31
29    28
22    26
31    22
21    19
20    19
33    14
32    13
34    10
36    10
35     9
38     4
37     4
40     3
39     2
19     2
Name: count, dtype: int64
```

In [7]:
```
age_groups = df['Age'].value_counts().sort_index()


predominant_age_group = age_groups.idxmax()
predominant_age_group_count = age_groups.max()

print(f"The predominant age  among employees is {predominant_age_group} years old with {predominant_age_group_count} employees
```

```
The predominant age  among employees is 24 years old with 47 employees.
```

In [8]:
```
Predominant_Age.plot(kind='bar')
plt.xlabel('Age of Players')
plt.ylabel('No of Players')
plt.title('Age group among employees')
plt.show()
```

In [9]:
```
bins = [0, 20, 30, 40, 50, 60, 70, 80, 90, 100]
labels = ['0-20', '21-30', '31-40', '41-50', '51-60', '61-70', '71-80', '81-90', '91-100']
df['age_group'] = pd.cut(df['Age'], bins=bins, labels=labels, right=False)


age_group_distribution = df['age_group'].value_counts()


predominant_age_group = age_group_distribution.idxmax()


print(f"The predominant age group is: {predominant_age_group}")
```

```
The predominant age group is: 21-30
```

In [10]:
```
###4) Discover which team and position have the highest salary expenditure. (2 marks)

salary_exp_by_team = df.groupby(['Team'])[['Salary']].sum()
```

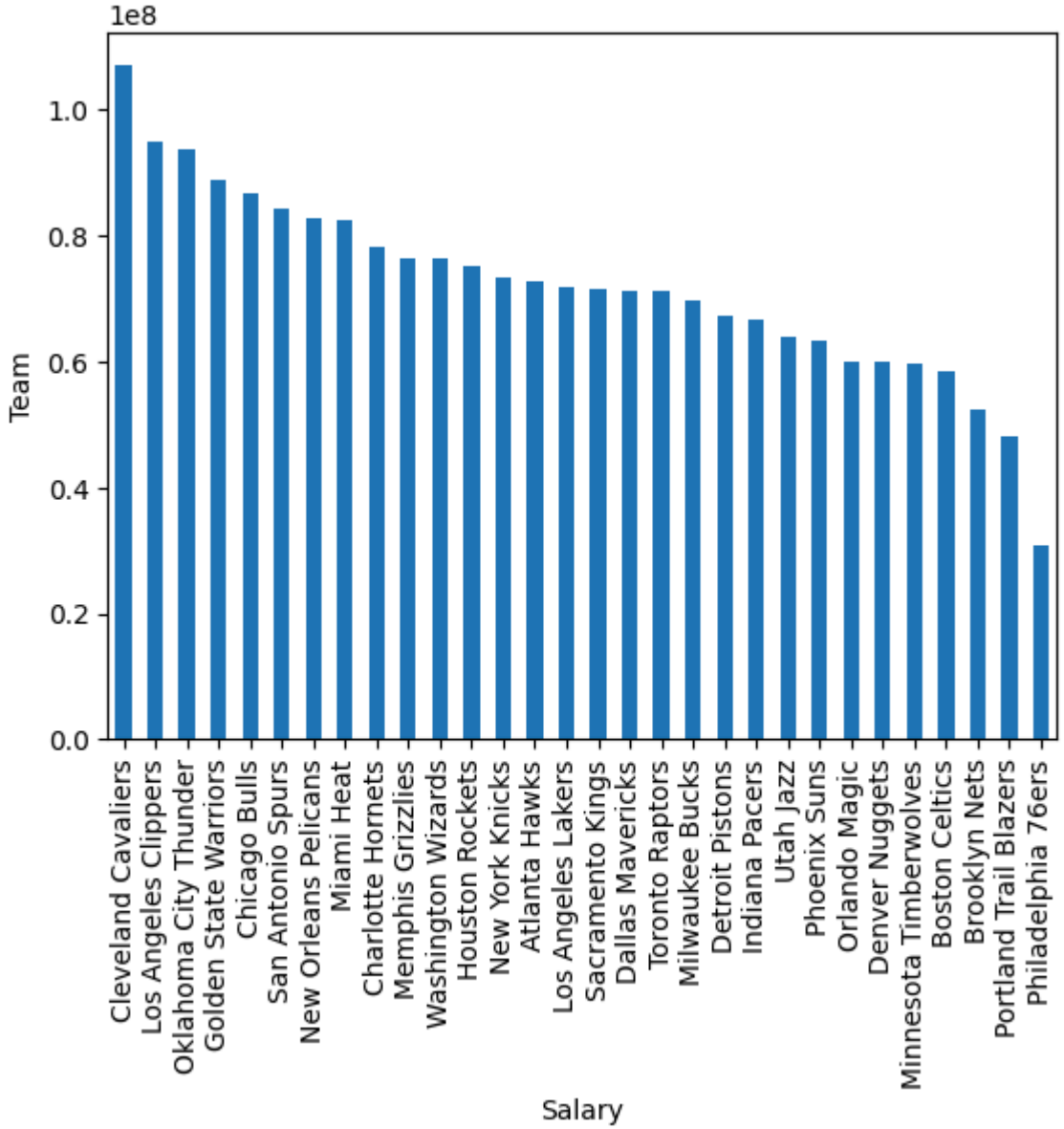
In [11]:
```
Team_highest_Exp =salary_exp_by_team['Salary'].sort_values(ascending = False)
Team_highest_Exp .head()
```

Out[11]:
```
Team
Cleveland Cavaliers      106988689.0
Los Angeles Clippers      94854640.0
Oklahoma City Thunder     93765298.0
Golden State Warriors     88868997.0
Chicago Bulls             86783378.0
Name: Salary, dtype: float64
```

In [12]:
```
salary_expenditure = df.groupby(['Team'])['Salary'].sum().reset_index()

max_expenditure = salary_expenditure.loc[salary_expenditure['Salary'].idxmax()]
print(f"The team with the highest salary expenditure is: {max_expenditure['Team']}")
```

```
The team with the highest salary expenditure is: Cleveland Cavaliers
```

In [13]:
```
Team_highest_Exp.plot(kind='bar')
plt.xlabel('Salary')
plt.ylabel('Team')
plt.show()
```



In [14]:
```
#5) Investigate if there's any correlation between age and salary, and represent it visually. (2 marks)


plt.figure(figsize=(8,5),dpi=100)
```

```
sns.scatterplot(y="Salary",x="Age",data=df)
plt.xlabel("Age")
plt.ylabel("Salary")

plt.show()
```