```python
# Preprocessing Data

import pandas as pd

# Load the new CSV file to inspect its contents
file_path_csv = '/mnt/data/myexcel (1).csv'
df_csv = pd.read_csv("myexcel (1).csv")

# Display the first few rows to understand the data structure
df_csv.head()

# Replace the "Height" column with random integers between 150 and 180
df_csv['Height'] = np.random.randint(150, 181, size=len(df_csv))

# Verify the replacement
df_csv.head()
```

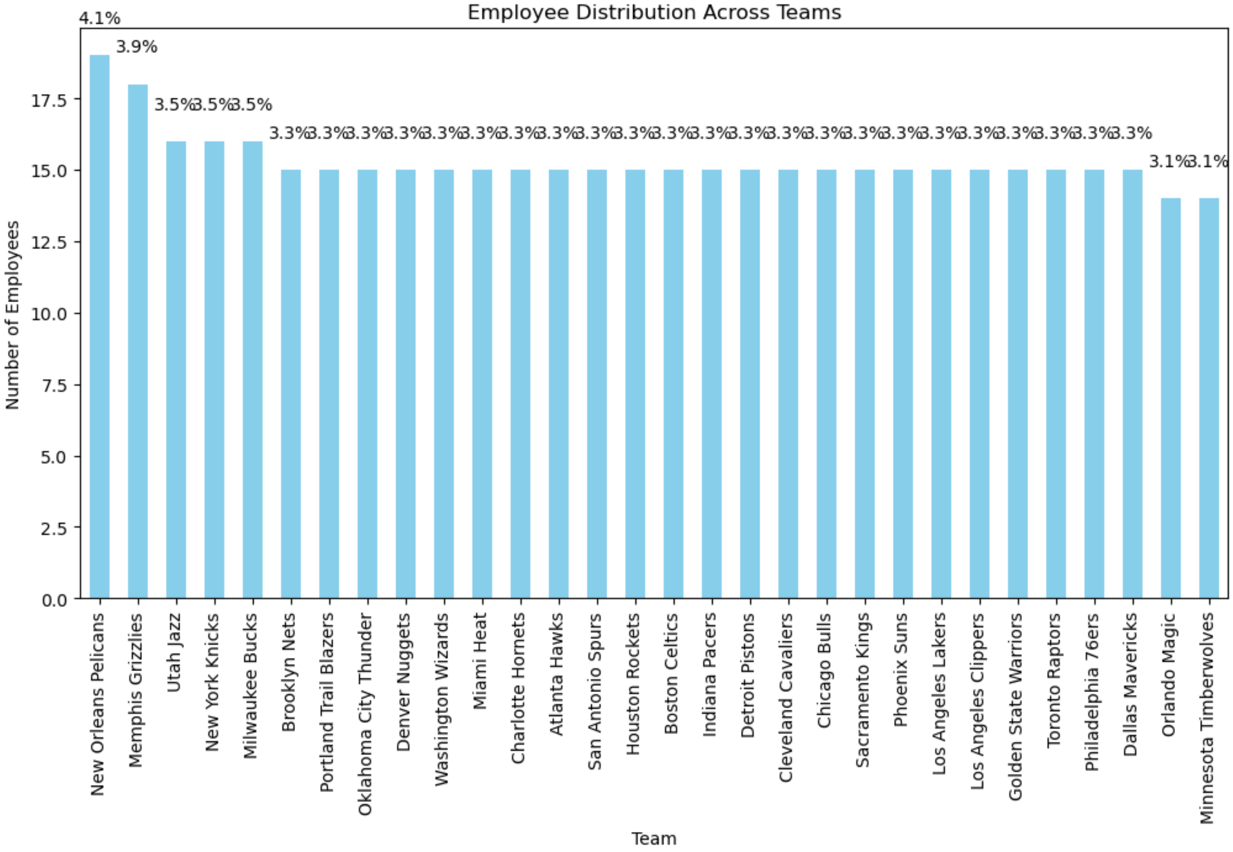
```
            Name            Team  Number Position  Age  Height  Weight
\
0  Avery Bradley  Boston Celtics       0       PG   25     153     180

1    Jae Crowder  Boston Celtics      99       SF   25     154     235

2   John Holland  Boston Celtics      30       SG   27     162     205

3    R.J. Hunter  Boston Celtics      28       SG   22     164     185

4  Jonas Jerebko  Boston Celtics       8       PF   29     150     231


             College     Salary
0              Texas  7730337.0
1          Marquette  6796117.0
2  Boston University        NaN
3      Georgia State  1148640.0
4                NaN  5000000.0
```

```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns

# Load the dataset
df = pd.read_csv("myexcel (1).csv")

# Question 1

# Calculate team distribution and percentage
team_distribution = df['Team'].value_counts()
team_percentage = (team_distribution / team_distribution.sum()) * 100
```

```
# Create DataFrame for display
team_summary = pd.DataFrame({
    'Employee_Count': team_distribution,
    'Percentage_Split': team_percentage
})

# Display the result
print("1. Distribution of Employees Across Each Team with Percentage
Split:")
print(team_summary)

# Bar chart with percentage annotations
plt.figure(figsize=(12, 6))
team_distribution.plot(kind='bar', color='skyblue')
plt.title('Employee Distribution Across Teams')
plt.xlabel('Team')
plt.ylabel('Number of Employees')
for i, v in enumerate(team_percentage):
    plt.text(i, team_distribution[i] + 1, f"{v:.1f}%", ha='center',
va='bottom')
plt.show()
```

```
1. Distribution of Employees Across Each Team with Percentage Split:
                        Employee_Count  Percentage_Split
Team
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
```

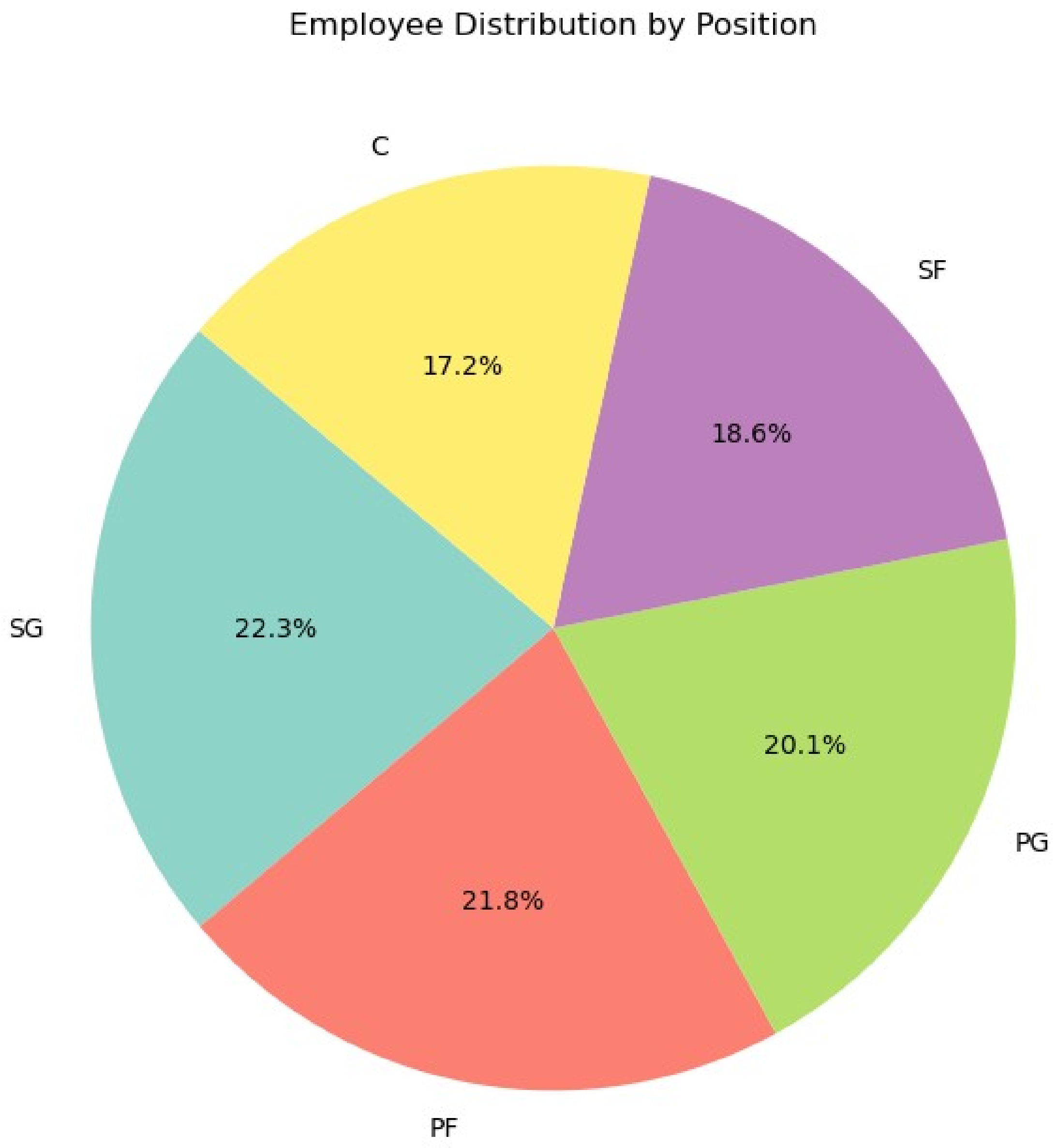
```
Toronto Raptors                            15          3.275109
Philadelphia 76ers                         15          3.275109
Dallas Mavericks                           15          3.275109
Orlando Magic                              14          3.056769
Minnesota Timberwolves                     14          3.056769

C:\Users\user\AppData\Local\Temp\ipykernel_14024\2729898175.py:24:
FutureWarning: Series.__getitem__ treating keys as positions is
deprecated. In a future version, integer keys will always be treated
as labels (consistent with DataFrame behavior). To access a value by
position, use `ser.iloc[pos]`
  plt.text(i, team_distribution[i] + 1, f"{v:.1f}%", ha='center',
va='bottom')
```



```python
# Question 2

# Calculate position distribution
position_distribution = df['Position'].value_counts()

# Display the result
print("\n2. Segregation of Employees by Position:")
print(position_distribution)
```

```
# Pie chart for positions
plt.figure(figsize=(8, 8))
position_distribution.plot(kind='pie', autopct='%1.1f%%',
startangle=140, cmap='Set3')
plt.title('Employee Distribution by Position')
plt.ylabel('')
plt.show()
```

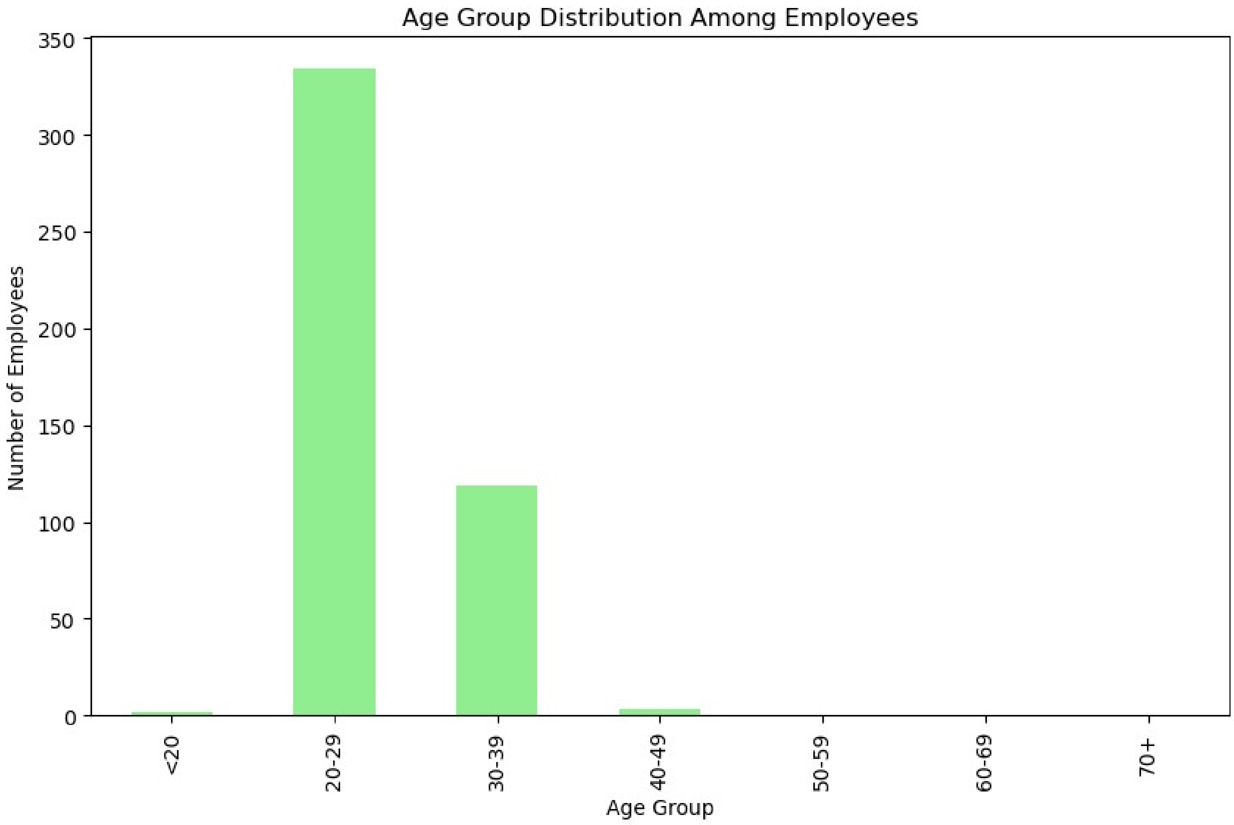
```
2. Segregation of Employees by Position:
Position
SG    102
PF    100
PG     92
SF     85
C      79
Name: count, dtype: int64
```



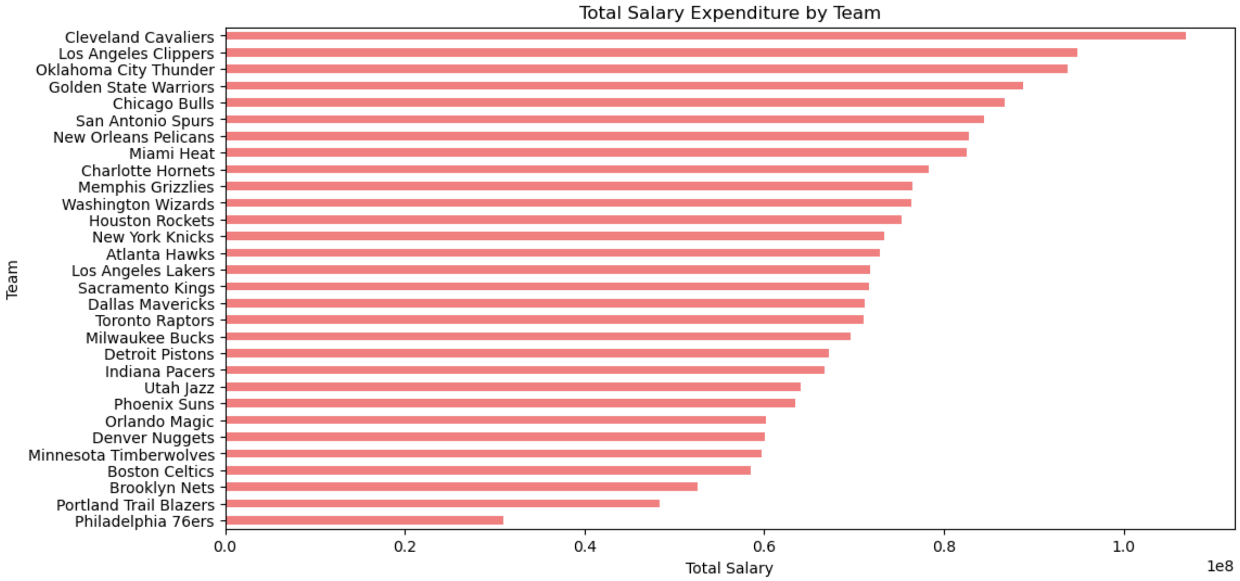
```
# Question 3

# Define age bins and labels
age_bins = [0, 20, 30, 40, 50, 60, 70, 100]
age_labels = ["<20", "20-29", "30-39", "40-49", "50-59", "60-69",
"70+"]

# Create a new column 'Age_Group' based on the bins
df['Age_Group'] = pd.cut(df['Age'], bins=age_bins, labels=age_labels,
right=False)

# Calculate age group distribution
```

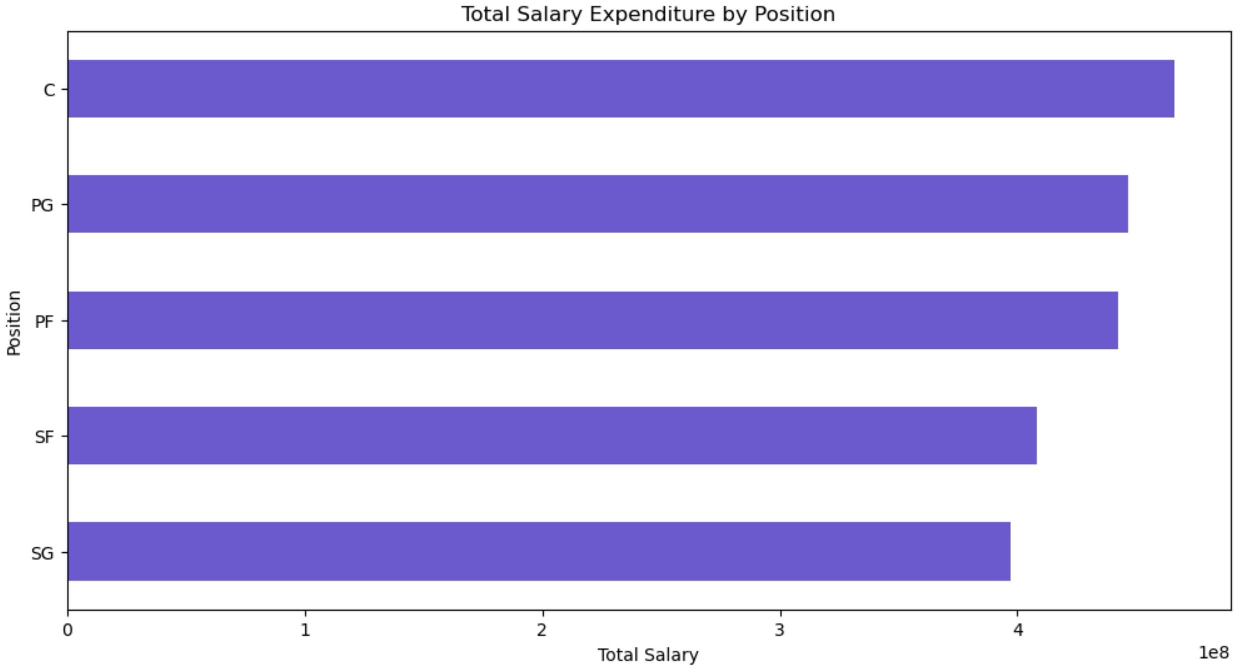
```python
age_group_distribution = df['Age_Group'].value_counts().sort_index()

# Display the result
print("\n3. Predominant Age Group Among Employees:")
print(age_group_distribution)

# Histogram for age groups
plt.figure(figsize=(10, 6))
age_group_distribution.plot(kind='bar', color='lightgreen')
plt.title('Age Group Distribution Among Employees')
plt.xlabel('Age Group')
plt.ylabel('Number of Employees')
plt.show()
```

```
3. Predominant Age Group Among Employees:
Age_Group
<20        2
20-29    334
30-39    119
40-49      3
50-59      0
60-69      0
70+        0
Name: count, dtype: int64
```



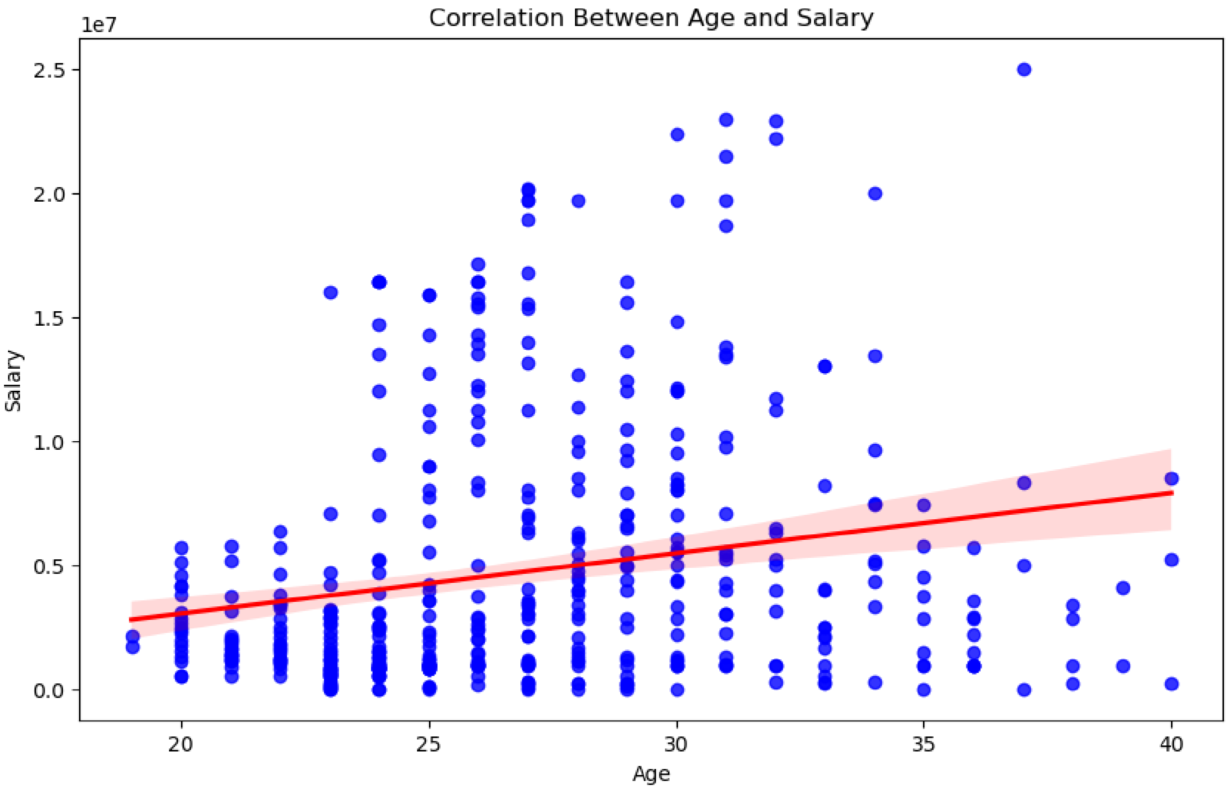
```
# Question 4

# Ensure Salary has no NaN values (fill with 0)
df['Salary'] = df['Salary'].fillna(0)

# Calculate total salary by team
team_salary = df.groupby('Team')['Salary'].sum().sort_values()

# Calculate total salary by position
position_salary = df.groupby('Position')['Salary'].sum().sort_values()

# Display highest salary expenditure team and position
highest_salary_team = team_salary.idxmax()
highest_salary_position = position_salary.idxmax()
print("\n4. Team and Position with Highest Salary Expenditure:")
print(f"Highest Salary Team: {highest_salary_team} - $
{team_salary[highest_salary_team]:,.2f}")
print(f"Highest Salary Position: {highest_salary_position} - $
{position_salary[highest_salary_position]:,.2f}")

# Horizontal bar charts for team and position salary expenditure
plt.figure(figsize=(12, 6))
team_salary.plot(kind='barh', color='lightcoral')
plt.title('Total Salary Expenditure by Team')
plt.xlabel('Total Salary')
plt.ylabel('Team')
plt.show()

plt.figure(figsize=(12, 6))
position_salary.plot(kind='barh', color='slateblue')
plt.title('Total Salary Expenditure by Position')
plt.xlabel('Total Salary')
plt.ylabel('Position')
plt.show()


4. Team and Position with Highest Salary Expenditure:
Highest Salary Team: Cleveland Cavaliers - $106,988,689.00
Highest Salary Position: C - $466,377,332.00
```





```python
# Question 5

# Calculate correlation coefficient
correlation = df['Age'].corr(df['Salary'])
print("\n5. Correlation Between Age and Salary:")
print(f"Correlation Coefficient: {correlation:.2f}")

# Scatter plot with regression line for age vs salary
plt.figure(figsize=(10, 6))
sns.regplot(x='Age', y='Salary', data=df,
scatter_kws={'color':'blue'}, line_kws={'color':'red'})
plt.title('Correlation Between Age and Salary')
plt.xlabel('Age')
plt.ylabel('Salary')
plt.show()
```

```
5. Correlation Between Age and Salary:
Correlation Coefficient: 0.21
```


Correlation Between Age and Salary
1e7
2.5
2.0
1.5
1.0
0.5
0.0
Salary
20
25
30
35
40
Age