Project: albb-saleries 2003 analysis

Introduction

Dataset Description

This dataset is a data of salaries of players of baseball in year 2003

Question(s) for Analysis :

1-how many team in the data

2-what are the positions of players? and show how many player in each position

3- what is the most and least team which have players

4-what is the most team which pays money in salaries and what the avereage of it payment

5-who is the player whose greatest salary? and get all information about him .

6- show the top greatest 20 salary of players and there positions

7-how much salary of each position? and show which position have the greatest

8-did the salaries of players is approximate

9- show the statistics of salaries

In [338…

```
# Load your data and print out a few lines. Perform operations to inspect data
# import the libraries that you use
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
```

In [339…

```
# load the data
df = pd.read_csv('albb-saleries in USA.csv').sort_values(['Salary'],ascending=False)
```

In [340…

```
# print out a few lines
df.head()
```

Out[340…

	Team	player name	first name	second name	Salary	Position
371	Texas Rangers	Alex Rodriguez	Alex	Rodriguez	22000000.0	Shortstop
76	Boston Red Sox	Manny Ramirez	Manny	Ramirez	20000000.0	Outfielder
117	Toronto Blue Jays	Carlos Delgado	Carlos	Delgado	18700000.0	First Baseman
8	New York Yankees	Derek Jeter	Derek	Jeter	15600000.0	Shortstop
68	Boston Red Sox	Pedro Martinez	Pedro	Martinez	15500000.0	Pitcher

Accessing and cleaning data

In [341…

```
# the shape of the dataframe
df.shape
```

Out[341…

```
(381, 6)
```

In [342…

```
# show the dataframe information
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 381 entries, 371 to 190
Data columns (total 6 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   Team         381 non-null    object
 1   player name  381 non-null    object
 2   first name   381 non-null    object
 3   second name  381 non-null    object
 4   Salary       381 non-null    float64
 5   Position     381 non-null    object
dtypes: float64(1), object(5)
memory usage: 20.8+ KB
```

it is clear that there is no null values

In [343…

```
# check the duplicated values
sum(df.duplicated())
```

Out[343…

```
0
```

then , there is no any duplicates

In [344…

```
# drop the columns that we don`t need it in analysis
df.drop(['first name','second name'],axis = 1, inplace=True)
```

The data is really clean now and there is no null or duplicated values

ok,we can continue now

Exploratory Data Analysis

how many team in the data

In [345…

```
df['Team'].nunique()
```

Out[345…

```
14
```

there are 14 team in the data

what are the positions of players? and show how many player in each position

In [346…

```
df.Position.unique()
```

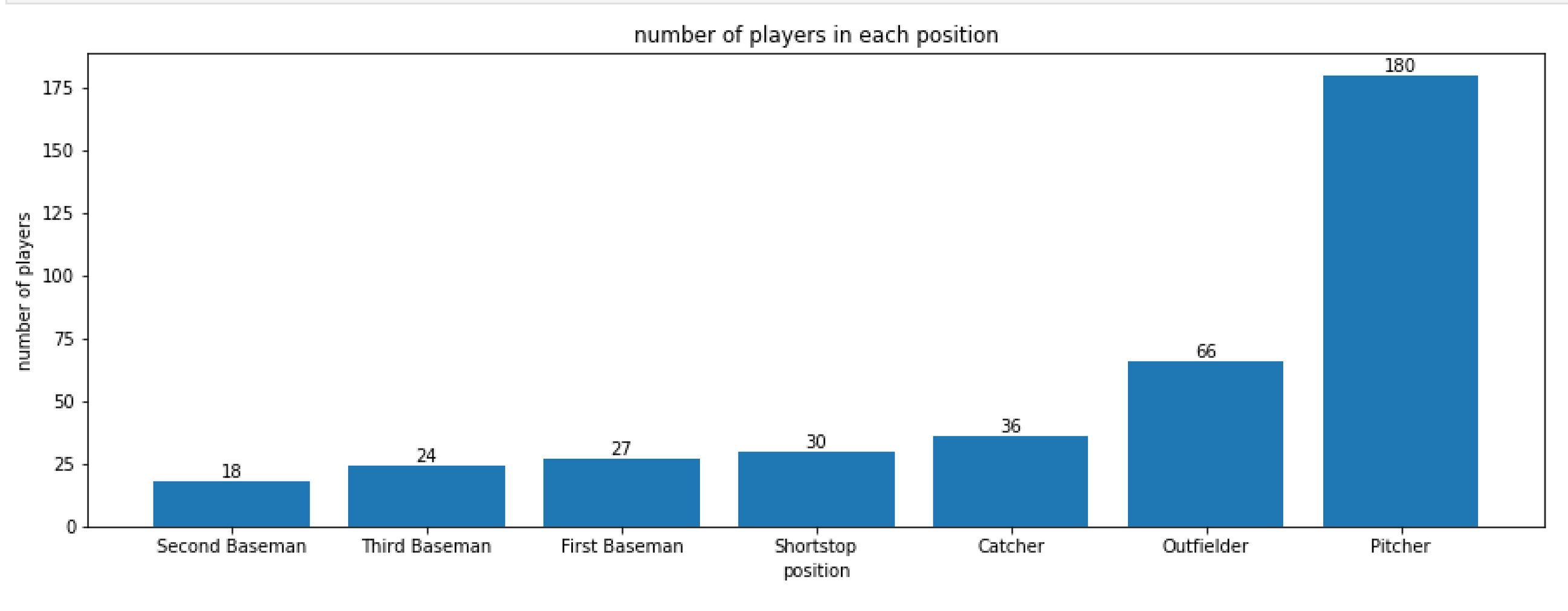
Out[346…

```
array(['Shortstop', 'Outfielder', 'First Baseman', 'Pitcher',
       'Third Baseman', 'Catcher', 'Second Baseman'], dtype=object)
```

then the positions are ['Shortstop', 'Outfielder', 'First Baseman', 'Pitcher','Third Baseman', 'Catcher', 'Second Baseman']

In [347…

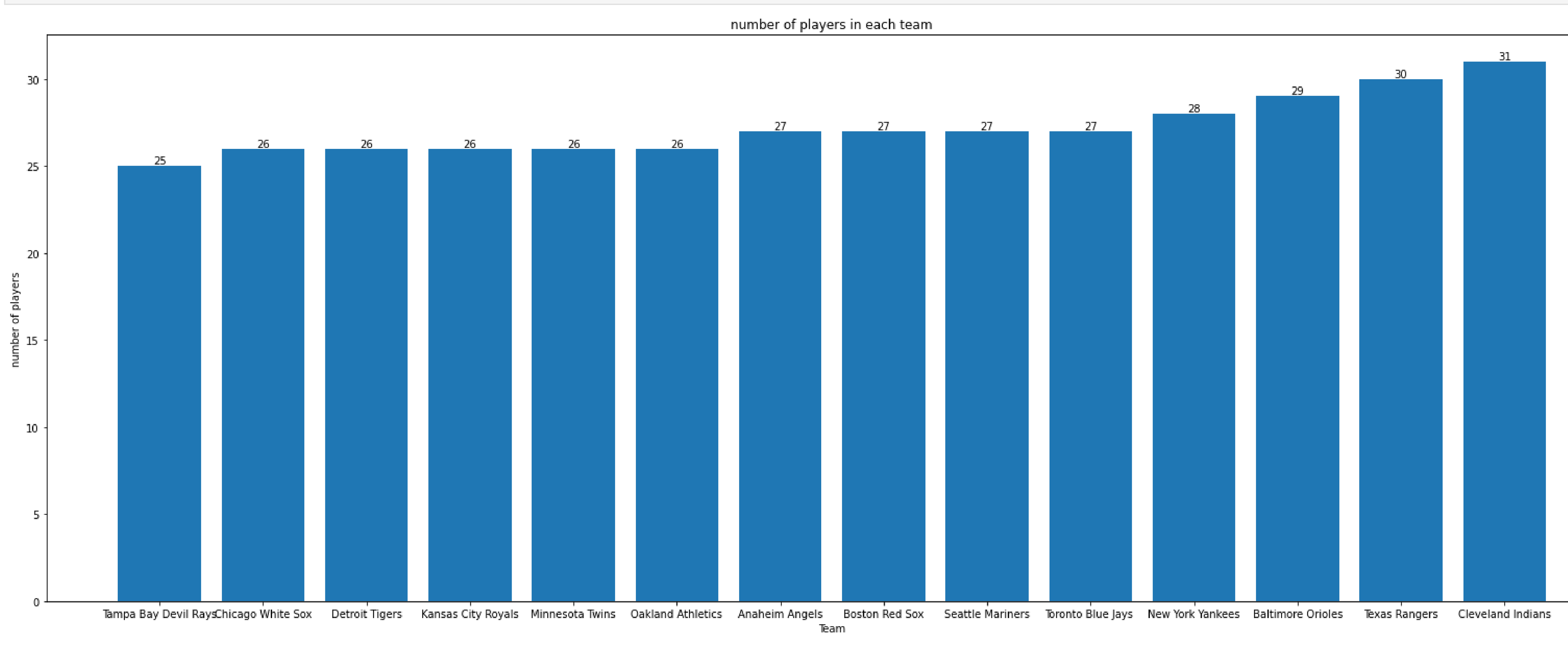
```
df_pos_players = pd.DataFrame(df.groupby('Position')['player name'].count()).sort_values(['player name'],ascending=True)
y =list(df_pos_players['player name'].values)
x = list(df_pos_players.index)
plt.figure(figsize = (15,5))
plt.bar(x,y)
for i in range(len(y)):
    plt.text(i,y[i],y[i], ha ='center', va= 'bottom')
plt.ylabel('number of players')
plt.xlabel('position')
plt.title('number of players in each position')
plt.show();
```



what is the most and least team which have players

In [348…

```
df_team_player = pd.DataFrame(df.groupby('Team')['player name'].count()).sort_values(['player name'],ascending=True)
x = list(df_team_player.index)
y = list(df_team_player['player name'].values)
plt.figure(figsize = (27,10))
plt.rcParams.update({'font.size': 10})
plt.bar(x, y)
for i in range(len(y)):
    plt.text(i,y[i],y[i], ha ='center', va= 'bottom')
plt.ylabel('number of players')
plt.xlabel('Team')
plt.title('number of players in each team')
plt.show();
```

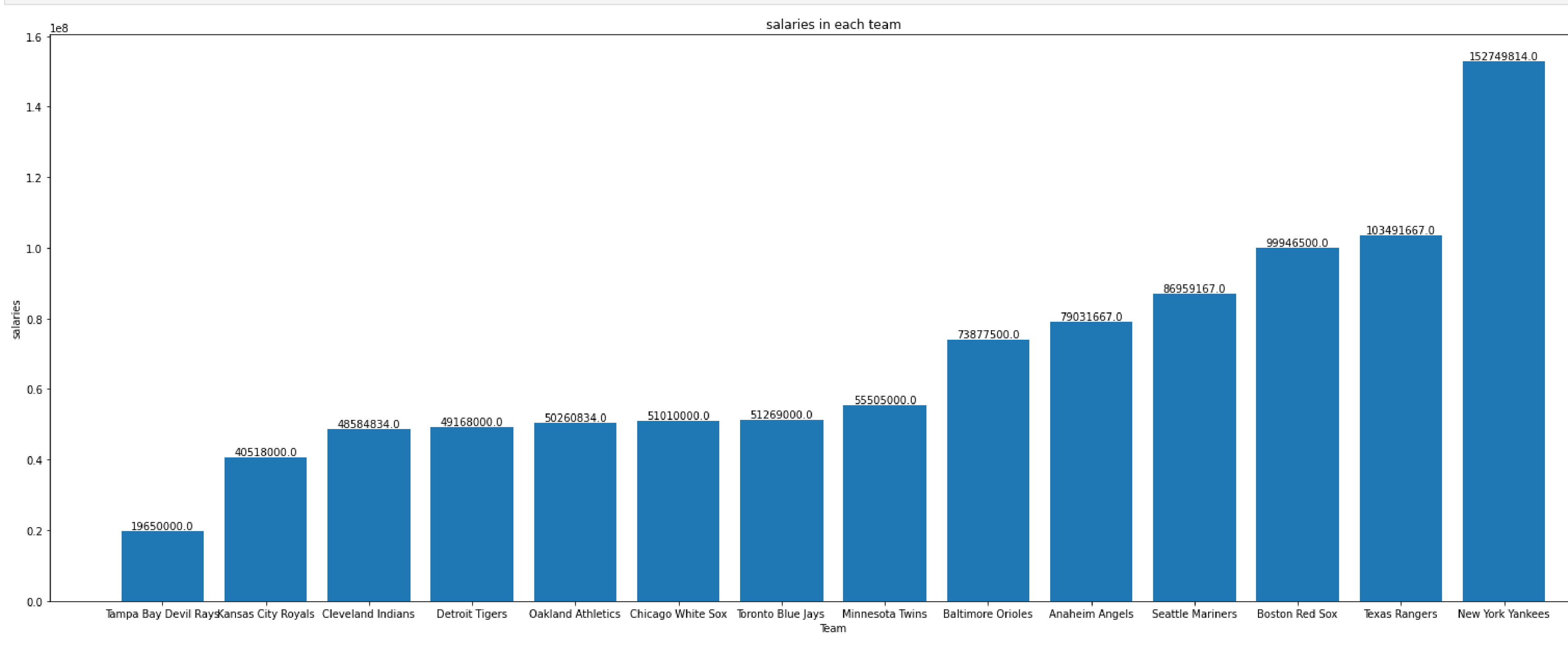


then the most team have a players is "Cleveland Indians" and the least team is "Tampa Bay Devil Ray"

what is the most team which pays money in salaries and what the avereage of it payment

In [349…

```
df_money_team = pd.DataFrame(df.groupby('Team')['Salary'].sum()).sort_values(['Salary'],ascending=True)
x = list(df_money_team.index)
y = list(df_money_team['Salary'].values)
plt.figure(figsize = (27,10))
plt.rcParams.update({'font.size': 10})
plt.bar(x, y)
for i in range(len(y)):
    plt.text(i,y[i],y[i], ha ='center', va= 'bottom')
plt.ylabel('salaries')
plt.xlabel('Team')
plt.title('salaries in each team')
plt.show();
```



Then the most team which paid money in salaries is "New York Yankees " and It paid 152749814.0 $

who is the player whose greatest salary? and get all information about him .

In [350…

```
df[df['Salary'] == df.groupby('player name')['Salary'].sum().max()]
```

Out[350…

	Team	player name	Salary	Position
371	Texas Rangers	Alex Rodriguez	22000000.0	Shortstop

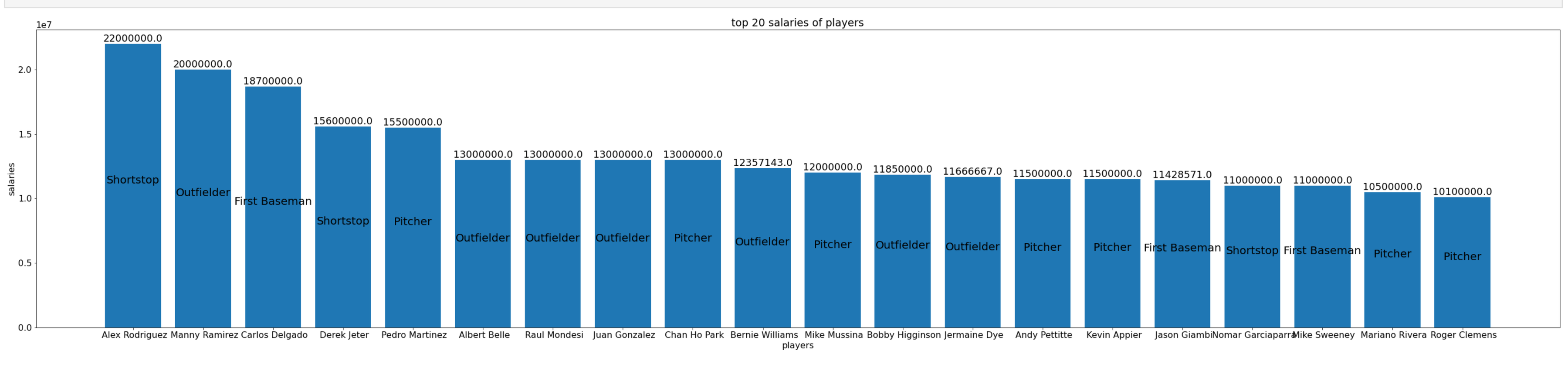
Then the player name is 'Alex Rodriguez' , his position is 'shortstop' and he plays in 'Texas Rangers' team

and takes salary 22000000.0 $

show the top greatest 20 salary of players and there positions

In [351…

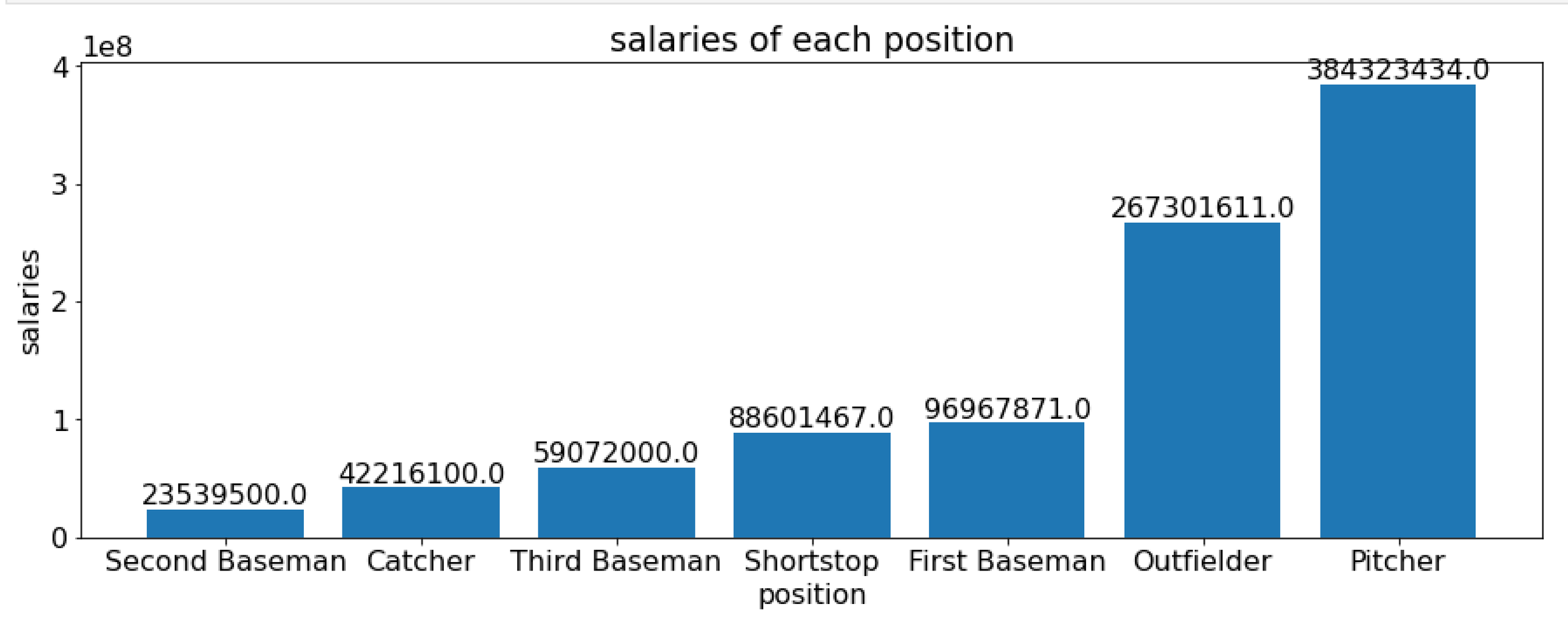
```
df_salary_player = pd.DataFrame(df.groupby(['player name','Position'],as_index = False)['Salary'].sum()).sort_values(['Salary'],ascending=False).head(20)
x = list(df_salary_player['player name'].values)
y = list(df_salary_player['Salary'].values)
z = list(df_salary_player['Position'].values)
plt.figure(figsize = (50,10))
plt.rcParams.update({'font.size':16})
plt.bar(x, y)
for i in range(len(y)):
    plt.text(i,y[i],y[i], ha ='center', va= 'bottom',fontsize=18)
    plt.text(i,y[i]/2,z[i], ha ='center', va= 'bottom',fontsize=20)
plt.ylabel('salaries')
plt.xlabel('players')
plt.title('top 20 salaries of players')
plt.show();
```



how much salary of each position? and show which position have the greatest

In [352…

```
df_pos_salary = pd.DataFrame(df.groupby('Position')['Salary'].sum()).sort_values(['Salary'],ascending=True)
y =list(df_pos_salary['Salary'].values)
x = list(df_pos_salary.index)
plt.figure(figsize = (15,5))
plt.bar(x,y)
for i in range(len(y)):
    plt.text(i,y[i],y[i], ha ='center', va= 'bottom')
plt.ylabel('salaries')
plt.xlabel('position')
plt.title('salaries of each position')
plt.show();
```



did the salaries of players is approximate ?

to answer this question we should measure the mean and standard deviation between salaries

In [353…

```
print ("the mean of salaries equal",df.Salary.mean() , "and the std of salaries equal" ,df.Salary.std() )
```

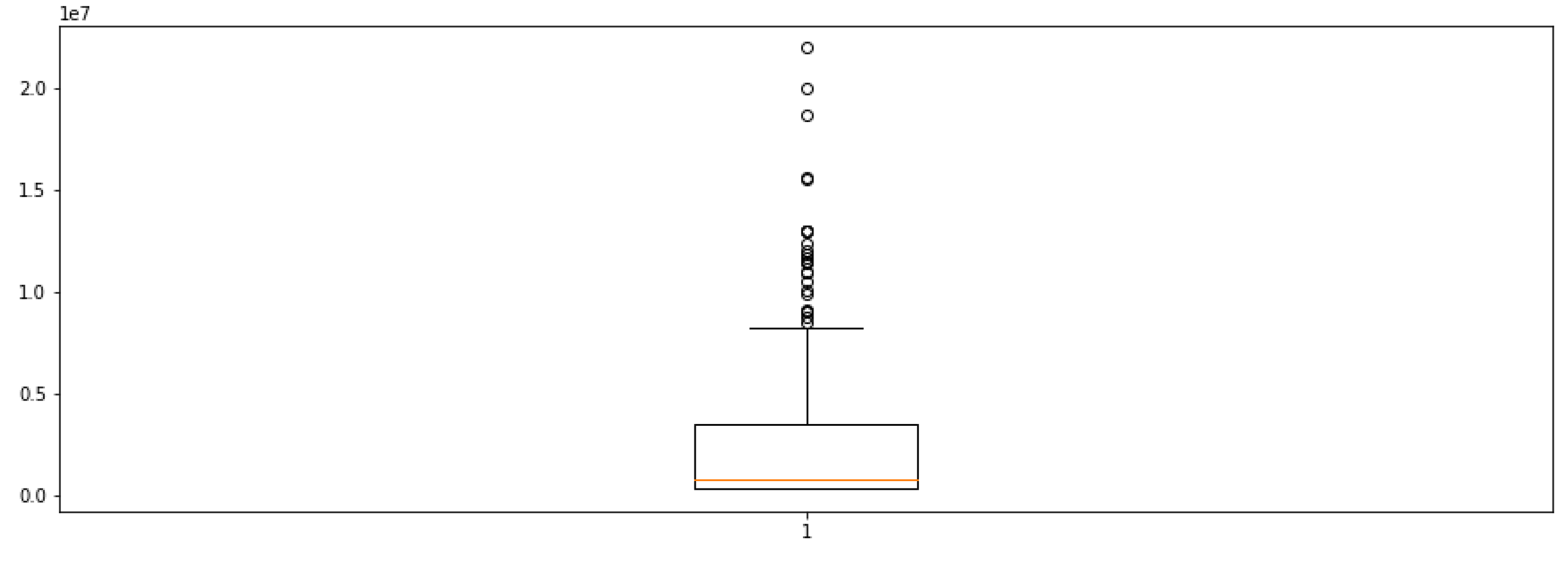
```
the mean of salaries equal 2524992.0813648296 and the std of salaries equal 3487394.5482523087
```

clearly the std is a huge number so the salaries of players is approximate and there are outliers in salaries

show the statistics of salaries

In [354…

```
plt.figure(figsize = (15,5))
plt.rcParams.update({'font.size': 10})
plt.boxplot(df.Salary)
plt.show();
```

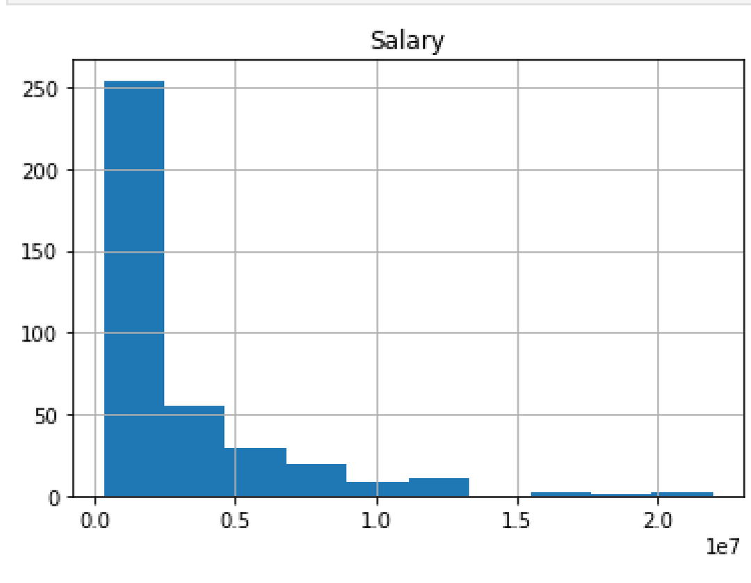


from the last figure it is clearly that there are outliers in salaries

also we get that the salary is right sekewed

In [355…

```
df.hist();
```



the descriptive satatistics of salary is

In [356…

```
df.Salary.describe()
```

Out[356…

```
count    3.810000e+02
mean     2.524992e+06
std      3.487395e+06
min      3.000000e+05
25%      3.150000e+05
50%      7.500000e+05
75%      3.500000e+06
max      2.200000e+07
Name: Salary, dtype: float64
```

Ok, here we finished our analysis process