DATA VISUALIZATION: EMPLOYEE ENGAGEMENT CASE STUDY

Background:

Employee engagement is defined through three attributes that include the extent to which employees:

– Say - speak positively about the organization to co-workers, potential employees and customers

– Stay - have an intense sense of belonging and desire to be a part of the organization

– Strive - are motivated and exert effort towards success in their job and for the company

The employee engagement score is obtained based on 6 questions. The score ranges from 0 to 100 where higher score indicates more engaged employee.

In addition, the feedback is obtained from employees about proposed “4-day week with extra working hours”. The feedback rating is 1-4 where higher score indicates higher agreement level.

Import Library:

```
library(tidyverse)
```

Import Data:

```
df<-read.csv("C:/Users/SANKHYA/Downloads/EMPLOYEE ENGAGEMENT DATA.c
sv")
head(df)
```

```
  EMPNO    DEPT GENDER EESCORE FEEDBACK EXP
1    11      IT   Male   32.13        3 3.3
2   830      IT   Male   54.13        2 5.4
3    65 FINANCE   Male   44.25        4 4.7
4    66   SALES   Male   37.75        3 4.1
5   130      IT   Male   53.50        2 5.9
6   132      IT   Male   48.63        3 4.9
```

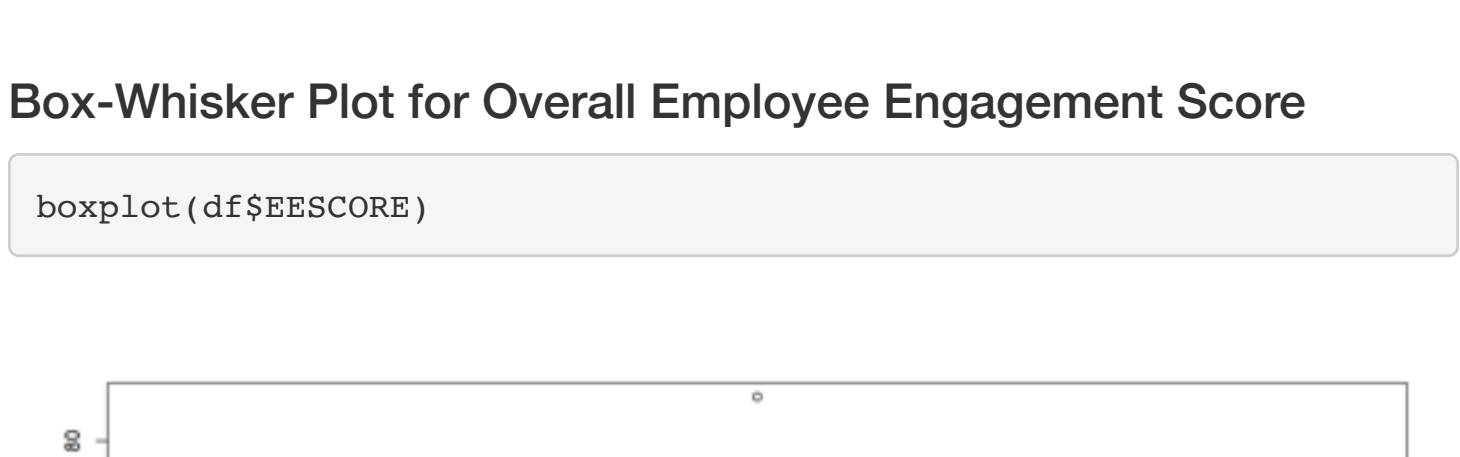
Data Description:

- EMPNO: Employee ID
- DEPT: Department of employee
- GENDER: Gender of employee
- EESCORE: Employee Engagement Score
- FEEDBACK: Employee feedback on ‘4-day week with extra working hours’. The feedback rating is 1-4 where higher score indicates higher agreement level
- EXP: Total years of experience in the organization

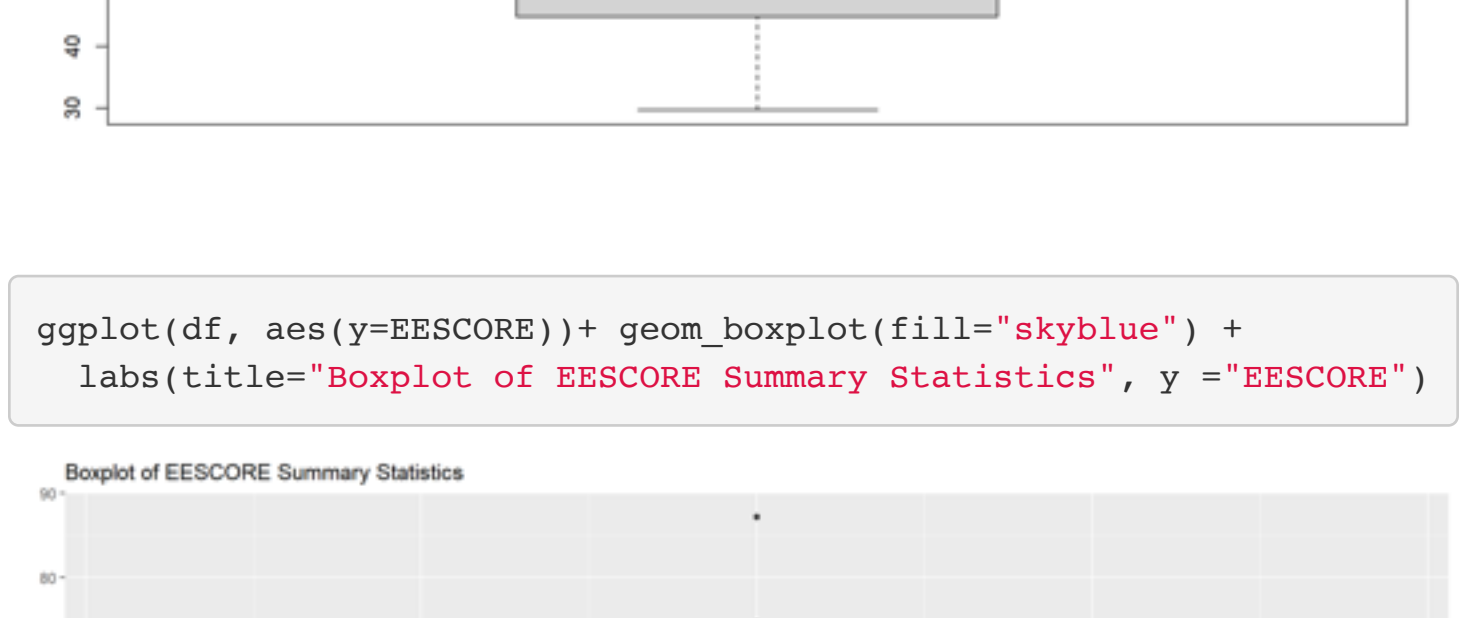
1. Visualize EESCORE using summary statistics

Box-Whisker Plot for Overall Employee Engagement Score

```
boxplot(df$EESCORE)
```



```
ggplot(df, aes(y=EESCORE))+ geom_boxplot(fill="skyblue") +
  labs(title="Boxplot of EESCORE Summary Statistics", y ="EESCORE")
```



Comment: The distribution of Employee Engagement score is symmetric with two outliers.

2. Visualize EESCORE using summary statistics by Gender

Box-Whisker Plot for Employee Engagement Score By Gender

```
ggplot(df, aes(x=GENDER, y=EESCORE)) + geom_boxplot(fill="skyblue")
+
  labs(title="Boxplot of EESCORE Summary Statistics by GENDER", x="
GENDER", y ="EESCORE")
```

Comment: The median score for female employees is much higher than for male employees.

3. Visualize EESCORE using summary statistics by Gender and Department

Box-Whisker Plot for Employee Engagement Score By Gender and Department

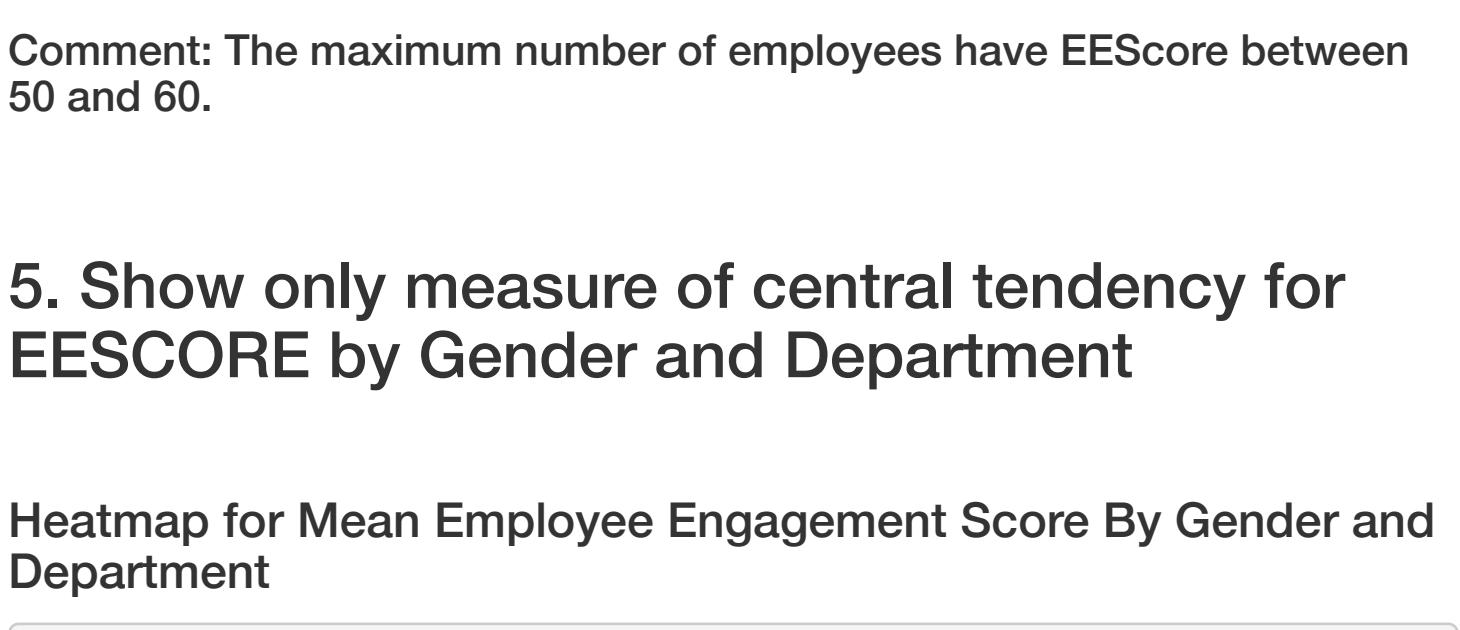
```
ggplot(df, aes(x=DEPT, y=EESCORE)) + geom_boxplot(aes(fill=GENDER))
+
  labs(title="Boxplot of EESCORE Summary Statistics by GENDER & DEP
T", x="DEPT", y ="EESCORE")
```

Comment: For each department, the median score for female employees is much higher than the median score for male employees.

4. Visualize the distribution of EESCORE - Overall

Histogram for Distribution of Overall Employee Engagement Score

```
hist(df$EESCORE, main = "Overall Distribution of EESCORE")
```



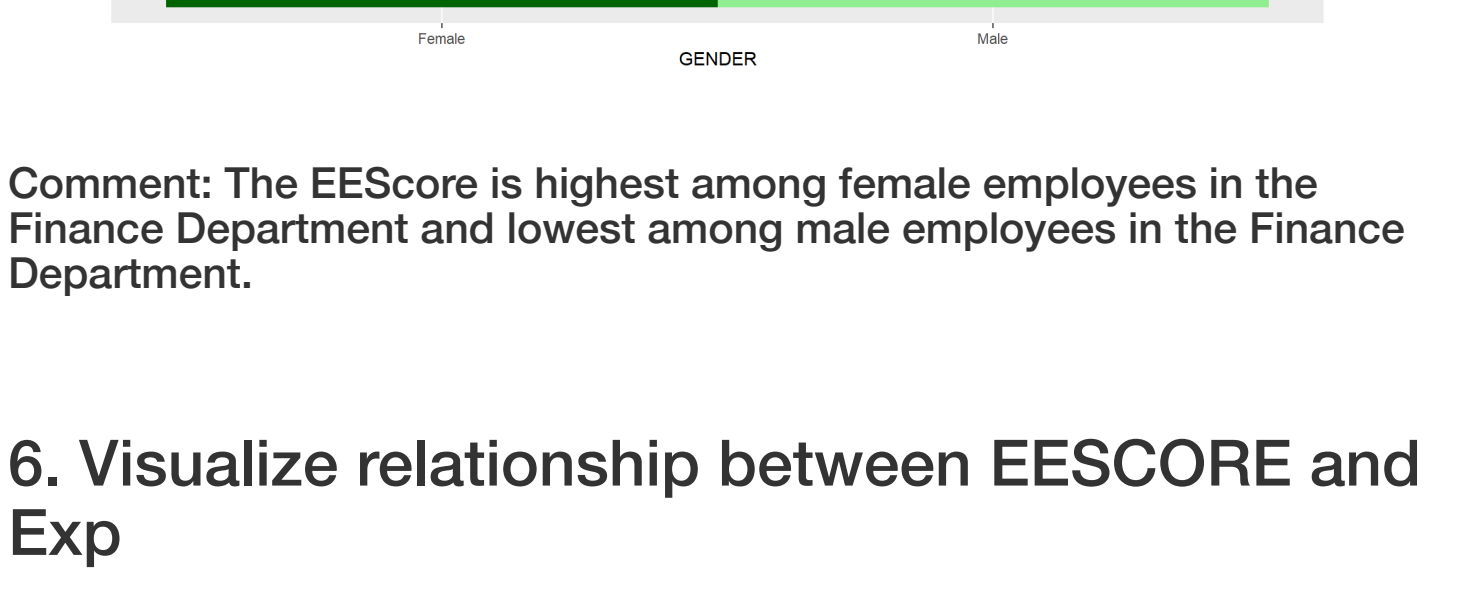
Comment: The maximum number of employees have EEScore between 50 and 60.

5. Show only measure of central tendency for EESCORE by Gender and Department

Heatmap for Mean Employee Engagement Score By Gender and Department

```
mean_GD <- aggregate(EESCORE~GENDER+DEPT,data=df,FUN=mean)

ggplot(mean_GD, aes(GENDER, DEPT, fill= EESCORE)) + geom_tile() +
  geom_text(aes(label=round(EESCORE,2)),vjust=1) +
  scale_fill_gradient(low="lightgreen", high="darkgreen") + labs(ti
tle= "")
```

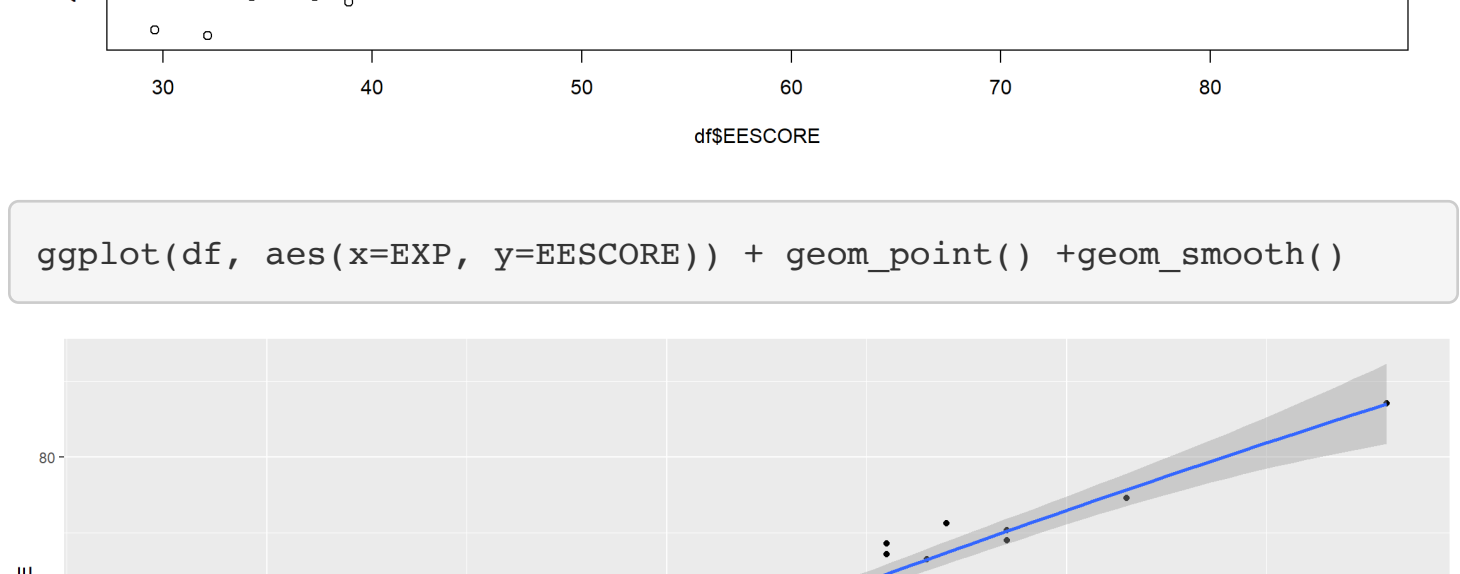


Comment: The EEScore is highest among female employees in the Finance Department and lowest among male employees in the Finance Department.

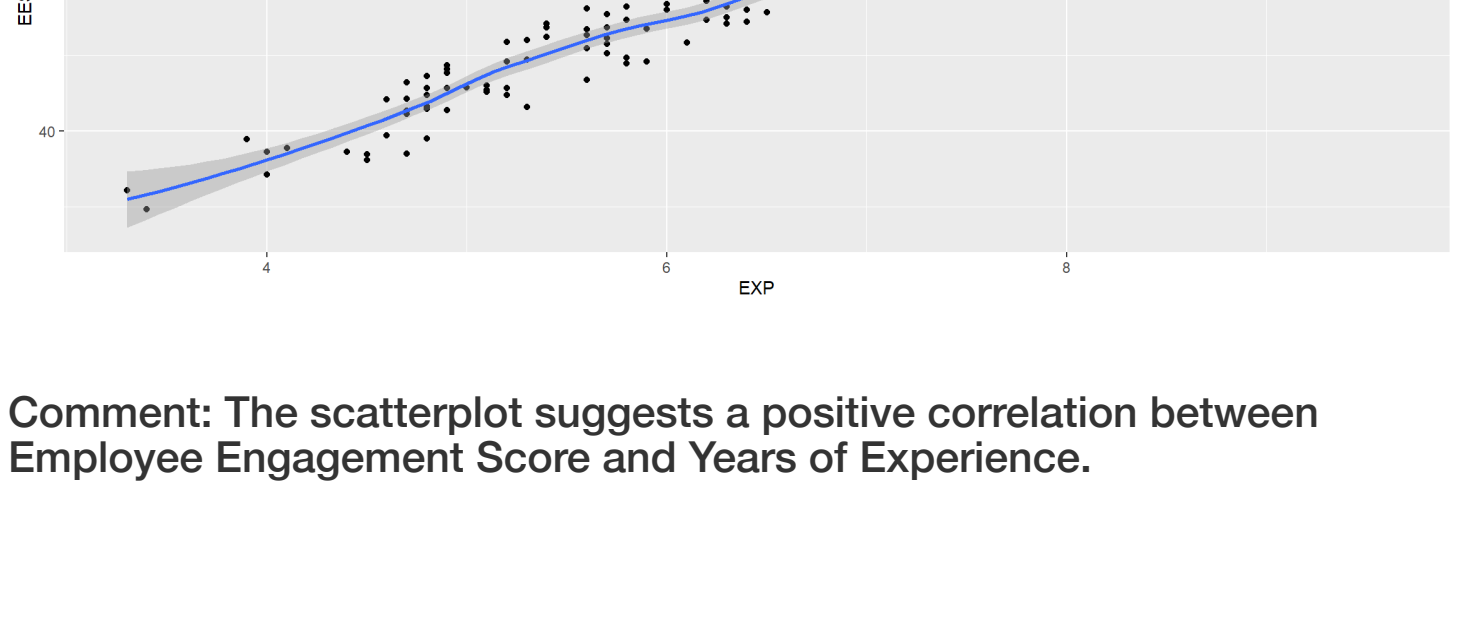
6. Visualize relationship between EESCORE and Exp

Scatterplot showing relationship between Employee Engagement Score and Years of Experience

```
plot(df$EESCORE, df$EXP)
```




```
ggplot(df, aes(x=EXP, y=EESCORE)) + geom_point() +geom_smooth()
```

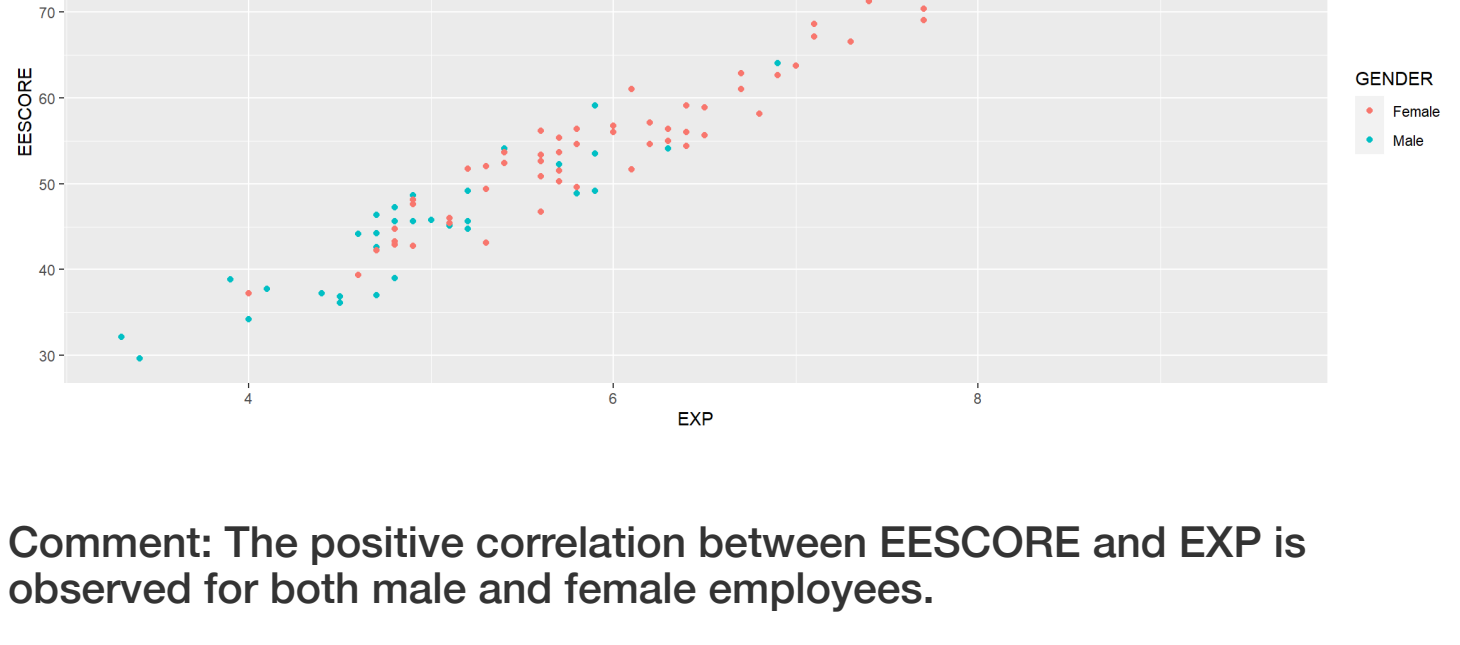


Comment: The scatterplot suggests a positive correlation between Employee Engagement Score and Years of Experience.

7. Visualize relationship between EESCORE and Exp by Gender

Bubble Chart showing relationship between Employee Engagement Score, Years of Experience and Gender

```
qplot(EXP, EESCORE, data=df, color=GENDER)
```



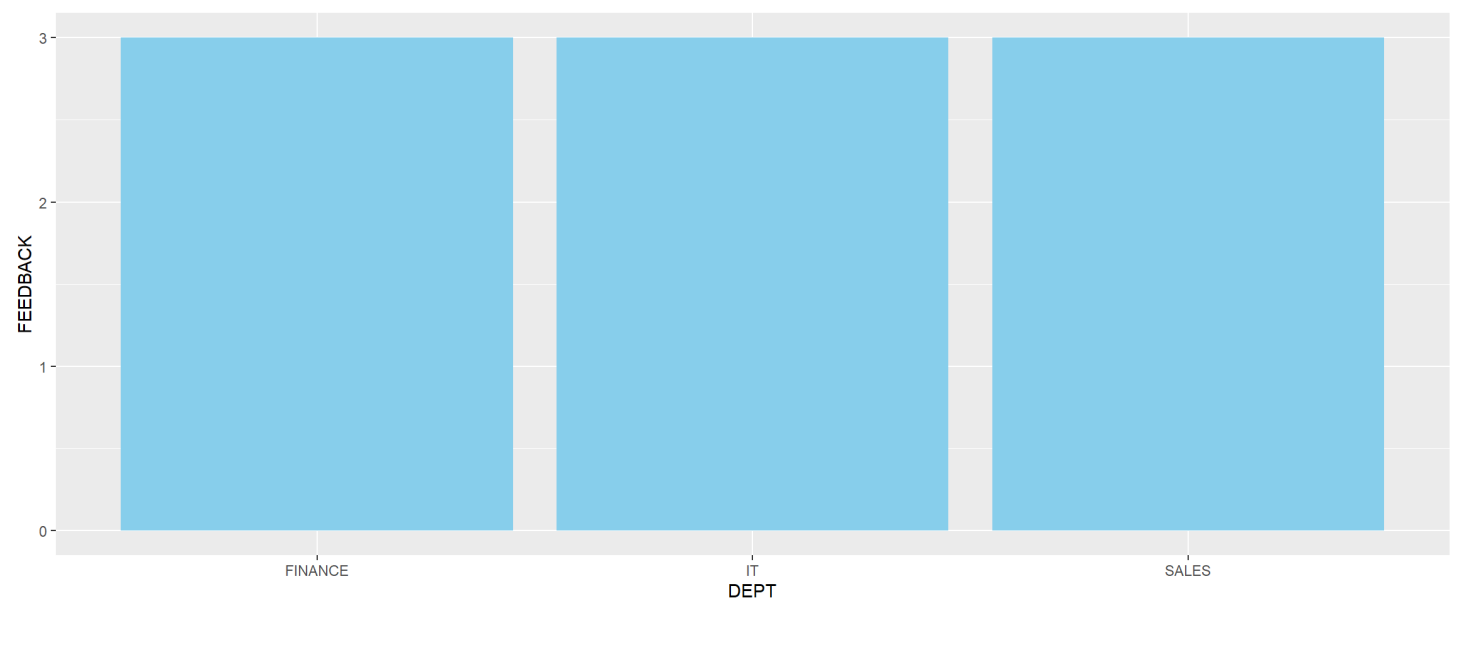
Comment: The positive correlation between EESCORE and EXP is observed for both male and female employees.

8. Visulaize Feedback using measure of central tendency by Department

Bar Chart showing the Median Feedback Scores by Department

```
median_FB<- df %>% group_by(DEPT) %>% summarise(FEEDBACK=median(FEE
DBACK))

ggplot(median_FB, aes(x=DEPT, y=FEEDBACK)) + geom_bar(stat="identit
y",fill="skyblue")
```



Comment: The median feedback is identical for three departments.