Two_Way_Anova

Investigate the effect of the education program (instructor) and supplement on the Sodium intake using two-way ANOVA

```
Instructor<-c(rep('Brendon Small',20),rep('Coach McGuirk',20),rep('Melissa Robins',20))
Supplement<-c(rep(c(rep('A',5),rep('B',5),rep('C',5),rep('D',5)),3))
Sodium<-c(1200,1400,1350,950,1400,1150,1300,1325,1425,1500,1250,1150,950,1150,1600,1300,1050,1300,1700,
)
#Sodium<-as.numeric(as.character(Sodium))
```

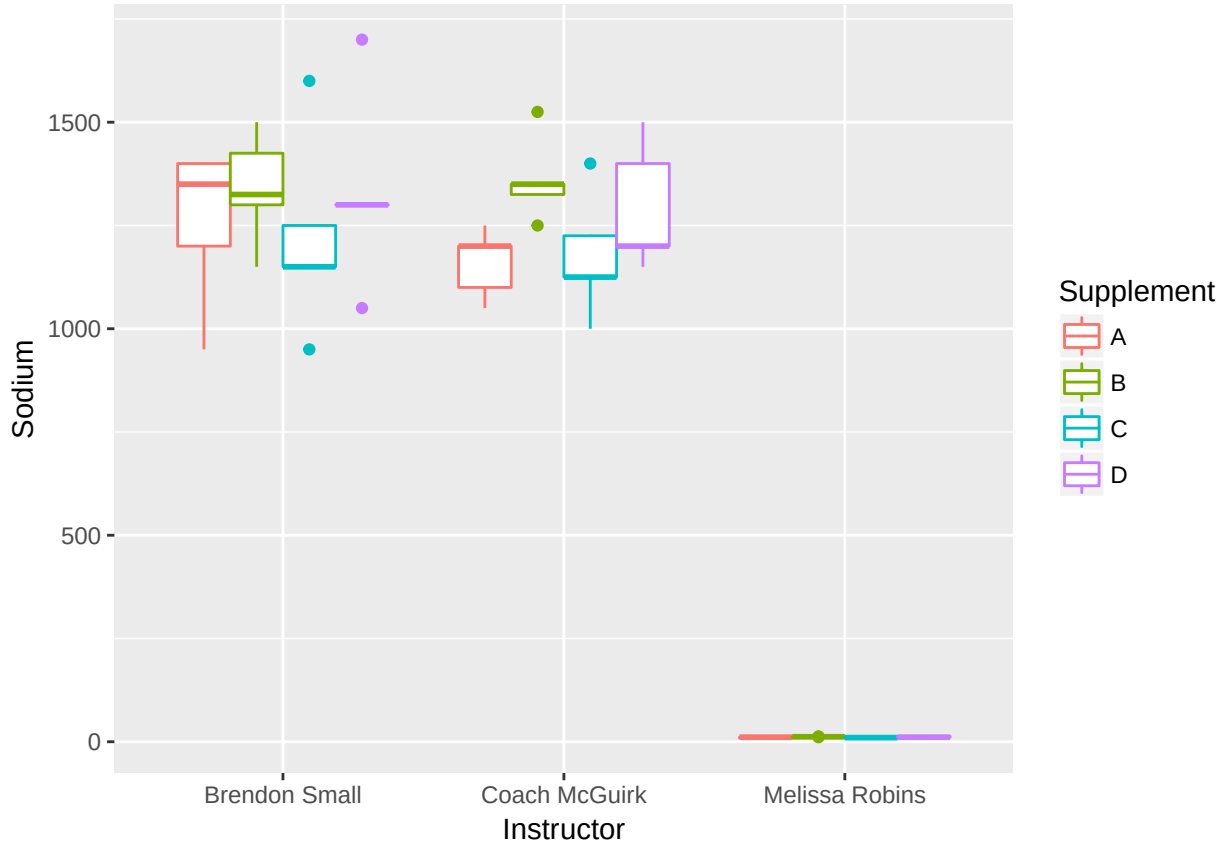
Make dataframe

```
df<- data.frame(Instructor,Supplement,Sodium)
```

```
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 3.3.3
```

```
ggplot(df,aes(Instructor,Sodium,colour=Supplement))+geom_boxplot()
```



Here Melissa Robins Sodium is way less than other two instructor.

Perform Two-Way ANOVA test

```
df_aov<-aov(Sodium~Instructor*Supplement,data=df)
summary(df_aov)
```

```
##                       Df   Sum Sq  Mean Sq F value Pr(>F)
## Instructor             2 21046643 10523321 553.690 <2e-16 ***
## Supplement             3   113519    37840   1.991  0.128
## Instructor:Supplement  6    72713    12119   0.638  0.699
## Residuals             48   912279    19006
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Based on P-value, we believe there are no difference between Supplement and Sodium or Instructor:Supplement with sodium, But there are difference between Instructor and Sodium.