

Practical 6

Aim : Implementation of ANOVA for the given dataset , also calculate the difference of variance between groups

CODE :

```
data <- data.frame(  
  group = factor(rep(c("group1", "group2", "group3"), each =  
10)),  
  value = c(85, 86, 88, 75, 78, 94, 98, 79, 71, 80,  
            91, 92, 93, 85, 87, 84, 82, 88, 95, 96,  
            79, 78, 88, 94, 92, 85, 83, 85, 82, 81)  
)  
View(data)  
boxplot(value~ group ,data)  
anova_result <- aov(value ~ group, data = data)  
summary(anova_result)  
oneway.test(value ~ group ,  
            data = data  
            )  
  
data2 <- data.frame(  
  group2 = factor(rep(c("x1", "x2", "x3" , "x4"), each = 5)),  
  value2 = c(8,10,12,8,7,  
            12,11,9,14,4,  
            18,12,16,6,8,  
            13,9,12,16,15)  
)  
View(data2)  
boxplot(value2~ group2 ,data2)  
anova_result2 <- aov(value2 ~ group2, data = data2)  
summary(anova_result2)  
oneway.test(value2 ~ group2 ,  
            data = data2  
            )
```

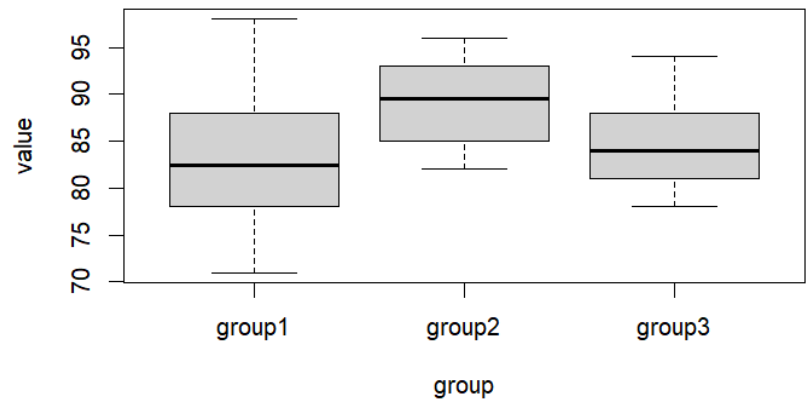
DATA :

	group	value
1	group1	85
2	group1	86
3	group1	88
4	group1	75
5	group1	78
6	group1	94
7	group1	98
8	group1	79
9	group1	71
10	group1	80

11	group2	91
12	group2	92
13	group2	93
14	group2	85
15	group2	87
16	group2	84
17	group2	82
18	group2	88
19	group2	95
20	group2	96

21	group3	79
22	group3	78
23	group3	88
24	group3	94
25	group3	92
26	group3	85
27	group3	83
28	group3	85
29	group3	82
30	group3	81

OUTPUT :



```
R 4.4.1 ~ /
> anova_result <- aov(value ~ group, data = data)
> summary(anova_result)
              Df Sum Sq Mean Sq F value Pr(>F)
group          2  192.2    96.10   2.358  0.114
Residuals     27 1100.6    40.76
> oneway.test(value ~ group,
+             data = data
+             )

One-way analysis of means (not assuming
equal variances)

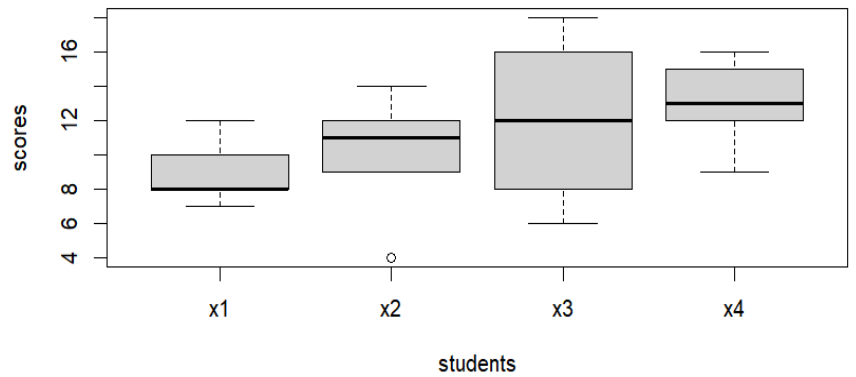
data:  value and group
F = 2.8305, num df = 2.000, denom df = 17.311,
p-value = 0.08639

> |
```

DATA :

	students	scores
1	x1	8
2	x1	10
3	x1	12
4	x1	8
5	x1	7
6	x2	12
7	x2	11
8	x2	9
9	x2	14
10	x2	4
11	x3	18
12	x3	12
13	x3	16
14	x3	6
15	x3	8
16	x4	13
17	x4	9
18	x4	12
19	x4	16
20	x4	15

OUTPUT :



```
R 4.4.1 ~ /
> anova_result2 <- aov(scores ~ students, data = data2)
> summary(anova_result2)
              Df Sum Sq Mean Sq F value Pr(>F)
students       3     50   16.67    1.282  0.314
Residuals     16    208   13.00
>
> oneway.test(scores ~ students,
+             data = data2
+ )

One-way analysis of means (not assuming equal
variances)

data:  scores and students
F = 2.1587, num df = 3.0000, denom df = 8.4774, p-value =
0.1668
```