Anova Test

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Performing the Anova Test of new employee depending on their monthly ratings given.

Reading the given Data:

```
library(XLConnect)

## Loading required package: XLConnectJars

## XLConnect 0.2-13 by Mirai Solutions GmbH [aut],
##   Martin Studer [cre],
##   The Apache Software Foundation [ctb, cph] (Apache POI),
##   Graph Builder [ctb, cph] (Curvesapi Java library)

## http://www.mirai-solutions.com ,
## http://miraisolutions.wordpress.com

wb =
loadWorkbook("C:\\Users\\Admin\\Desktop\\Work\\EarlyLifeProductivity_firstdra
ft_Copy.xlsx")
Tarapur_df = readWorksheet(wb, sheet = "Sheet1", header = TRUE)
```

Clean the data to test the model.

```
library(dplyr)

##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union

Tarapur_data <- slice(Tarapur_df,1:50)
Tarapur_data <- na.omit(Tarapur_data)
View(Tarapur_data)

attach(Tarapur_data)

Tarapur_data$X3month <- as.numeric(Tarapur_data$X3month)
Tarapur_data$X6month <- as.numeric(Tarapur_data$X6month)
```

Assign Groups to monthly rating.

```
Group1 <- Tarapur_data$X1month.
Group2 <- Tarapur_data$X3month
Group3 <- Tarapur_data$X6month
```

Combined the groups.

```
combined_grps <- data.frame(cbind(Group1,Group2,Group3)) # combined data set
into single dataset
combined_grps
```

```
##    Group1 Group2 Group3
## 1       3      3      4
## 2       1      2      2
## 3       2      3      3
## 4       3      3      4
## 5       2      3      3
## 6       3      3      3
## 7       2      3      3
## 8       3      3      4
## 9       3      3      4
## 10      2      3      3
## 11      3      4      4
## 12      2      3      3
## 13      2      3      3
## 14      2      3      3
## 15      2      3      3
## 16      2      3      3
## 17      2      3      3
## 18      2      3      3
## 19      3      3      4
## 20      3      3      4
## 21      2      3      3
## 22      2      3      3
## 23      3      3      4
## 24      4      5      5
## 25      2      3      3
## 26      2      3      3
## 27      2      3      3
## 28      2      3      3
## 29      3      3      3
## 30      3      4      5
## 31      4      4      4
## 32      3      4      4
## 33      2      3      3
## 34      3      3      3
## 35      2      3      3
## 36      2      3      4
## 37      3      3      3
## 38      3      3      4
```

```
## 39      4      4      5
## 40      2      3      3
## 41      2      2      3
## 42      2      3      3
## 43      3      3      4
## 44      3      4      4
## 45      2      3      4
## 46      2      3      3
## 47      4      5      5
## 48      2      3      3
## 49      3      2      3
```

```
summary(combined_grps)
```

```
##      Group1          Group2          Group3
##  Min.   :1.00   Min.   :2.000   Min.   :2.000
##  1st Qu.:2.00   1st Qu.:3.000   1st Qu.:3.000
##  Median :2.00   Median :3.000   Median :3.000
##  Mean   :2.51   Mean   :3.143   Mean   :3.449
##  3rd Qu.:3.00   3rd Qu.:3.000   3rd Qu.:4.000
##  Max.   :4.00   Max.   :5.000   Max.   :5.000
```

Stacked the groups.

```
stacked_grps <- stack(combined_grps)
stacked_grps
```

```
##     values    ind
## 1        3 Group1
## 2        1 Group1
## 3        2 Group1
## 4        3 Group1
## 5        2 Group1
## 6        3 Group1
## 7        2 Group1
## 8        3 Group1
## 9        3 Group1
## 10       2 Group1
## 11       3 Group1
## 12       2 Group1
## 13       2 Group1
## 14       2 Group1
## 15       2 Group1
## 16       2 Group1
## 17       2 Group1
## 18       2 Group1
## 19       3 Group1
## 20       3 Group1
## 21       2 Group1
## 22       2 Group1
## 23       3 Group1
```

```
## 24       4 Group1
## 25       2 Group1
## 26       2 Group1
## 27       2 Group1
## 28       2 Group1
## 29       3 Group1
## 30       3 Group1
## 31       4 Group1
## 32       3 Group1
## 33       2 Group1
## 34       3 Group1
## 35       2 Group1
## 36       2 Group1
## 37       3 Group1
## 38       3 Group1
## 39       4 Group1
## 40       2 Group1
## 41       2 Group1
## 42       2 Group1
## 43       3 Group1
## 44       3 Group1
## 45       2 Group1
## 46       2 Group1
## 47       4 Group1
## 48       2 Group1
## 49       3 Group1
## 50       3 Group2
## 51       2 Group2
## 52       3 Group2
## 53       3 Group2
## 54       3 Group2
## 55       3 Group2
## 56       3 Group2
## 57       3 Group2
## 58       3 Group2
## 59       3 Group2
## 60       4 Group2
## 61       3 Group2
## 62       3 Group2
## 63       3 Group2
## 64       3 Group2
## 65       3 Group2
## 66       3 Group2
## 67       3 Group2
## 68       3 Group2
## 69       3 Group2
## 70       3 Group2
## 71       3 Group2
## 72       3 Group2
## 73       5 Group2
```

```
## 74       3 Group2
## 75       3 Group2
## 76       3 Group2
## 77       3 Group2
## 78       3 Group2
## 79       4 Group2
## 80       4 Group2
## 81       4 Group2
## 82       3 Group2
## 83       3 Group2
## 84       3 Group2
## 85       3 Group2
## 86       3 Group2
## 87       3 Group2
## 88       4 Group2
## 89       3 Group2
## 90       2 Group2
## 91       3 Group2
## 92       3 Group2
## 93       4 Group2
## 94       3 Group2
## 95       3 Group2
## 96       5 Group2
## 97       3 Group2
## 98       2 Group2
## 99       4 Group3
## 100      2 Group3
## 101      3 Group3
## 102      4 Group3
## 103      3 Group3
## 104      3 Group3
## 105      3 Group3
## 106      4 Group3
## 107      4 Group3
## 108      3 Group3
## 109      4 Group3
## 110      3 Group3
## 111      3 Group3
## 112      3 Group3
## 113      3 Group3
## 114      3 Group3
## 115      3 Group3
## 116      3 Group3
## 117      4 Group3
## 118      4 Group3
## 119      3 Group3
## 120      3 Group3
## 121      4 Group3
## 122      5 Group3
## 123      3 Group3
```

```
## 124      3 Group3
## 125      3 Group3
## 126      3 Group3
## 127      3 Group3
## 128      5 Group3
## 129      4 Group3
## 130      4 Group3
## 131      3 Group3
## 132      3 Group3
## 133      3 Group3
## 134      4 Group3
## 135      3 Group3
## 136      4 Group3
## 137      5 Group3
## 138      3 Group3
## 139      3 Group3
## 140      3 Group3
## 141      4 Group3
## 142      4 Group3
## 143      4 Group3
## 144      3 Group3
## 145      5 Group3
## 146      3 Group3
## 147      3 Group3
```

Anova Test Command in R programming.

```
Anova_Result <- aov(values ~ ind, data = stacked_grps)
summary(Anova_Result)
```

```
##              Df Sum Sq Mean Sq F value   Pr(>F)
## ind           2  22.46  11.231   26.79 1.28e-10 ***
## Residuals   144  60.37   0.419
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Result shows the significant difference in ratings.