

LAB ASSIGNMENT – 6

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COURSE CODE	MAT2001
COURSE NAME	STATISTICS FOR ENGINEERS
SLOT	L7+L8
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1. A firm wishes to compare four programs for training workers to perform a certain manual task. Twenty new employees are randomly assigned to the training programs, with 5 in each program. At the end of the training period, a test is conducted to see how quickly trainees can perform the task. The number of times the task is performed per minute is recorded for each trainee

Program 1	Program 2	Program 3	Program 4
9	10	12	9
12	6	14	8
14	9	11	11
11	9	13	7
13	10	11	8

Calculate and interpret the above one way ANOVA table.

Null Hypothesis(H_0):

No significant difference in performance of each trainee.

Alternative Hypothesis(H_1):

There is a significant difference in the performance of each trainee.

R CODE & OUTPUT:

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> programs=c("1","1","1","1","1","2","2","2","2","2","3","3","3","3","3","4","4","4","4","4")
> employees=c(9,12,14,11,13,10,6,9,9,10,12,14,11,13,11,9,8,11,7,8)
> Anova=aov(employees~programs)
> summary(Anova)
          Df Sum Sq Mean Sq F value    Pr(>F)
programs    3  54.95   18.32    7.045 0.00311 **
Residuals   16  41.60    2.60
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Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
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ANS:

P value = 0.00311 is lesser than the significance levels 0.05 and 0.01 as well as the F-computed value = (7.045) is greater than F-tabulated_{0.05} (3,16) = 3.24 and F-tabulated_{0.01} (3,16) = 5.29. Hence, we reject the null hypothesis that there is no significant difference in the performance of each trainee.