

# LAB ASSESSMENT -5

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## Lab Assessment-5

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Q1) Suppose the recovery time for patients taking a new drug is measured (in days). A placebo group is also used to avoid the placebo effect. The data are as follows.

with Drug	11	15	18	7	14	18	25	19	9	13
Placebo	12	14	18	9	15	17	22	20	10	14

Is there any significant difference b/w the average effect of these two drugs?

Code:

> ~~x = c~~ x = c(11, 15, 18, 7, 14, 18, 25, 19, 9, 13)

> y = c(12, 14, 18, 9, 15, 17, 22, 20, 10, 14)

> t.test(x, y, alt = "less", var.equal = TRUE)

t = -0.093; df = 18, p-value = 0.463; mean of x = 14.9  
mean of y = 15.1

Q2) Five measurement of the output of two units have given the following results (in kilograms of material per one hour of operation). Assume that both samples have been obtained from normal populations, test at 5% significance level if two populations have the same variance.

unit A	14.1	15.2	13.5	12.9	14.3	15.0
unit B	12.9	14.3	16.0	13.5	15.3	13.7

> unit\_A = c(14.1, 15.2, 13.5, 12.9, 14.3, 15.0)

> unit\_B = c(12.9, 14.3, 16.0, 13.5, 15.3, 13.7)

> var.test(unit\_A, unit\_B)

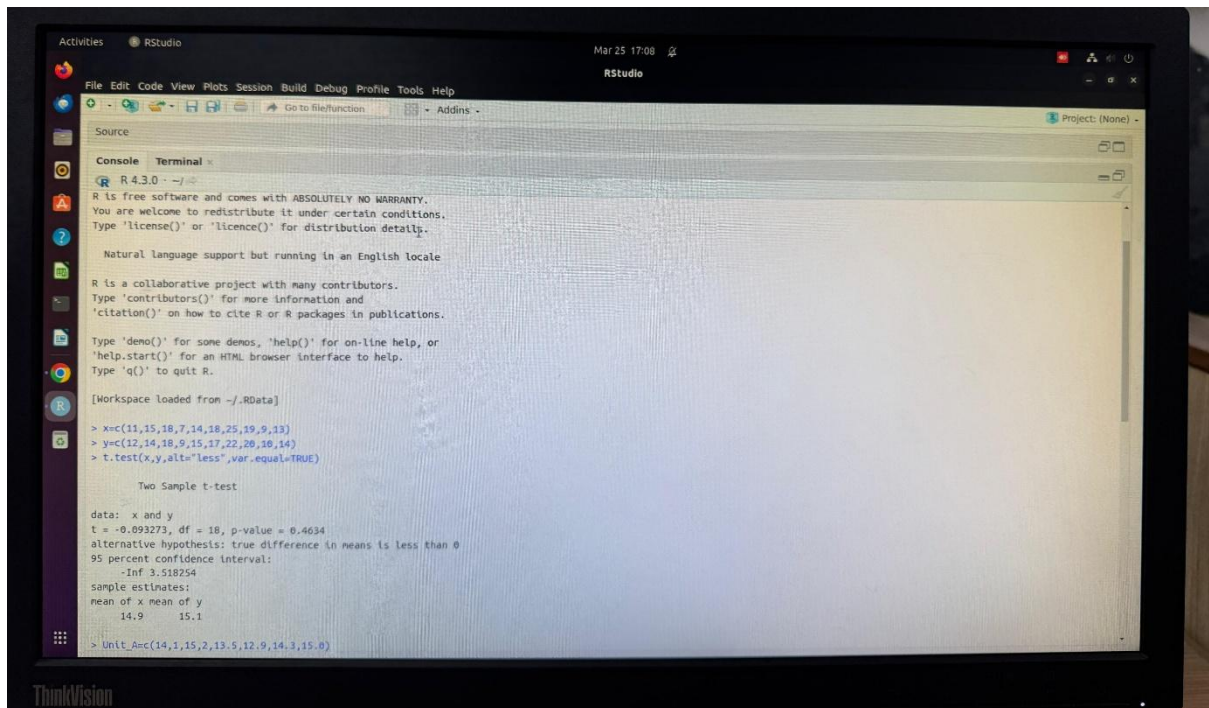
F = 0.5597469, num df = 5, denom df = 5,

P-value = 0.593979

ratio of variances = 0.5597469

## CODE & OUTPUT :

### CODE 1:



```
R 4.3.0 - ~/RData
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'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

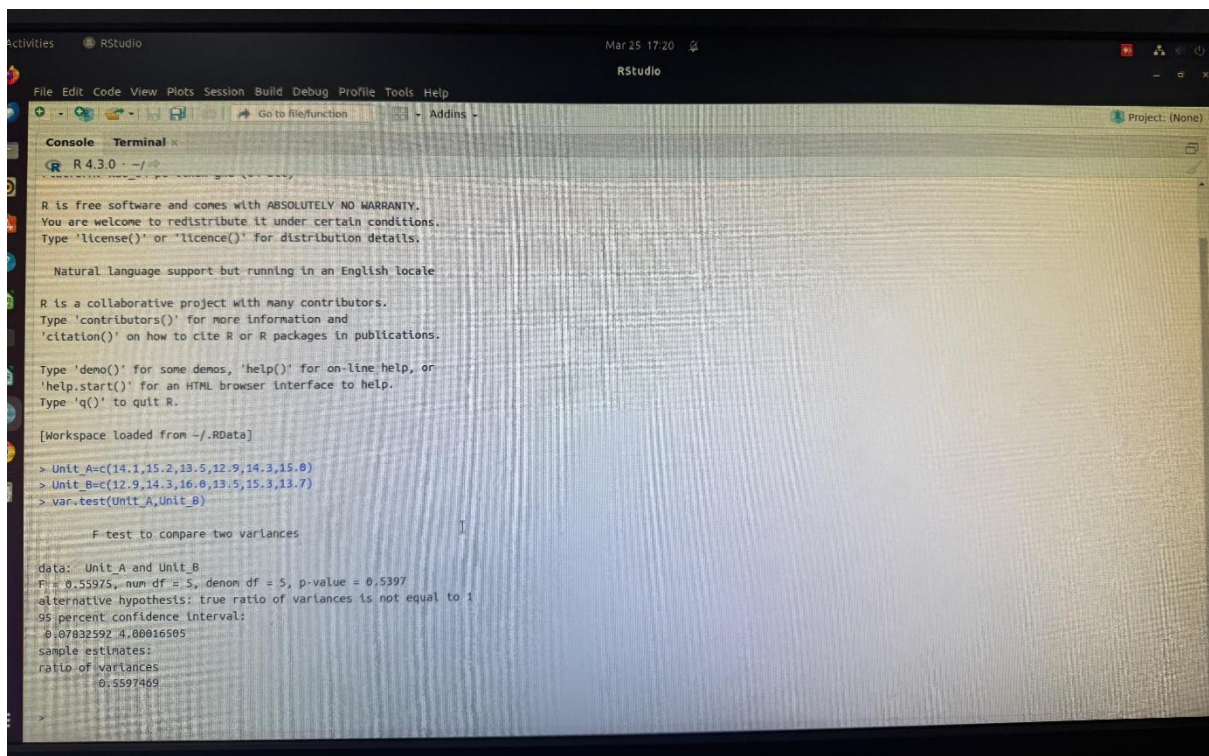
[Workspace loaded from ~/RData]
> x=c(11,15,18,7,14,18,25,19,9,13)
> y=c(12,14,18,9,15,17,22,20,10,14)
> t.test(x,y,alt="less",var.equal=TRUE)

Two Sample t-test

data: x and y
t = -0.093273, df = 18, p-value = 0.4634
alternative hypothesis: true difference in means is less than 0
95 percent confidence interval:
 -Inf 3.518254
sample estimates:
mean of x mean of y
 14.9    15.1

> Unit_A=c(14,1,15,2,13,5,12,9,14,3,15,8)
```

### CODE 2:



```
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'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

[Workspace loaded from ~/RData]
> Unit_A=c(14,1,15,2,13,5,12,9,14,3,15,8)
> Unit_B=c(12,9,14,3,16,0,13,5,15,3,13,7)
> var.test(Unit_A,Unit_B)

F test to compare two variances

data: Unit_A and Unit_B
F = 0.55975, num df = 5, denom df = 5, p-value = 0.5397
alternative hypothesis: true ratio of variances is not equal to 1
95 percent confidence interval:
 0.07832592 4.08816505
sample estimates:
ratio of variances
 0.5597469

>
```