MAT5007 – Applied Statistical Methods

Embedded Lab – *R* Statistical Software

FALL SEMESTER –
20222023L25+L26
SLOT

E-RECORD
Experiment No.: 7
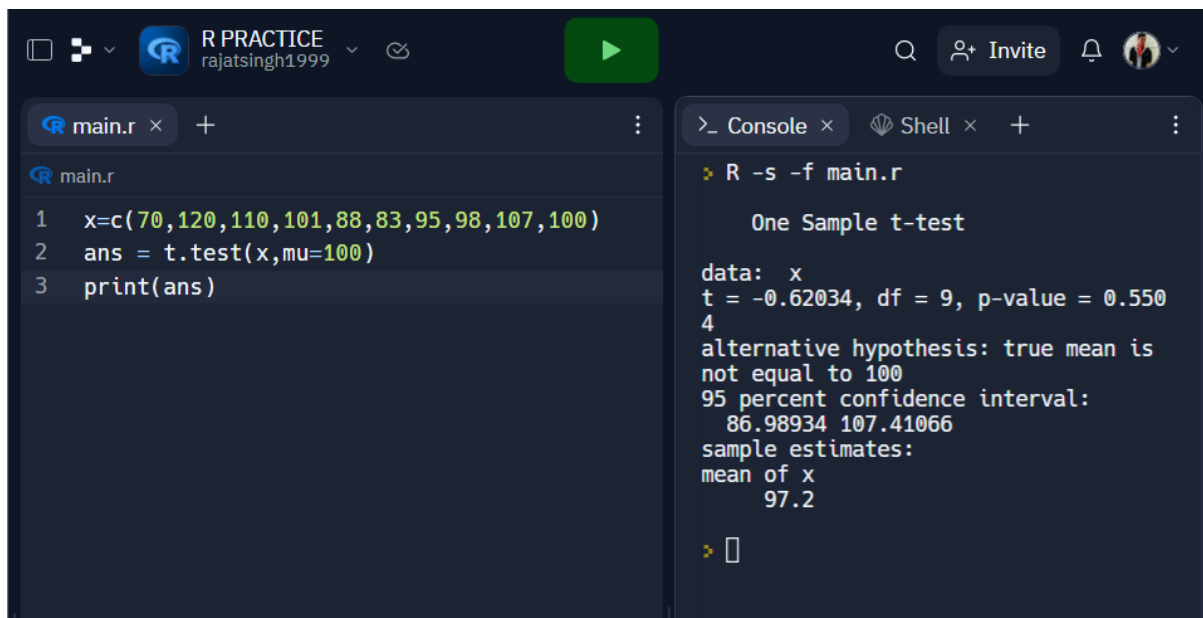
Submitted By

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MCA-I Year
SITE

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1. A random sample of 10 boys with the following IQs: 70, 120, 110, 101, 88, 83, 95, 98, 107, and 100. Write down the R programming code to test whether the data support the assumption of a population mean IQ of 100 at 5 % level of significance.
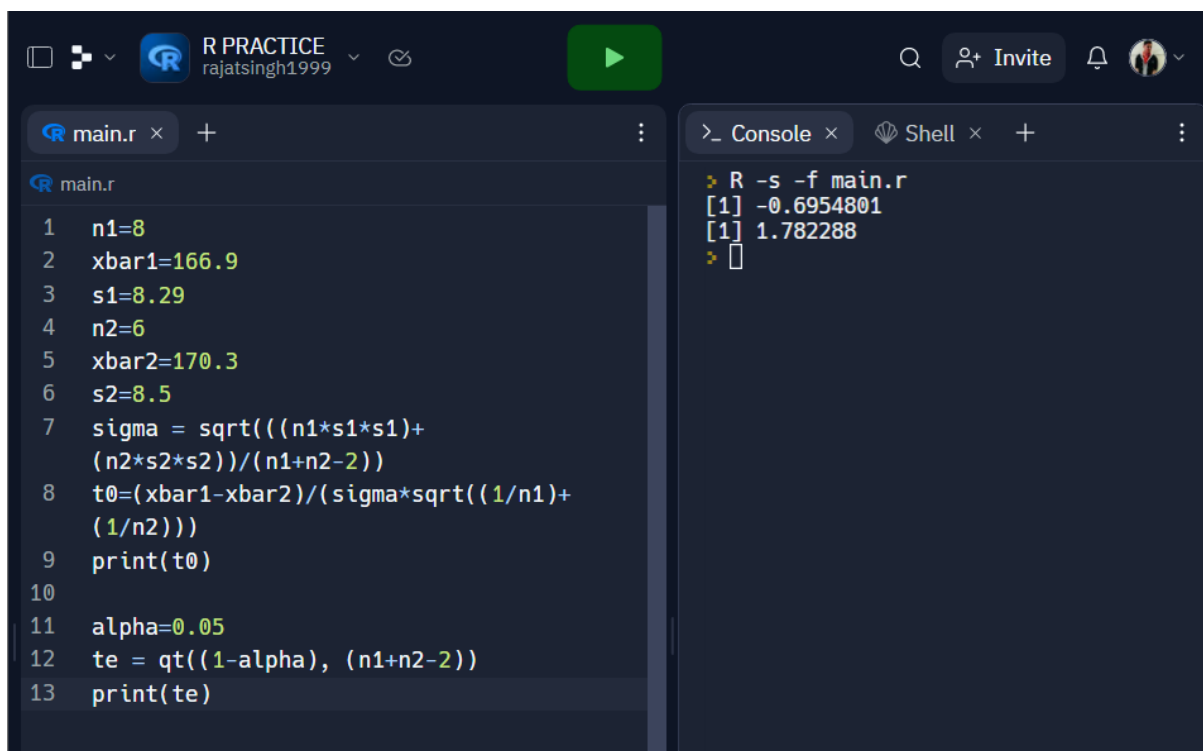
The p-value 0.5504 is greater than the 0.05 (two tailed test). Hence, at 0.05 significance level, we fail to reject the null hypothesis that the mean IQ of a population is 100.

2. The mean height and the standard deviation height of 8 randomly chosen soldiers are 166.9 cm and 8.29 cm respectively. The corresponding values of 6 randomly chosen sailors are 170.3 cm and 8.50 cm respectively. Write down the R programming code to test whether the soldiers are shorter than the sailors on the basis of average height.

R main.r +

R main.r

```r
1   n1=8
2   xbar1=166.9
3   s1=8.29
4   n2=6
5   xbar2=170.3
6   s2=8.5
7   sigma = sqrt(((n1*s1*s1)+
    (n2*s2*s2))/(n1+n2-2))
8   t0=(xbar1-xbar2)/(sigma*sqrt((1/n1)+
    (1/n2)))
9   print(t0)
10
11  alpha=0.05
12  te = qt((1-alpha), (n1+n2-2))
13  print(te)
```

>_ Console ×   Shell × +

```
> R -s -f main.r
[1] -0.6954801
[1] 1.782288
>
```

$|t0|=0.6954801$ is less than $|te|=1.782288$ (left tailed test). Hence, at 0.05 significance level, we fail to reject the null hypothesis that soldiers are equally as tall as sailors based on average height