

LAB-9 Parametric tests

a) t-test for one mean

Print("enter the data")

data = scan()

print("enter the mean")

mu = scan()

print("enter the significance percentage")

alpha = scan()

xbar = sum(data)/length(data)

sd = 0

for(i in data){

sd = sd + ((i - xbar) ^ 2)

}

sd = sd/(length(data)-1)

sd = sd ^ 0.5

val = sd/(length(data) ^ 0.5)

t = (xbar - mu)/val

tab-val = qt(1 - (alpha/2), length(data)-1)

Print(paste("x bar calculated :", xbar))

Print(paste("sd calculated :", sd))

Print(paste("t calculated value :", t))

Print(paste("t value in table:", tab-val))

if(t > tab-val){

Print(paste("mu is not equal to", mu))

} else {

Print(paste("mu is equal to", mu))

}

Output

enter the data

45 47 50 52 48 47 49 53 51

enter the mean

47.5

enter the significance percentage

0.01

\bar{x} bar calculated : 49.11111111

sd calculated : 2.61937227

t calculated value : 1.845225

t table value : 3.355387 (331)

μ is equal to 47.5

b) T - test for two means

Print("enter data1")

data1 = scan()

Print("enter data2")

data2 = scan()

Print("enter the significance percentage")

alpha = scan()

$n_1 = \text{length}(\text{data1})$

$n_2 = \text{length}(\text{data2})$

$\bar{x} = \text{sum}(\text{data1}) / n_1$

$\bar{y} = \text{sum}(\text{data2}) / n_2$

sd = 0

for i in data1 {

sd = sd + (i - \bar{x})²

for j in data2 {

sd = sd + (j - \bar{y})²

sd = sd / (n₁ + n₂ - 2)

sd = sd ^ 0.5

res = (1/n₁) + (1/n₂)

val = sd * (res ^ 0.5)

t = ($\bar{x} - \bar{y}$) / val


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tab-val = qt (1-(alpha/2), n1+n2-2)
print(paste("x bar calculated:", xbar))
print(paste("y bar calculated:", ybar))
print(paste("the standard deviation calculated (s) = ", sd))
print(paste("the t value calculated :", t))
print(paste("the t-value from table :", tab-val))
if (t > tab-val){
    print("there is some significance difference btw two means")
} else {
    print("there is no significance difference btw two means")
}
```


output

enter the data1

8260 8130 8350 8070 8340

enter the data2

7950 7890 7900 8140 7920 7840

enter the significance percentage

0.01

x bar calculated : 8230

y bar calculated : 7940

The sd calculated : 114.3095

The t value calculated : 4.18967

The t table value : 3.2498355

There is some significance difference between two means