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Assignment-8

Q.1) Test the hypothesis that the mean systolic blood pressure in a certain population equals 140mmHg. The standard deviation has a known value of 20 and a data set of 55 patients is available.BBb

Ans

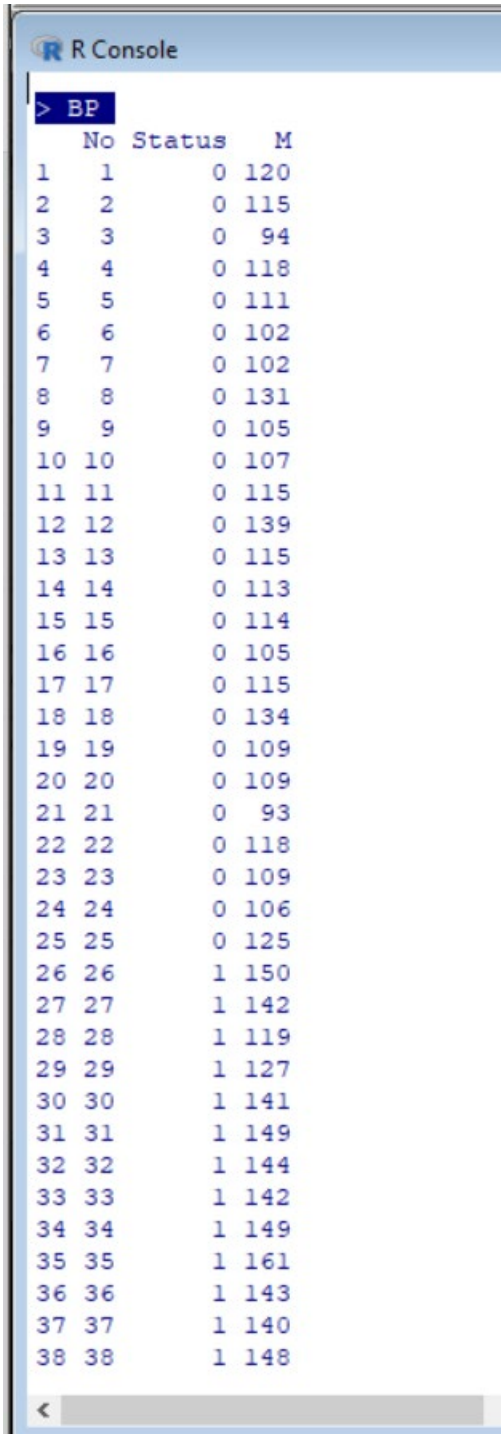
```
> No<-seq(1:55)

> Status <- c(rep(0,25),rep(1,30))

> M<-
c(120,115,94,118,111,102,102,131,105,107,115,139,115,113,114,105,115,134,
109,109,93,118,109,106,125,150,142,119,127,141,149,144,142,149,161,143,1
40,148,149,141,146,159,152,135,134,161,130,125,141,148,153,145,137,147,1
75)

> BP<-data.frame(No,Status,M)

> BP
```



34 34 1 149
35 35 1 161
36 36 1 143
37 37 1 140
38 38 1 148
39 39 1 149
40 40 1 141
41 41 1 146
42 42 1 159
43 43 1 152
44 44 1 135
45 45 1 134
46 46 1 161
47 47 1 130
48 48 1 125
49 49 1 141
50 50 1 148
51 51 1 153
52 52 1 145
53 53 1 137
54 54 1 147
55 55 1 175

```
> MU=140
> XB=mean(BP$M)
> Sigma=20
> N=55
> ##Z-Value
> Z=(XB-MU)/(Sigma/sqrt(N))
> Z
[1] -3.660905
> ##P-Value
> P=2*pnorm(-abs(Z))
> P
[1] 0.0002513257
> if(P<0.5) {
+ print("The Null Hypothesis is Rejected")
+ } else{
+ print("The Null Hypothesis is Accepted")
+ }
[1] "The Null Hypothesis is Rejected"
```

Q.2) A coin is tossed 100 times and turns up head 43 times Test the claim that this is a fair coin.Use 5% level of significance to test the claim.

Ans

```
> a=100
> b=43
> c=b/a
> d=0.5
> e=1-d
> #Z – value
> f=(c-d)/(sqrt((d*e)/a))
> f
[1] -1.4
> ## P - value
> g=2*pnorm(-abs(f),lower.tail=FALSE)
> g
[1] 1.838487
> if(f<g){
+ print("This Coin is Fair")
+ } else{
+ print("This Coin is Not Fair")
+ }
[1] "This Coin is Fair"
```

Q.3) A manufacturer of sports equipment has developed a new synthetic fishing line that the company claims has a mean breaking strength of 8 kilograms with a standard deviation of 0.5kilogram. Test the hypothesis that μ=8 kilograms against the alternative that μ is not equal to 8kilograms if a random sample of 50 lines is tested and found to have a mean breaking strength of7.8 kilograms. Use a 0.01 level of significance.

Ans

```
> a=7.8
> b=8
> c=0.5
> d=50
> ##Z-value
> e=(a-b)/(c/sqrt(d))
> e
[1] -2.828427
> ##P-Value
> f=2*pnorm(-abs(Z))
> f
[1] 0.0002513257
> if(e<f){
+ print("The Null Hypothesis is Rejected")
+ }else{
+ print("The Null Hypothesis is Accepted")
+ }
[1] "The Null Hypothesis is Rejected"
```