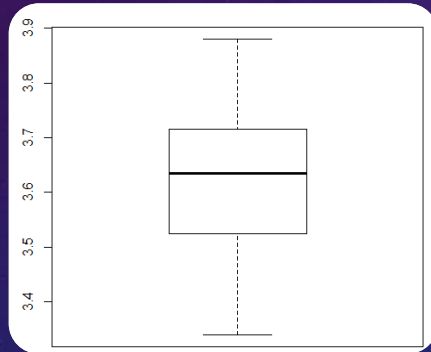
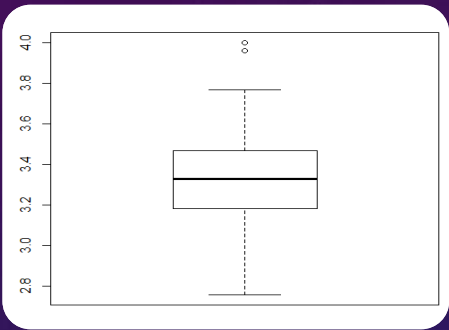
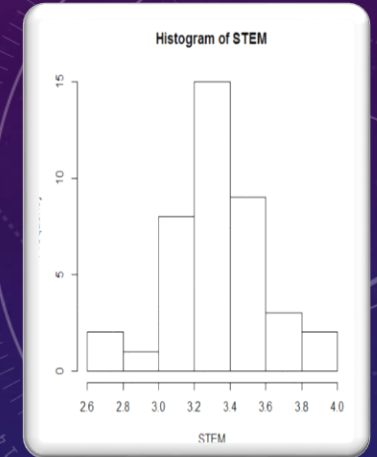
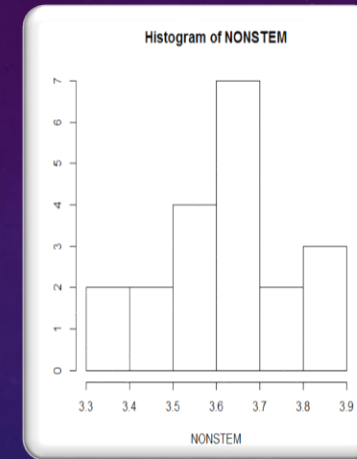


STEM vs. non STEM MAJORS ACADEMIC PERFORMANCE

- STEM VS. non STEM ?
- GPA scale (A,B,C,D,F ; 4,3,2,1,0)
- GPAs : STEM (3.338) , non STEM (3.62)
 - Normal graphs
- Box plot & 5 number summary :



GROUP 1 (non STEM):

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
3.340	3.528	3.635	3.618	3.708	3.880

Group 2 (STEM):

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
2.760	3.188	3.330	3.338	3.465	4.000

$$Z = \frac{0.28}{0.0556} = 5.03$$

6. Decision: $5.03 > 1.65$; So, we reject H_0 .

7. Calculate p-value :

$$P(Z > z_0) = 2.45 * 10^{-7}$$

$$0.05 > 2.45 * 10^{-7}$$

So we reject H_0 .

Hypothesis Test :

1. Parameter : mean
2. Hypothesis : μ_1 (non STEM) , μ_2 STEM)
 - $H_0 : \mu_1 = \mu_2$
 - $H_1 : \mu_1 > \mu_2$

$$\frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}} > Z_\alpha$$

Conclusion