In the secifications of the purchased software (AI based, it is written that objects are detected in "4 seconds on average". The quality control supervisor measures 8 durations (in seconds) as follows (the same values in the previous question)

$$6.1, \quad 5.3, \quad 5.9, \quad 5.1, \quad 6.4, \quad 4.9, \quad 4.7, \quad 5.6$$

Perform the hypotheses test whether the mean detection duration is 4 seconds as it is claimed on the specifications?

a) State the null hyphothesis to be tested and the alternate hyphothesis

Ho:

Ha:

b) Perform the appropriate test of hyphothesis for the object detection durations usin $\alpha = 0.01$.

c) Find the Critical Value (s).

d) Conclusion and interpretation.

e) find the approximate p-value.

$$SE = \sqrt{\frac{1}{n-1} \sum_{i=1}^{v} (x_i - \bar{x})^2}$$

Mean $= \bar{x} = 5.5$

$\rightarrow 0.15635$ again

$No = 4$

$$t = \frac{\bar{x} - \mu_0}{\frac{S_r}{\sqrt{n}}} = \frac{5.5 - 4}{\frac{0.15635}{\sqrt{8}}} = 7.5291$$

table $\rightarrow 7.$ ~~9.74~~

~~9~~ ~~8~~

3.499

Critical Value : 3.499

$7.529 > 3.499$

degree of freedom $= 8 - 1 = 7$

a) H_0: H_0 is rejected

H_a:

b) $t = \dfrac{5.5 - 4}{\frac{0.5635}{\sqrt{8}}} = 7.5291$

c) Critical value: 3.499

d) Conclusion: The avg is not equal to μ_0

7.5291 > 3.499   t is bigger than critical value.