As a Data Analyst, you want to tell Marketing Team about the effects of two different marketing programs. The first program is using funny concept (first group) and the second one is using elegant concept (second group). The program is sent to 10 customers for each group.
After the program ends you calculated the spending of each customers.

Given:

• alpha=5%

• average spending of first group = 100

• average spending of second group = 95

• pooled standard deviation = 4.3

Calculate t-statistics.

$$SE = S_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$$

$$SE = 4.3 \sqrt{\frac{1}{10} + \frac{1}{10}}$$

$$SE = 4.3(0.707) = 3.04$$

$$t - score = \frac{\mu_1 - \mu_2}{SE}$$

$$t - score = \frac{100 - 95}{3.04} = 1.645$$

Prove whether different program have a significant different effect on customer's spending.

$H_o : \mu_1 = \mu_2$

$H_1 : \mu_1 \neq \mu_2$

dof = $(n_1\text{-}1) + (n_2\text{-}1) = 18$

In the t-table, with 95% confidence level at 18 dof, the t-score is 2.101.
The calculated t-score (1.645) is smaller than t-score from table (2.101).

Therefore, the null hypothesis (H_o) is accepted, and there is no significant different effect between these programs.