

Problem n.3

Consider the following model for the price of a pc [€]:

$$Y = \alpha + \beta_g \cdot f + \gamma_g \cdot c + \varepsilon,$$

where f is the clock frequency [GHz], c is the time to access the cache [ns], $g = 1, 2, 3$ represents the operating system (1=Mac, 2=Windows, 3=Linux) and $\varepsilon \sim N(0, \sigma^2)$. Based on the data contained in `pc.txt` answer the following questions.

- a) Estimate the parameters of the model (report the estimates of $\alpha, \beta_g, \gamma_g$ for $g = 1, 2, 3$ and σ^2).
- b) Having verified the needed assumptions, perform a test of level 10% to verify if the factor *operating system* has a significant impact on the mean price of the pc.
- c) Does the *time to access the cache* have a significant impact on the mean price of a pc?
- d) Based on the test performed at points b) and c) and any other test deemed relevant, reduce the model and update the model parameters.
- e) Using the model at point d), provide a confidence interval of level 90% for the mean price of a pc with clock frequency 3.2 [GHz], time to access the cache 10 [ns] and Windows operating system.

Upload your results here:

<https://forms.office.com/Pages/ResponsePage.aspx?id=K3EXCvNtXUKAjjCd8ope612LHtvIHvFEsEi2L6mhPg1URE1EUk5EQzZFQkQ3Q1J0WkQ5WUI2WU5XNy4u>