Project 2: Least-squares linear regression

- Create a data set (x,y) with a linear relation between x and y + gaussian error
  - Error with constant sigma
  - Error with variable sigma
- Least-squares parameter estimation.
- Weighted least square
- (discuss) Conditions for equivalence between least-squares and maximum-likelihood estimate.
- Confidence interval and Prediction Interval
- Inference about the slope of the regression line. T-test, Meaning of the R^2 parameter.
- Study how your results vary with the number of data points.
- Symmetrical treatment of variables in linear regression: bisector OLS.
- Introduce some outliers and study:
  - Robust regression.
  - Leverage and influence of outliers: hat matrix and Cook's distance.