Empirical exercise – Function – Least squares statistics

This function calculates the OLS estimates and related statistics. The input arguments of the function are `y` and `X`. `y` is a `N` by `1` vector, and `X` is an `N` by `K` matrix. The output argument of the function is `LSS`. It a structure array that contains the calculated least squares statistics.

```
function LSS = exercisefunction(y,X)
%% Number of observations and column dimension of X
LSS.N                 = length(y);
LSS.K                 = size(X,2);
%% Coefficient estimates, predictions, residuals
LSS.B_hat             = inv(X'*X)*X'*y;
LSS.y_hat             = X*LSS.B_hat;
LSS.u_hat             = y-LSS.y_hat;
%% Residual sum of squares
LSS.RSS               = LSS.u_hat'*LSS.u_hat;
%% The estimator of the variance of the regression error
LSS.sigma_hat_squared = LSS.RSS/(LSS.N-LSS.K);
LSS.sigma_hat         = sqrt(LSS.sigma_hat_squared); % Referred to as the root MSE.
%% The variance-covariance estimator of the OLS estimator
LSS.B_hat_VCE         = LSS.sigma_hat_squared.*inv(X'*X);
LSS.B_hat_SEE         = sqrt(diag(LSS.B_hat_VCE));
end
```