

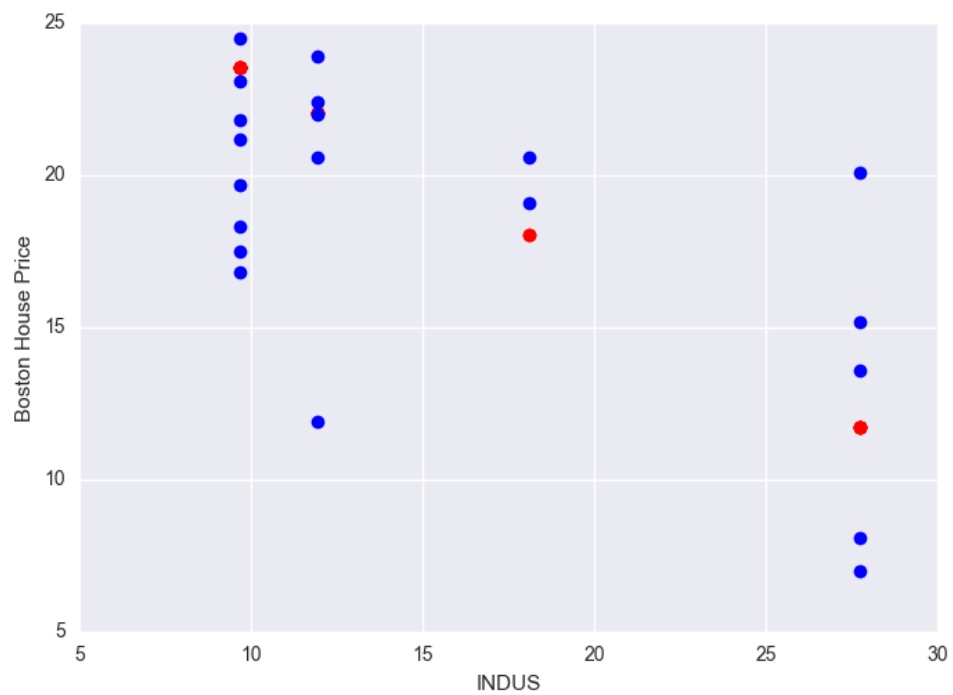
Number of features in the Boston dataset is: 13

Number of samples in the Boston dataset is: 506

Best fitted feature name is: INDUS

Best fitted model score is: 0.20596851298

Value of the loss function for the best fitted model is: 18.5645355697

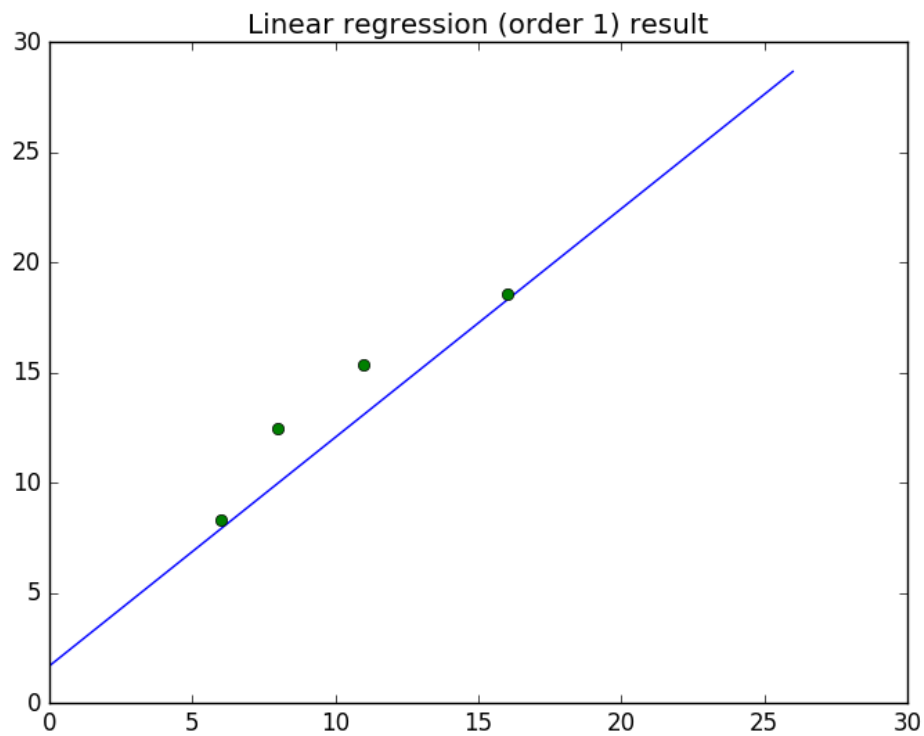




Parameter theta calculated by SGD: [-0.00189133336593, 0.720026835525, -0.00640042505874]

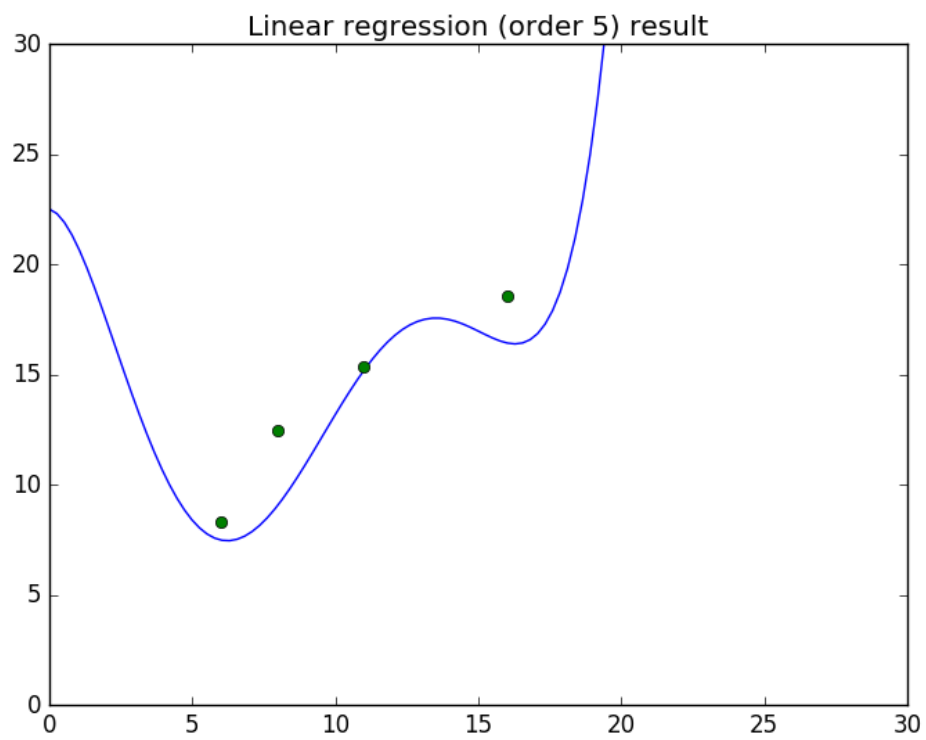
$$y_1 = 1.7 + 1.0375x$$

Linear regression (order 1) model score is: 0.79629076087



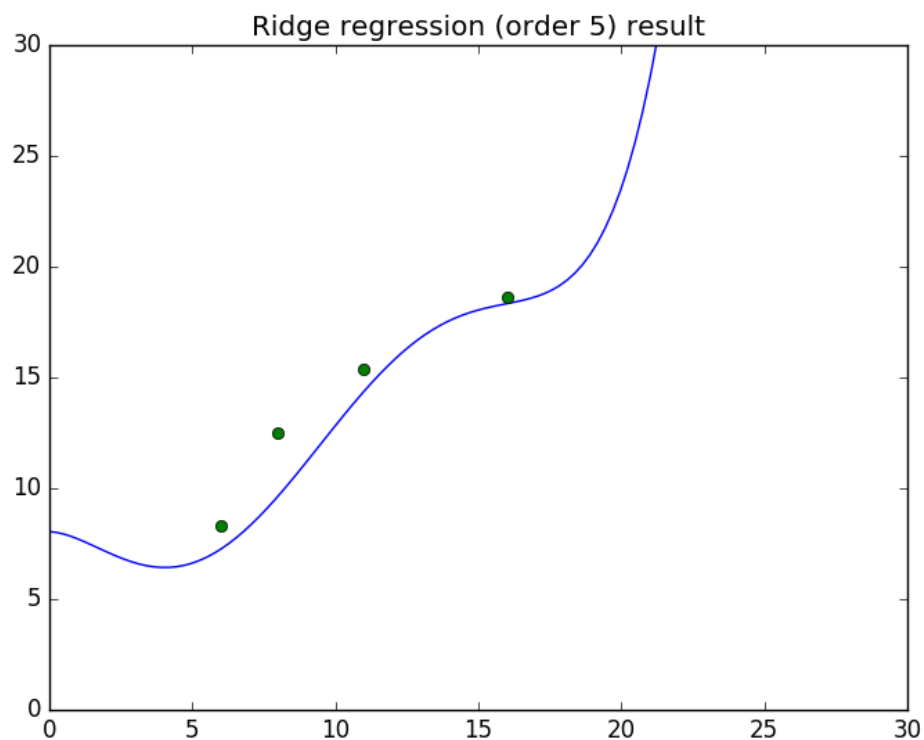
$$y_2 = 22.5189365504 + 2.35135613237e-11 x + -0.345575425181 x^2 + -1.69531630217 x^3 + 0.341630494767 x^4 + -0.0228934321526 x^5$$

Linear regression (order 5) score is: 0.706486295693



Ridge regression (order 5) score is: 0.820537525488

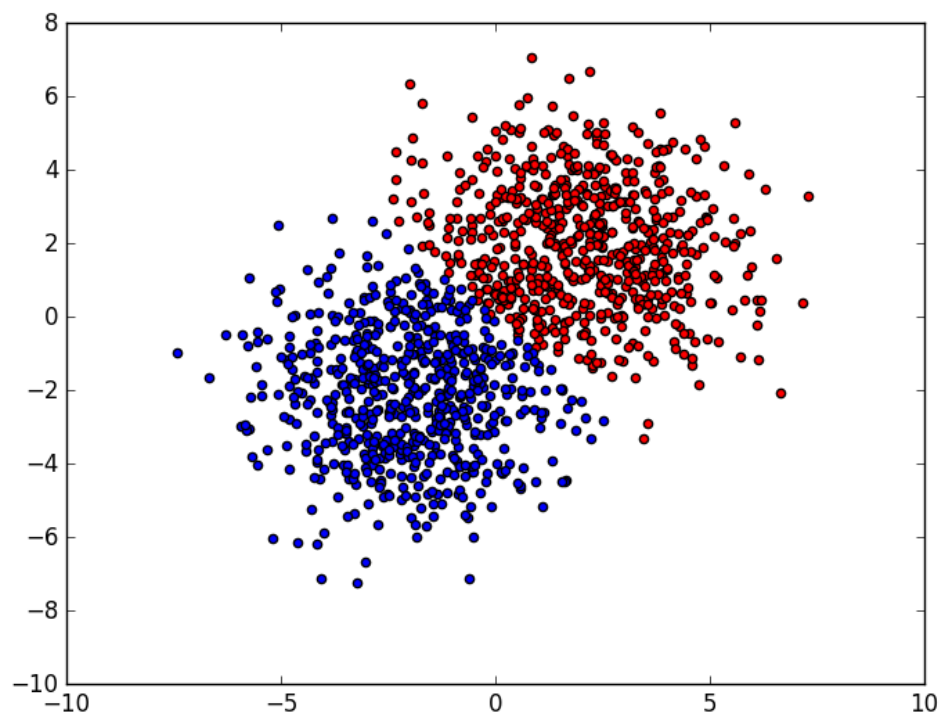
$$y_2 = 8.04799922882 + 0.0x + -0.0708636459073x^2 + -0.34590785239x^3 + 0.0879874697943x^4 + -0.00615338438865x^5$$



### Comparisons

1. The model with the highest score is: **Ridge model (order 5)**
2. Ridge model can prevent over-fitting: **yes**
3. Ridge model is nearly equivalent to LR model (order 5) if  $\alpha=0$ : **yes**
4. A larger alpha results in a larger coefficient for  $x*x*x*x*x$ : **no**
5. Best score is achieved at order: **2**

The predictions only have 0 and 1: **yes**



Number of wrong predictions is: 73