S1-24\_AIMLCZG565: Correction in the numerical example - **regularized cost function and weight update**

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| [M.](https://taxila-aws.bits-pilani.ac.in/user/view.php?id=57244&course=12890) | Correction in the numerical example - regularized cost function and weight update  by [Monali Mavani .](https://taxila-aws.bits-pilani.ac.in/user/view.php?id=57244&course=12890) - Friday, 17 January 2025, 11:22 AM |
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|  | Fit a linear regression. Show only the first iteration of Gradient descent algorithm using learning rate of 0.02 for the following data , if the Relative Risk of Coronary Heart Disease is believed to be only linearly dependent on BMI as well as Diastolic Pressure. Assume the intercept of the regression model as 5 and the slope of independent variables as -0.03 (negative).  Apply a regularization on the same problem with regularization constant 5 and apply GD for 2 iterations & interpret the results. Try both ridge regression as well as lasso regression. Below equation is changed only for ridge regression. Students must apply appropriate GD update equation changes for this problem.  Steps :  1.Identification of the equations y = w0+w1X1+W2X2  2.Cost function & derivative  1.W0` = w0 – 1/3 \* learning rate \* (sum (w0+w1X1+W2X2 - y))  2.W1` = w1\* (1- **(learning rate \* regularization constant)/3)** – 1/3 \* learning rate \* (sum (w0+w1X1+W2X2 - y) \* x1)  3.W2` = w2 \* **(1- (learning rate \* regularization constant)/3)** – 1/3 \* learning rate \* (sum (w0+w1X1+W2X2 - y)\*x2)  3.Apply the equations  *Change is highlighted in bold*  *Regularized cost function will have divide by n(no of examples) in both the terms (loss term + regularization term)* |