Softmax Regression for multi class in logistic regression use use softmax Regression/multinomial liggistic Regnession

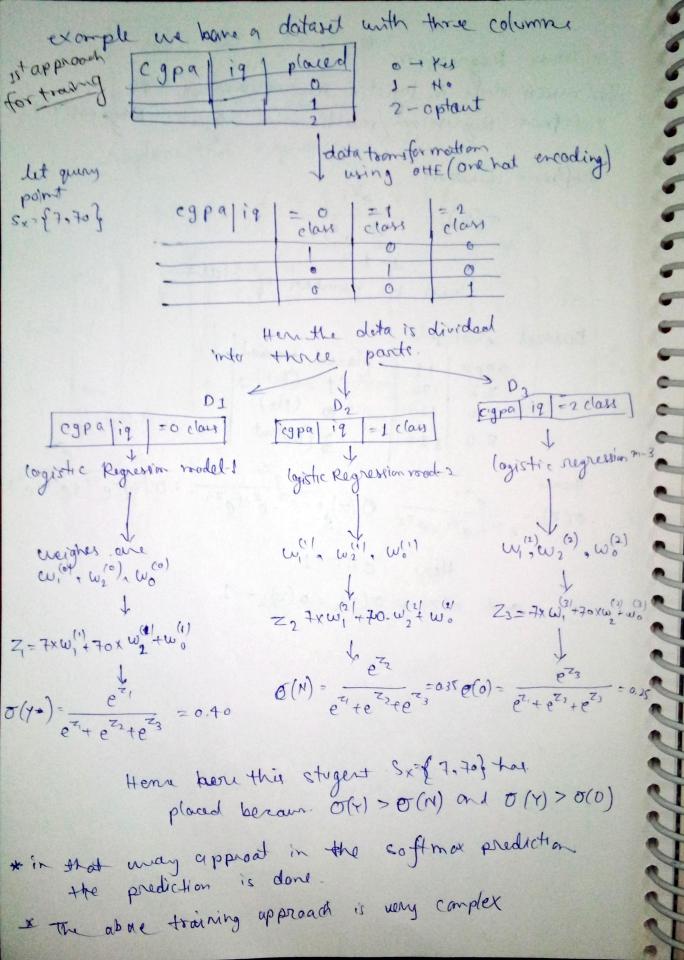
softmax function
$$e^{Zi}$$

$$\sigma(z)_{i} = \frac{e^{Zi}}{\sum_{j=1}^{k} e^{Zj}}$$
Here $k = \text{number of class}$

Henn
$$\sigma(z)_{1} = \frac{e^{z_{1}}}{e^{z_{1}} + e^{z_{2}} + e^{z_{3}}} = \frac{e^{z_{3}}}{\sigma(z)_{2}} = \frac{e^{z_{3}}}{e^{z_{4}} + e^{z_{2}} + e^{z_{3}}} = \frac{e^{z_{3}}}{\sigma(z)_{2}} = \frac{e^{z_{3}}}{e^{z_{4}} + e^{z_{2}} + e^{z_{3}}} = \frac{e^{z_{3}}}{\sigma(z)_{2}} = \frac{e^{z_{3}}}{e^{z_{4}} + e^{z_{2}} + e^{z_{3}}} = \frac{e^{z_{3}}}{\sigma(z)_{2}} = \frac{e$$

Here
$$020<1$$

and $o(z)_1 + o(z)_2 + o(z)_3 = 1$



2rd apprach for tooining using loss function: Here the grother approph is that the ne modify the loss function in such a way it is useful in softmax Regression previous (ors function r= -1 & 1: (00(1)+(1-1:) (00 (1-1:)) in softmax Regression L = = 1 & E (7k) log(7k) for class in to sumper each raw of ran. example: X2 Y Yk=1 Yk=2 7, (10g (x, (1)) + Y2 (10g (x2)) + x3 (10g (x3)) + Y(2)(09 (x(2)) + Y2(2)(09 (x2)) + Y3(09 (x32)) + 7, (3) (0) (4,(3)) + 4, (3) (0) (4,3)) + 4,3 (0) (4,3 (3)) L = Y''log (x'') + x''log (x'') + x'''log (x'') + x''''

V

3

13

3

3

3

-3

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Here

$$\frac{1}{3} = \frac{1}{3} = \frac{1$$