

Question 7.

Assign Risklevel = Low $\rightarrow y = 0$ Risklevel = High $\rightarrow y = 1$

Linear regression model

$$z = w_0 + w_1 \cdot x_1 + w_2 \cdot x_2$$

where x_1 is Age ; x_2 is Credit Score

$$\hat{y} = \sigma(z) = \frac{1}{1 + e^{-z}}$$

For T_1

$$z = 0.5 - 0.02 \times 35 + 0.01 \times 720$$

$$= 7$$

$$\hat{y} = \sigma(z) = \frac{1}{1 + e^{-z}} \approx 1 = 0.999$$

 \Rightarrow The initial prediction of T_1 is Risklevel = "High"

Cost function

$$L_{CE} = -[y \cdot \log(\hat{y}) + (1-y) \cdot \log(1-\hat{y})]$$

~~$$= -[0 \cdot \log(1) + (1-0) \cdot \log(1-1)]$$~~

$$= -[0 \cdot \log(0.999) + (1-0) \cdot \log(1-0.999)]$$

$$= 3$$