baseline / base level

<u>Example</u>: In the project of faculty salary equity study, there is a variable named Academic Rank, which include 5 levels, Instructor, Assistant Professor, Associate Professor, Professor and Distinguished Professor.

base level $\qquad$ $k=5$

1. How many dummy variables are required for Academic Rank? $\quad k-1 = 5-1 = 4$

2. Set up the dummy variables.

3. Use a table to show the values of each dummy variable for each level of Academic Rank.

	x_1 Instructor_Y	x_2 Associate_Y	x_3 Prof_Y	x_4 Dist._Y
Instructor	1	0	0	0
Assistant	0	0	0	0
Associate	0	1	0	0
Professor	0	0	1	0
Distinguished	0	0	0	1

4 dummy variables / indicator variables / dummies

$$X_1 = \text{Instructor\_Y} = \begin{cases} 1, & \text{if instructor} \\ 0, & \text{otherwise} \end{cases}$$

$$X_2 = \text{Associate\_Y} = \begin{cases} 1, & \text{if associate professor} \\ 0, & \text{ow} \end{cases}$$

$$X_3 = \text{Professor\_Y} = \begin{cases} 1, & \text{if professor} \\ 0, & \text{ow} \end{cases}$$

$$X_4 = \text{Distinguished\_Y} = \begin{cases} 1, & \text{if Dis... professor} \\ 0, & \text{ow} \end{cases}$$