$$y = \begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_3 \end{bmatrix} \quad X = \begin{bmatrix} 1 & x_{11} & \cdots & x_{1p} \\ 1 & x_{21} & \cdots & x_{2p} \\ \vdots & \vdots & \ddots & \vdots \\ 1 & x_{m1} & \cdots & x_{mp} \end{bmatrix} \quad e = \begin{bmatrix} e_1 \\ e_2 \\ \vdots \\ e_m \end{bmatrix} \quad \beta = \begin{bmatrix} \beta_0 \\ \beta_1 \\ \vdots \\ \beta_p \end{bmatrix}$$

$$y = X\beta + e \quad = \begin{bmatrix} 1\beta_0 + x_{11}\beta_1 + \cdots + x_{1p}\beta_p \\ 1\beta_0 + x_{21}\beta_1 + \cdots + x_{2p}\beta_p \\ \vdots \\ 1\beta_0 + x_{m1}\beta_1 + \cdots + x_{mp}\beta_p \end{bmatrix} + \begin{bmatrix} e_1 \\ e_2 \\ \vdots \\ e_m \end{bmatrix}$$