by the same way it is true that:

$\vec{j} \cdot \vec{k} = \vec{k} \cdot \vec{j} = 0$ which means $\vec{j} \perp \vec{k}$ & $\vec{k} \perp \vec{j}$

and $\vec{i} \cdot \vec{k} = \vec{k} \cdot \vec{i} = 0$ which means $\vec{i} \perp \vec{k}$ and $\vec{k} \perp \vec{i}$.

Note: In $\mathbb{R}^2$ the standard base for $\mathbb{R}^2$ is only consists of two vectors these are $\vec{i} = (1, 0)$ & $\vec{j} = (0, 1)$

$\|\vec{i}\| = \sqrt{1^2 + 0^2} = \sqrt{1} = 1$

$\|\vec{j}\| = \sqrt{0^2 + 1^2} = \sqrt{1} = 1$

$\vec{i} \cdot \vec{j} = \vec{j} \cdot \vec{i} = 0$

$(1, 0) \cdot (0, 1) = 0 + 0 = 0$

$$\cos\theta = \frac{\vec{i} \cdot \vec{j}}{\|\vec{i}\|\|\vec{j}\|} = \frac{0}{(1)(1)} = \frac{0}{1} = 0$$

$\therefore \theta = \cos^{-1}(0) = \frac{\pi}{2} = 90^\circ$

$\therefore \vec{i} \perp \vec{j}$ & $\vec{j} \perp \vec{i}$

i.e. $\vec{i}$ and $\vec{j}$ are perpendicular.