$\|u_1\| = 1$, $\|u_2\| = \sqrt{2}$, $\|u_3\| = \sqrt{2}$

Consequently, normalizing u_1, u_2 and u_3

$$v_1 = \frac{u_1}{\|u_1\|} = \frac{(0,1,0)}{1} = (0,1,0)$$

$$v_2 = \frac{u_2}{\|u_2\|} = \frac{(1,0,1)}{\sqrt{2}} = \left(\frac{1}{\sqrt{2}}, 0, \frac{1}{\sqrt{2}}\right)$$

$$v_3 = \frac{u_3}{\|u_3\|} = \frac{(1,0,-1)}{\sqrt{2}} = \left(\frac{1}{\sqrt{2}}, 0, -\frac{1}{\sqrt{2}}\right)$$

$S = \{v_1, v_2, v_3\}$ is Orthogonal

$\langle v_1, v_2 \rangle = \langle v_1, v_3 \rangle = \langle v_2, v_3 \rangle = 0$

Orthonormal $\|v_1\| = \|v_2\| = \|v_3\|$

In an inner product space, A basis consisting of orthonormal vectors is called an orthonormal ~~vectors~~. basis.

A basis consisting of orthogonal vectors is called an orthogonal basis.