We are going to prove that the vector perpendicular to line $w_1x_1+w_2x_2+w_0=0$ can be written as $\mathbf{n}=[w_1,w_2]^T$.

Let's assume the line $w_1x_1+w_2x_2+w_0=0$. Its intersection with x_1 and and x_2 axes can be represented by the vectors $\mathbf{v}=\left[-\frac{w_0}{w_1},0\right]^T$ and $\mathbf{u}=\left[0,-\frac{w_0}{w_2}\right]^T$, respectively.

The vector starting from $\left[0,-\frac{w_0}{w_2}\right]^T$ and ending at $\left[-\frac{w_0}{w_1},0\right]^T$ can be written as the difference between $\mathbf{v}$ and $\mathbf{u}$, as $\mathbf{a}=\left[-\frac{w_0}{w_1},\frac{w_0}{w_2}\right]^T$. Vector $\mathbf{a}$ lies on the above line.

Let $\mathbf{n}=[n_1,n_2]$ be the perpendicular vector to the line, which is also perpendicular to $\mathbf{a}$, therefore their inner product will be zero, i.e., $\mathbf{a}\cdot\mathbf{n}=0$.

Based on the above equation we get $-n_1\frac{w_0}{w_1}+n_2\frac{w_0}{w_2}=0 \implies \frac{n_1}{w_1}=\frac{n_2}{w_2}$. If we assume that $n_2=w_2$, then the perpendicular vector can be written as $\mathbf{n}=[w_1,w_2]^T$.

$\mathbf{n}$ could be any vector as long as its elements verify the association $\frac{n_1}{w_1}=\frac{n_2}{w_2}$.