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Vector spaces over the binary field  $\mathbb{Z}_2$  share certain properties with familiar vector spaces over  $\mathbb{R}$  such as the existence of bases for spaces. There are, however, many differences. For example, when equipped with the dot product, a vector space over  $\mathbb{Z}_2$  becomes an indefinite inner product space where non-zero vectors may have zero length. We continue previous work on these spaces by investigating subspaces of  $\mathbb{Z}_2^n$  and ask when two vector spaces are unitarily equivalent. In particular we consider embeddings of subspaces into  $\mathbb{Z}_2^n$  for some  $n$ . An algorithm is given showing that every vector space over  $\mathbb{Z}_2$  can be embedded in this manner. We also investigate the existence of both Parseval frames and dual frames for vector spaces over  $\mathbb{Z}_2$  and their relation to the Grammian operator. Finally we show that, unlike vector spaces over  $\mathbb{R}$ , the existence of a dual frame pair does not necessarily imply the existence of a Parseval frame of the same length for a space. (Received July 26, 2010)