Read the lecture notes written by Mike Hill posted on CCLE named Hill - Bilinear Forms. You may also find it helpful to read about bilinear forms in Section 6.8 of Friedberg et al.

1. Let V be a finite-dimensional real inner product space so $\mathbb{F} = \mathbb{R}$. What "special type" of bilinear form is the inner product?

2. Now let V be a finite-dimensional complex inner product space so $\mathbb{F} = \mathbb{C}$. Why is the inner product not a bilinear form?

3. How are the special types of bilinear forms related if the characteristic of the field is 2?

4. Briefly describe the relationship between bilinear forms and matrices.