Abstract: The Fejér-Riesz theorem, named after Leopold Fejér (1880-1959) and Frigyes Riesz (1880-1956), states a factorization result. There exist various versions of this theorem. In this talk we will focus on the versions in a Hilbert space in one and two variables. The Fejér-Riesz theorem in a Hilbert space in one variable, also named Operator-Fejér-Riesz theorem, says that a positive, operator-valued, trigonometric polynomial Q on the unit circle in one variable can be written as a hermitian square of an outer, analytic, operator-valued polynomial P, i.e. $Q(\zeta) = P(\zeta)^* P(\zeta), \zeta \in \mathbb{T}$. In two variables the statement changes in the sense that we consider a strict positive, operator-valued, trigonometric polynomial Q on the unit circle in two variables which can be written as a finite sum of hermitian squares of analytic polynomials P_i, i.e. $Q(\zeta) = \sum_{i=1}^{n} P_i(\zeta)^* P_i(\zeta), n \in \mathbb{N}, \zeta \in \mathbb{T}^2$. In this talk we define Schur complement and get an idea of how we use Schur complements to prove the theorems. Moreover we will see the main results we need to prove the theorems.