The Kadison-Singer problem is a problem in the theory of C*-algebras that was motivated by mathematical physics. It has been open for over 50 years. Recently, work of Casazza lead to a resurgence of interest in this problem, when he proved that the Kadison-Singer problem was equivalent to the Feichtinger problem, which arose from the theory of wavelets and signal processing. The Feichtinger problem is a more easily stated problem in the theory of frames. In this talk I will introduce this area, survey some of the recent progress and discuss what I believe to be some of the more approachable unresolved special cases and related problems.