Abstract: Ising superconductors with in-plane upper critical fields several times higher than the Pauli limits have been discovered recently in transition metal dichalcogenides such as MoS2 and NbSe2 thin films [1-3]. These Ising superconductors have very strong Ising spin-orbit couplings (SOC), in the order of 10 to 100meV, which pin electron spins to the out-of-plane directions. This is in contrast to Rashba SOC which pins electron spins to in-plane directions. Here, we explain how Ising SOC can enhance the in-plane upper critical field of Ising superconductors [1-4]. We also show that Ising superconductors can be used to create Majorana fermions by placing a metal wire on top of the Ising superconductor [5], similar to the case of Rashba wire on top of s-wave superconductors. We further show that an applied in-plane magnetic field can drive a monolayer NbSe2 [2,5] into a nodal topological phase with Majorana flat bands when the applied in-plane field is higher than the Pauli limit but smaller than the upper critical field.