Quantum Monte Carlo Simulation of one dimensional SU(N) Fermion system SHENGLONG XU, CONGJUN WU, University of California, San Diego — One dimensional interacting fermionic systems with $SU(N)$ symmetry have been realized in ultracold atom systems. The interplay between the dimensionality and symmetry provides a platform to search for unconventional phenomena. Inspired by recent experiments, we use quantum Monte Carlo to explore the metallic phase, nature of the metal-insulator transition as well as possible exotic magnetic orders of such systems. The effects of trapping potential are also discussed.