The requirements for virtual agents are more and more demanding. In order to manage the complex behavior of the agent, it’s possible to take advantage of cognitive architectures which arised on the field neuroscience and artificial intelligence. This work examines PoJACTR library which links Pogamut library for developing intelligent agents in Unreal Tournament 2004 and jACT-R library which is Java implementation of one of the leading cognitive architectures ACTR. This work also studies certain agent implementation problems in PoJACTR and proposes a solution for them in form of debugging tools, which were subsequently implemented on an Eclipse IDE platform. In addition, it expands PoJACTR navigation and communication library modules for the game - Capture The Flag. As a validation, two agents (bots) were developed to play game, one in standard Pogamut and one in PoJACTR. When matched against each other in battle, PoJACTR bot had comparable performance to a Pogamut bot. The results showed that debugging tools facilitated development process of PoJACTR agents.