The goal of this work is to design a model of episodic memory for virtual agents capable of creating false memories and implement its prototype. The model architecture is inspired by present day knowledge about human episodic memory. Core structures in our model are the chronobags storing details of experienced episodes, and the schemabag storing the general scripts for all experienced events. The episodes are stored in the form of AND-OR trees and it is possible to derive missing details from the stored scripts during recall. We followed the work of Burkert and implemented a prototype of designed memory model in Java using the Pogamut 3 Framework. The model is parameterizable and it is evaluated in several experiments. In these experiments we looked on the trends in correct and incorrect recalls over time and we simulated the experiment demonstrating existence of room schemata. We compared the results produced by our model with the data from psychological researches and we showed that our model can produce false memories similar to false memories recollected by humans.