CMPE 211 - Data Structures and Algorithms

Quiz 3 - Basic Simulation

You are given simpleAgentQuiz.java code in which a population of N agents interact with each other during a given period of time. Agents have memory which is implemented as an **unordered array**. At each time step, two random agents are selected to interact. Interaction takes place as giving and taking recommendations among selected agents. Recommendation is a simple operation which returns a random item from the memory.

1. Fill the following functions in the code.

   - know(item)   : *does item exist in the memory, if so return its index.*
   - learn(item)   : *add **unknown** item to a random place in the memory*
   - recommend() : *return a random item from the memory*

2. Write a new java program, based on the given code, that uses **an ordered array** for the representation of memory.

   - know(item)   : *does item exist in the memory, if so return its index.*
   - learn(item)   : *add **unknown** item to its **correct** place*
   - recommend() : *return random item **from the range** $[M/2, M]$*

3. Compare running time for the following operations

	ordered	unordered
know(item)		
learn(item)		
recommend()		