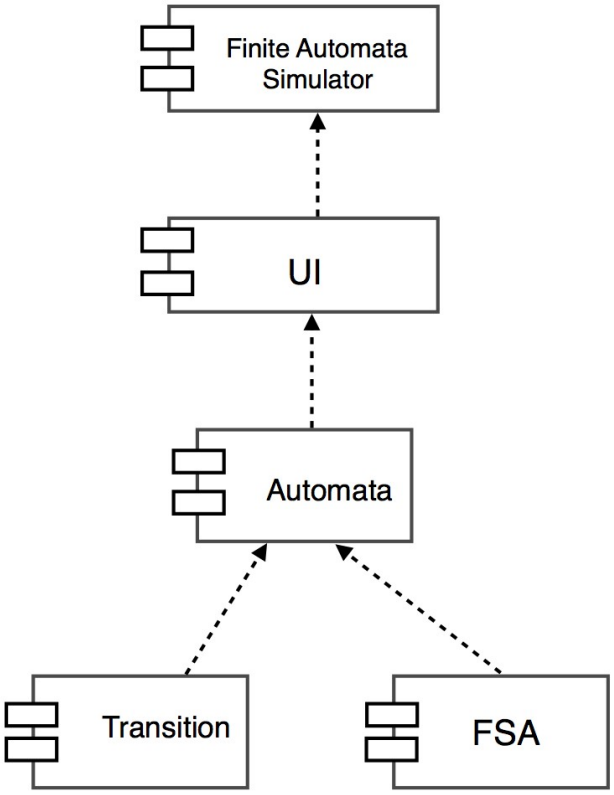
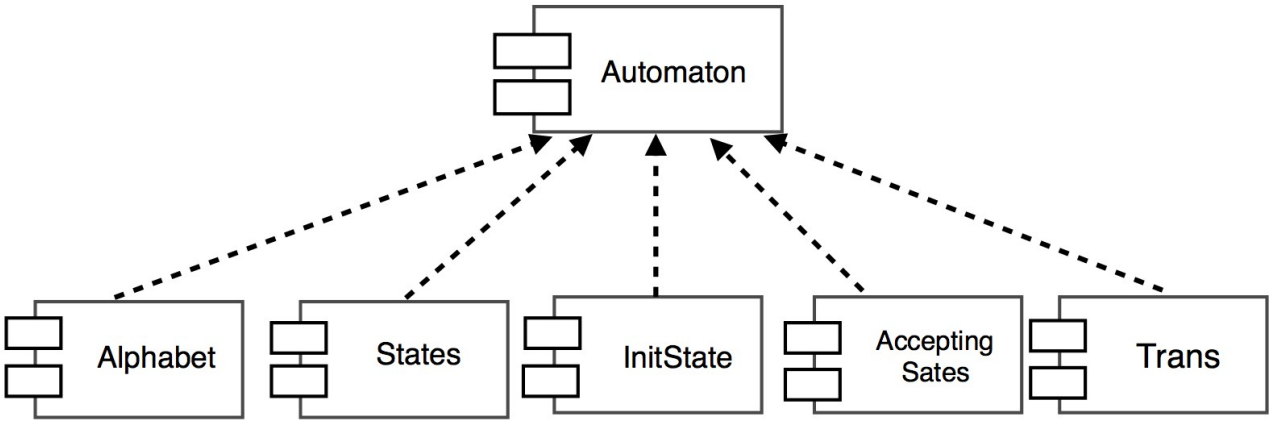
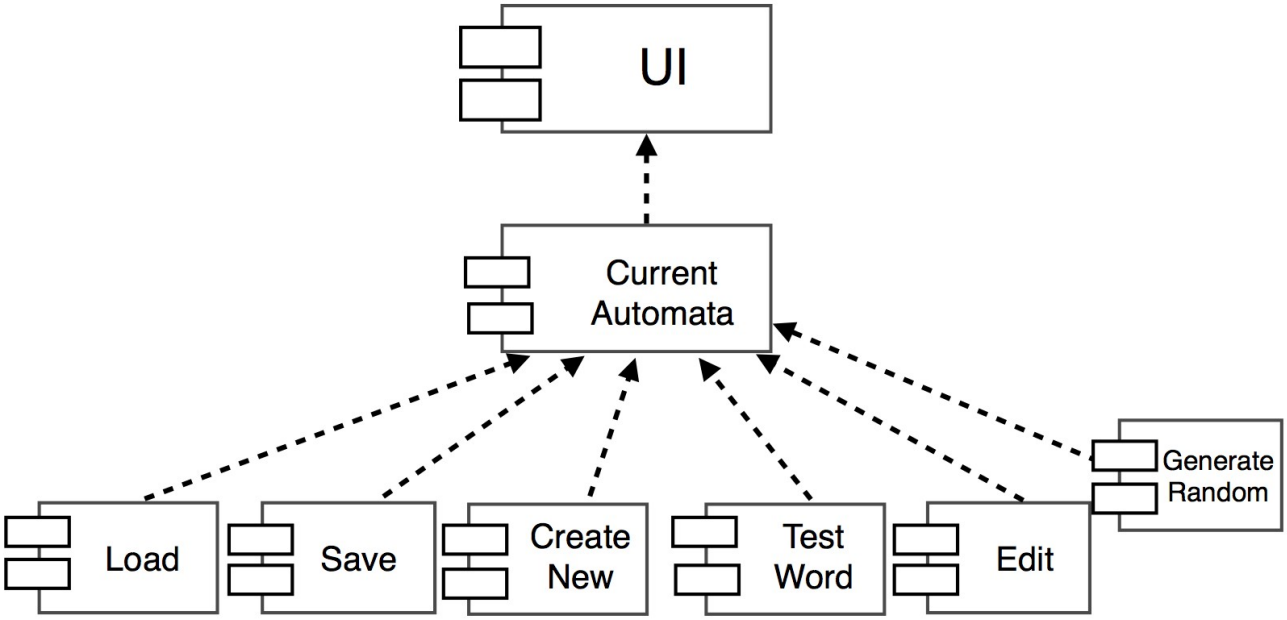
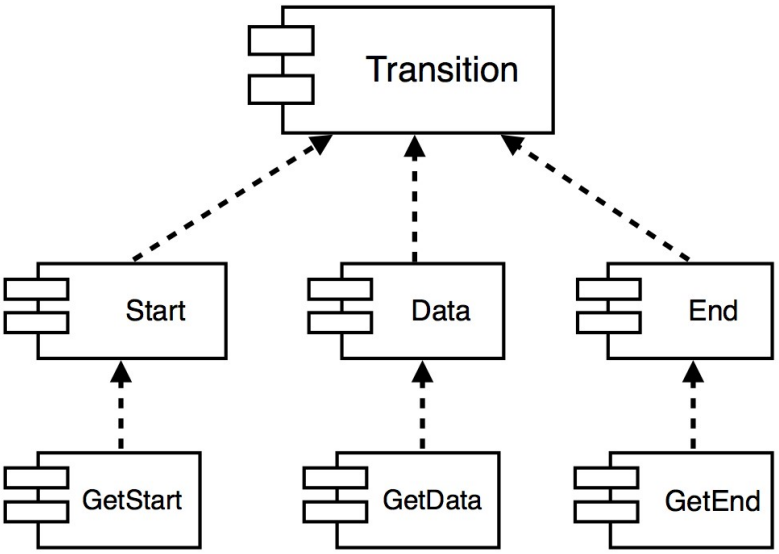
ARCHITECTURE DESIGN:
Component Diagram:

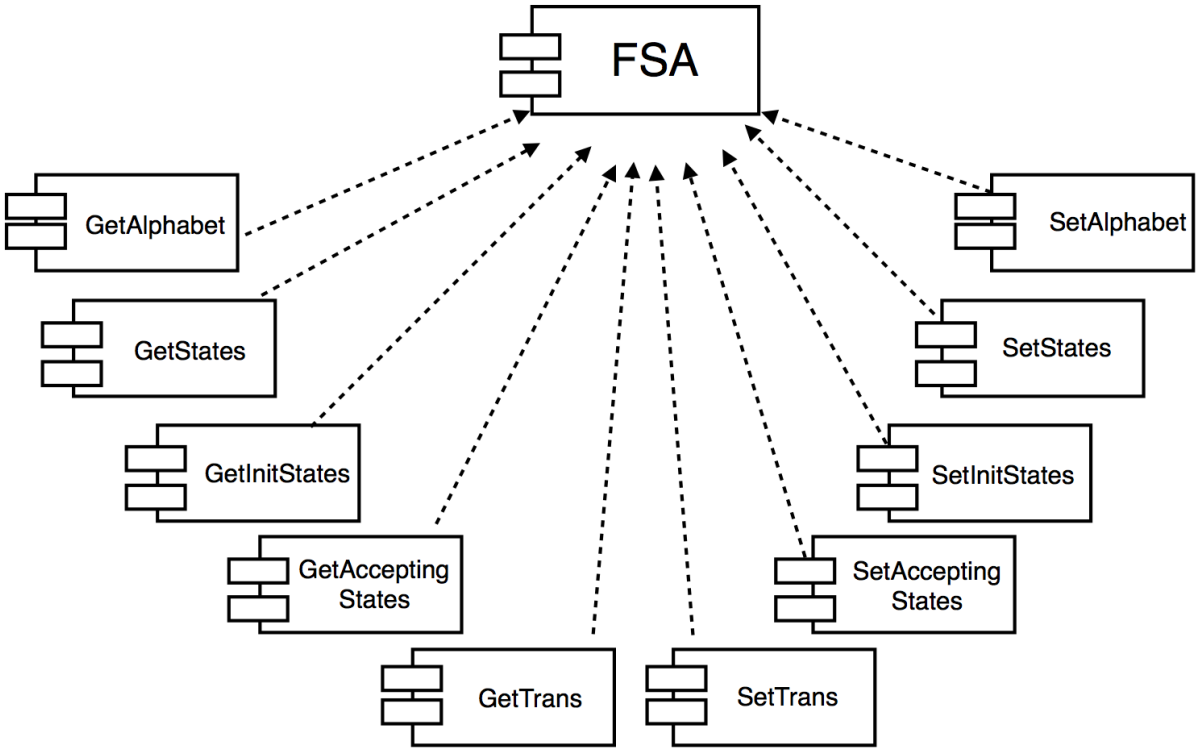


COMPONENT DESIGN:
Elaborated Component Diagrams

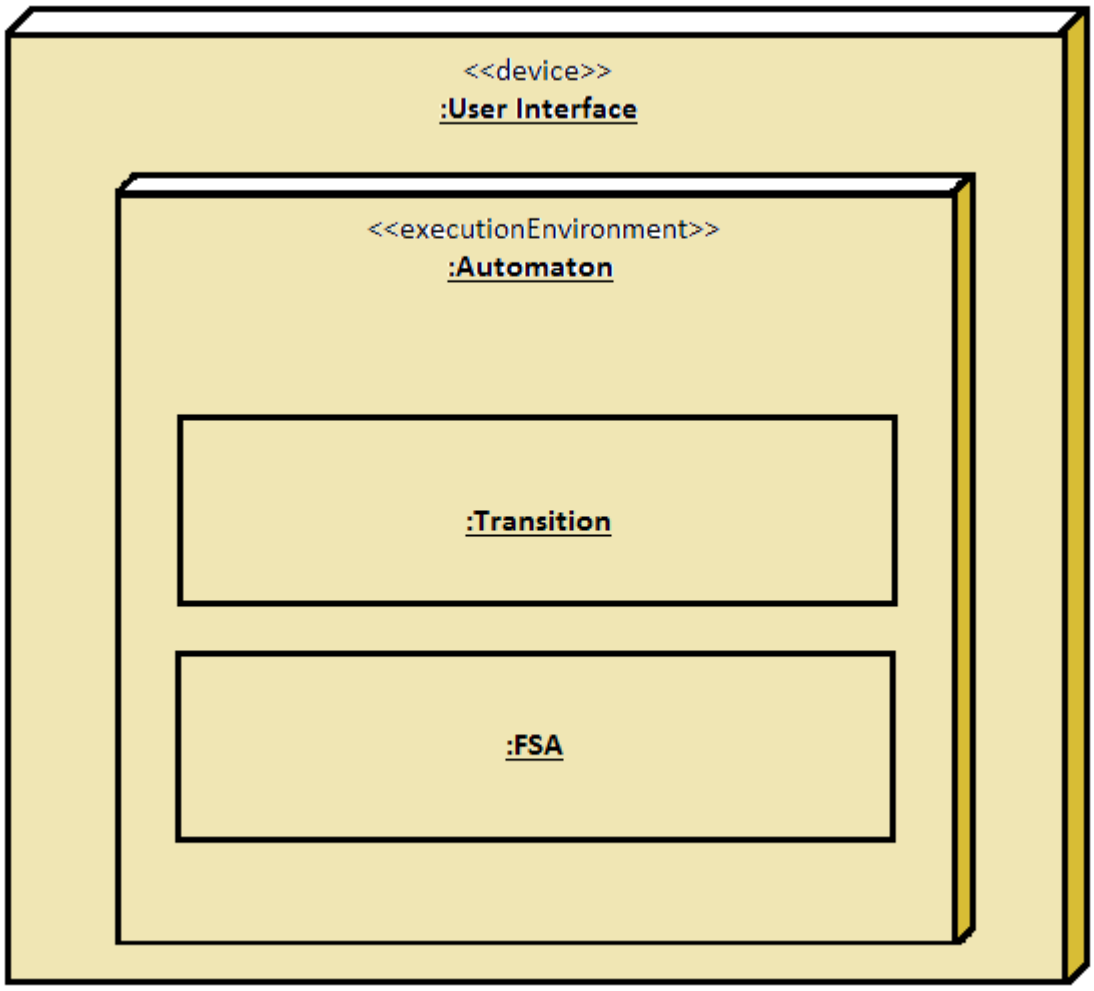





Transition
Start
Data
End
GetStart
GetData
GetEnd


FSA
GetAlphabet
SetAlphabet
GetStates
SetStates
GetInitStates
SetInitStates
GetAccepting States
SetAccepting States
GetTrans
SetTrans

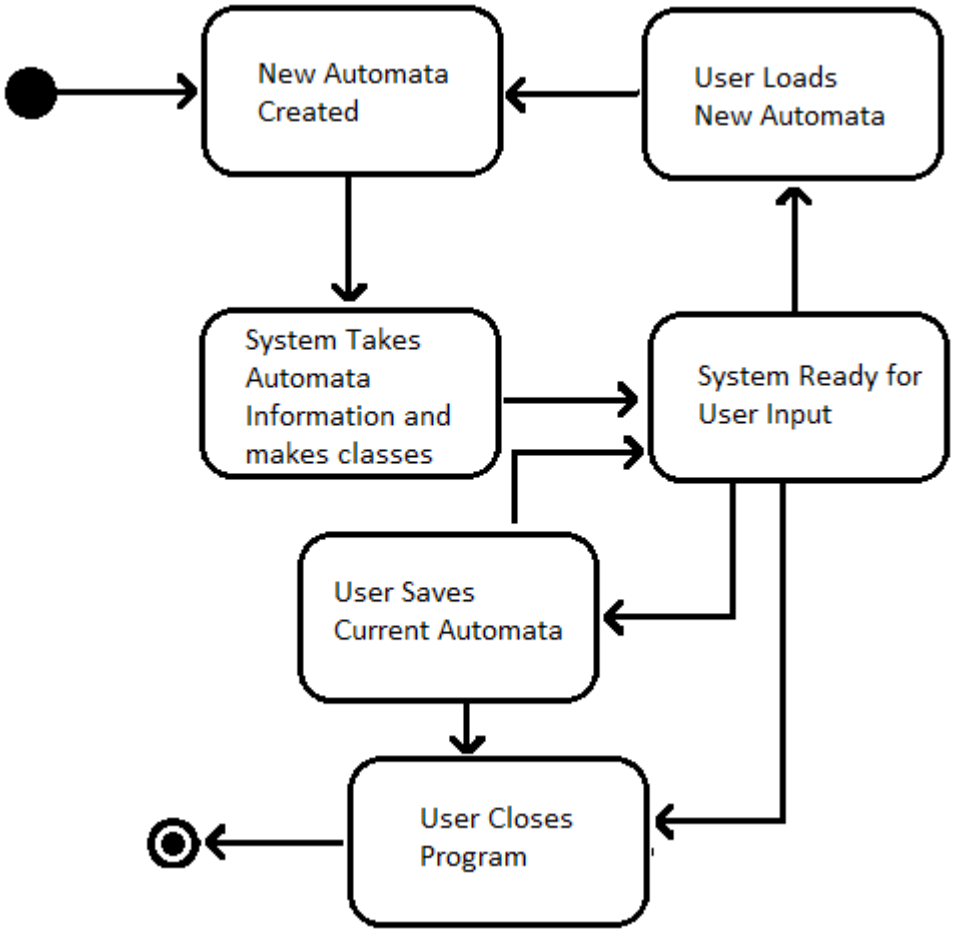
Elaborated Deployment Diagram:

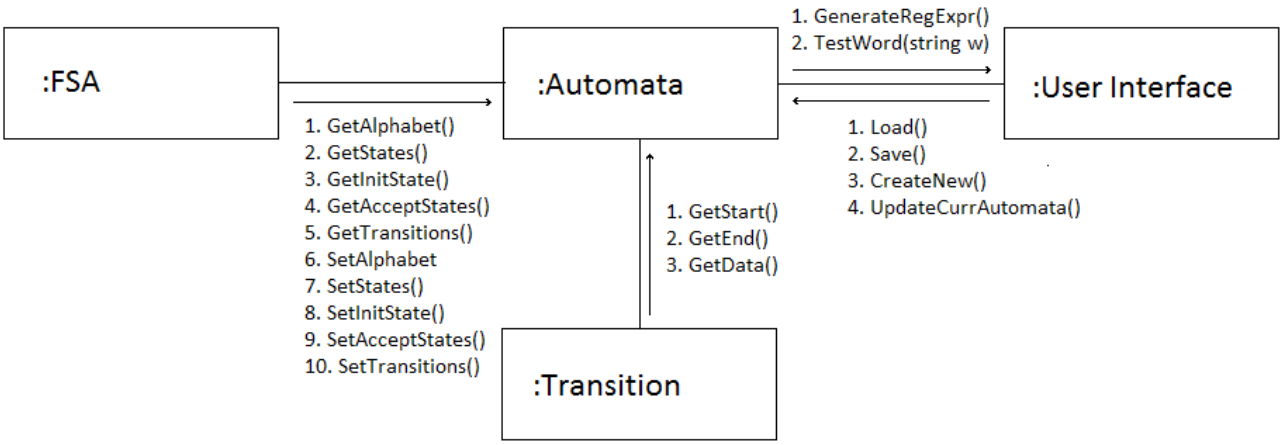


Data Structure/Data Type Elaboration:

In the automaton class, we use character lists for the Alphabet, string lists for the states and accepting states, and a Transition list for the transition set. We use a string to store the initState. We use lists because most of our access of the data is iterative in nature and lists are easily used for that application. We used a string for the initState because it holds only one state and we need it to be stored as a string for display purposes in our GUI. In the Transition class we use strings for the start, data, and end members. Again, we used strings because each of those members will only represent one item and the string type is required for displaying the information in our GUI. In the UI class we used an Automata to store the currentAutomata. This will be where the “master” or most current/accurate information is pulled from for other functions in our GUI. The Automaton class holds information about what defines the automaton in question such as the alphabet, state set, transition set, initial state, and accepting state. We do not have any persistent data structures.

Statechart Diagram:





Communication Diagram:

Information is sent from the User interface to the Automata via the Load(), Save(), CreateNew(), and Update CurrAutomata() functions. Information is sent form the Automata to the User Interface via the GenerateRegExpr() and TestWord(string w) functions. Information is sent from the Transition class to the Automata via the GetStart(), GetEnd(), and GetData() functions. Information is sent from the FSA to the Automata via the GetAlphabet(), ..., and SetTransitions() functions.

Collaboration Diagram: