Functional decomposition

* Read/Write Cards:
  1. Communicate w/ DLP: The chosen RFID reader is the DLP-RFID2 reader/writer module. The system must communicate with this reader using the RS-232 protocol at TTL voltage levels. The communication link must be at 115200 Baud, 8-bits, 1 stop bit, and no parity check. The commands to the RFID reader are specified in TRF7960\_ISO15693\_protocol.pdf
  2. Traverse card data
  3. Write Card: Data must be written to the card according to the ISO 15693 standard. The structure of data contained on the card may vary with the game associated with the card. The following data locations must be present:
     1. Unique card Identifier (UID) – A serial number uniquely identifying the card from all other cards
     2. Card name – The name of the card
     3. Display name – The name of the card as displayed to the user
     4. Associated Programs – A code that identifies the card as valid for a specific game set.
* Access Database
  1. Read Data to SRAM: The system must be capable of requesting data from the SRAM using a byte-addressing scheme. The returned data must be received as an 8-bit word in parallel.
  2. Write data to SRAM: The system must be capable of requesting data from the SRAM using a byte-scheme. Data must be sent as an 8-bit word in parallel.
  3. Lookup/reference Table:
* User Interaction
  1. Read Keypad: The system must read user keypad input with a maximum lag time of 250 ms.
  2. Display: The system must display the following
     1. Simple graphics
     2. Score
     3. Game instructions
     4. Player options
  3. Card Reactions: When a card is placed on the reader, the system must acknowledge the card through a series of LEDs. If the card is read/accepted as valid, green appears. If the card cannot be read, red appears. Additional colors may indicate other statuses
* External Communications (ExtCom):
  1. Xbee: The system must be capable of maintaining a connection with another system using the XBee wireless standard over a minimum distance of 5 feet. Data transmission must occur at 250kbs.
  2. RS-232 connection: The system must be capable of maintaining an EIA-232 serial connection with an external computer system. Data sent must be at 9600 baud, 8-bit, 1-stop bit, and no priority.
  3. Wireless Driver: The driver must be capable of sending commands to initiate connections, acknowledge received data, sending data, and terminating a connection
  4. RS-232 Driver: The driver must be capable of sending strings of data up to 20 characters in length. The encoding must use the extended ASCII table.
* Play Game
  1. Load game: When requested, the system must load the specified game from memory and prepare the system for game execution
  2. Execute game: When run, the system must execute the loaded game. If an error occurs during game play, the system must reset.