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## Blackjack Simulator

### Synopsis:

Design a blackjack simulator using DE2-115 board and System Verilog.

### Project Overview:

We are creating a blackjack simulator for the DE2 board. This device will allow people to practice applying basic strategy to blackjack without having to spend money at the casino or procure a deck of cards.

The DE2 board will boot up in an idle state and wait for the player to start the game by toggling the reset switch. From there, the board will proceed into Blackjack Mode.

The player will be dealt two cards, and the left two 7-segment displays will light up to indicate the player's current hand value. The dealer will also be dealt two cards, and the dealer's hand value will also be shown. However, the shown value will not include the "hole card" value to represent the dealer's face-down card.

Then the player will be offered a choice to HIT or STAND. If the player chooses HIT by pushing the indicated Key, the player is dealt a random card from the deck and the hand value on the 7-segment display is updated. The player can continue to HIT until they BUST or decide to STAND. If the player BUSTS, the game is over and restarts. If the player STANDS, then the dealer will take its turn. First the "hole card" will be revealed. Then, while the dealer's hand is less than 17, it will HIT otherwise it will STAND.

If the dealer BUSTS, then the player wins. If both the player and dealer have selected STAND, then the one with the highest hand value wins. In the case both hands are of equal value, the game results in a PUSH (tie).

### BlockDiagram

