ECE153B Project Proposal

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https://sites.google.com/view/black-jack-project/home

Purpose

To build a one-on-one blackjack game that should be displayed on an LCD screen and controlled by terminal and joystick. Main features will include the game itself, betting, and a running balance. Joystick will be used to select play option such as bets, hitting, standing etc. LCD will display the current phase/state of the game. The HC-05 module will be used to interface with a terminal so numerical bets can be inputted.

Peripherals and Protocols

1. Nokia 5110 LCD – SPI
   a. To display cards played, bets, current count, and options.
   b. Some options include place previous bet, re-enter bet, hit, stand, etc.
2. HC-05 Bluetooth Module – UART
   a. To interface an external terminal to enter numerical bets.
3. Joystick – No protocol
   a. Used to select options.
   b. ADC pin is used to process x-axis
   c. Digital pin used to process switch.

Block Diagram
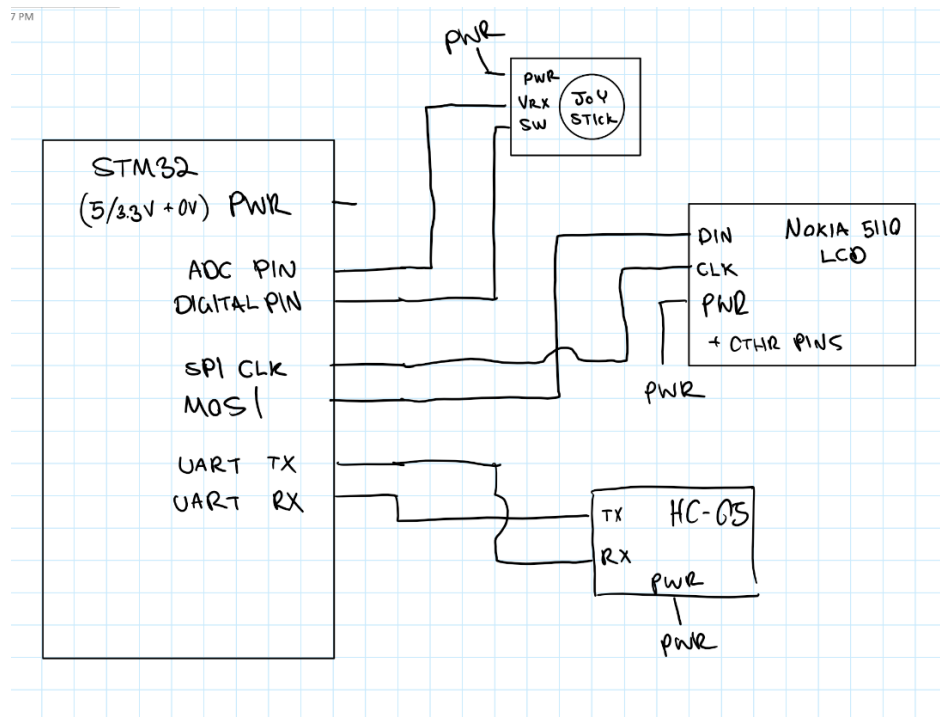
Software

1. Interrupts
   a. While in the betting state, a SysTick interrupt is used after 2.5 mins pass, in which the game automatically places the previous (or default if no previous) bet and runs the game to the next state.
   b. An RTC Alarm interrupt is used to notify the player that 30 mins have passed and should then take a break. This interrupt should cause the game to go into an idle/paused state.
2. Game Logic
   a. Standard Blackjack game logic will be implemented alongside betting logic.
   b. Before game starts, user will be asked to input a starting balance. Default after 2.5 mins will be 10k.
   c. The game ends when the user has an invalid balance (less than the minimum bet amount).
3. Graphics
   a. Implement simple graphics for card visuals, selection options, and text.