EEE102 Term Project: Math Problem Alarm Clock

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Project Goal:

The purpose of this project is to create a functional alarm clock on Basys3 that can be stopped by answering a simple math problem.

External components that will be used besides Basys3:

1- Breadboard
2- Jumper cables
3- A buzzer
4- A 16x2 LCD

Components of Basys3 that will be used:

1- 7 segment display to show time
2- 100 Mhz internal clock
3- Switches to enter the result of the math problem or to enter the alarm time
4- Buttons to select modes and digits

Description:

Unless an alarm time is selected, the design will just show the time in the 7-segment-display of Basys3. The user can enter the alarm time to the design by pushing a button in Basys3. After pushing this button, the user can use 4 buttons to select which digit he/she wants to change and enter a new number in binary using the switches of Basys3. When the user enters the alarm time, he/she can exit this mode by the same button initially pushed. The design works as a regular clock until the alarm time comes. When the time that's been entered arrives the buzzer attached to Basys3 starts to ring and the LCD screen displays a simple math problem. If the user enters the solution of the math problem as a binary number with the switches of Basys3 the buzzer stops and the design will keep working as a regular clock.

Progress Demo:

By the time of the progress demo, I am planning to finish the working clock part the design and start working on the alarm system. I will also buy a compatible buzzer and the LCD for Basys3 and learn how to control them with Basys3.

Final Demo:

By the time of the final demo, I am planning to finish the alarm system of the design and start combining other components to form the final design.