Digital Clock

In this lab project, you are going to design a digital clock in 24 hour format and demonstrate the functionality using Basys 3 board. Following questions/comments might help you to achieve the task.

1. How to count seconds on a Basys 3 board?
2. If you can count seconds then you can easily count minutes.
3. If you can count minutes then you can also count hours.
4. Your design should have an option to reset the time to zero and you should be able to set your clock to desired time, i.e., HHMMSS.
5. You need to display the time in HHMMSS format on Basys3 board. On Basys3 board, you only have four 7 Seven Segment Displays; however, you can connet two Seven Segment Displays through p-mod connector.

You can write the Verilog code for your project and simulate it using open source tools like iverilog. You can also use GTKWave to see the waveforms. You can test the complete design while you are at hostels. Bonus marks will be given to the students who will implement additional features. For instance, a) an alarm will ring (or a LED will blink) when a set time is reached, b) stop watch. Be creative.