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The object of this lab was to create a simulation of a toaster oven on the pic32. The oven has three modes, bake, toast, and broil. The user can change the temperature and desired time using the potentiometer. The user can also switch between modes using the buttons. To implement this on the pic32 I had to use a finite-state machine and a free-running timer. These were the most important aspects that were used to complete this lab.

My approach for this lab was to plan very heavily. I used my iPad the most I have ever used in a lab before. I wrote out all of the pseudocode for each section on my iPad. Once I had a pretty good plan for the logic I would be using, I wrote the code in MPLAB. I then tested that section thoroughly to make sure that it wouldn't create any bugs later on. I then did the same thing with the next section until it was done. The manual was very helpful this time around because it had a graphic of the FSM for this lab. Therefore I was able to follow that graphic and put it into computer language. This approach worked so much better than my earlier approaches in the lab. The planning part took the longest, but I had all of my thoughts on paper instead of trying to juggle them all in my head as I'm coding. The biggest problem that my program has is that it doesn't work when the time is set to less than 7 seconds. I couldn't figure out that issue and I think it has to do with the speed at which the timer works in the program. I also think that it could be that my code isn't optimized enough to handle that quick speed. From a coding standpoint, I think this is an issue, but at the same time, I think that it is pretty unlikely that someone would want to put something in the oven for only 7 seconds. Another thing that went wrong throughout most of the lab was that when I would try to set up the temperature and time the range would repeat three times. After I completed coding the whole entire system including the extra credit, I realized that I needed to shift the bits to the right twice before doing the bit mask. This problem was happening because I was masking the lower 8 bits, but I was

supposed to be masking the top 8. So in order to do that I needed to shift the bits so they would be in the lower position and then complete the masking.

I think this Lab turned out pretty well. I can't really find any bugs besides not being able to cook before 7 seconds. I was even able to implement the extra credit Considering how complex this lab is, I think that with the time I had I did the best I could. That being said this was one of the hardest labs to complete because I was very sick during the week that it was due. This made me have to get an extension, which meant that I wasn't able to go to the TA section because the timing didn't work out with my illness and the strike. This meant that I was on my own for this lab and I am proud of what I was able to accomplish because of that.