

## Digital Alarm Clock

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The aim of this project to build and program a digital clock with typical alarm clock features with a self explanatory user interface. Instead of the four 7-segment LED's I will be using an LCD display, which will be used to both display the time, and when needed will show the set time for the alarm. I plan to have the clock operate in the 12hr system, so I will use a decimal point to indicate whether the time is in the am or pm portion of the day.

I will devote one of the on-board buttons to a toggle function which will cycle through 3 modes, one where the clock is running waiting for the alarm to go off, one where the user is setting the time, and one where the user is setting the alarm.

To change the time (or alarm) I will use 3 more of the on-board buttons. One will alternate between selecting minutes and to selecting hours, then two more will be used to increase or decrease the selected variable.

There must also be a feature which allows the user to enable or disable the alarm function. Since it is undesirable to have this function enabled or disabled by accident I have implemented it so that multiple buttons must be pressed simultaneously to alter the state of the alarm function. I will also have another decimal place on the LCD display indicating whether the alarm is enabled or disabled. The last of the on-board buttons will be used to turn the alarm off once it has started making noise.

I also plan to add on one large button that will be used for the typical 'snooze' feature. Once the alarm has been triggered, the snooze button will be activated and when pushed will disable the alarm for 5 minutes.

If time allows I will continue to add on additional features without over complicating the user interface, as one of my main goals is for anyone to operate the clock without a user manual.