ECE 312 Project Description

Adjustable Pacemaker

Lab Day[1]: M T W (R) F

	Member Name	ID
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Brief Description

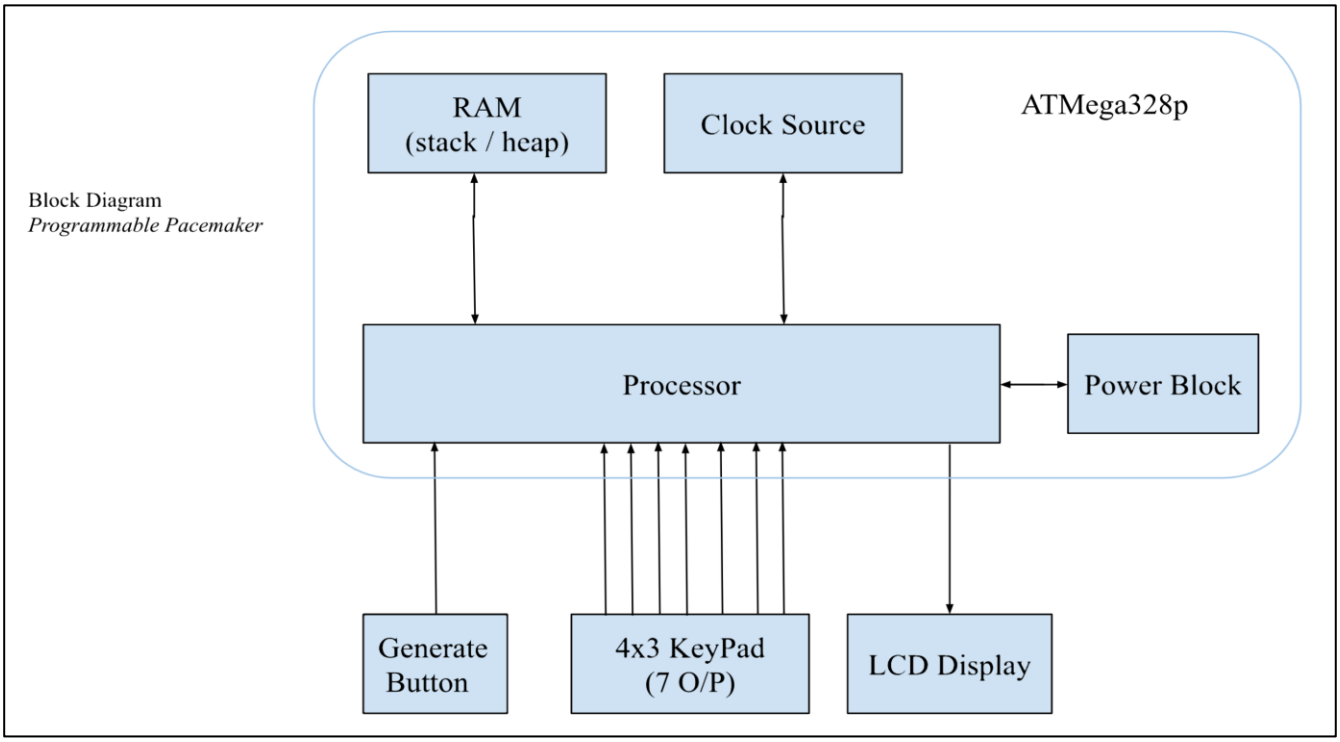
This device is a prototype of an Adjustable Pacemaker that is made to assist those with irregular, or slow, heartbeats which will be set according to the patients needs such as activity level and health condition and lifestyle. This device will be a configurable waveform generator that will use PWM, granting users the access to generate the appropriate heartbeat. The relevant components of this device is a 3x4 keypad, which will set the waveform specifications based on what the user inputs, an LCD to display the specifics of the waveform being generated and a push button which will finally generate the waveform. The waveform generated will be tested and observed on an LED.

Target Specifications

1. Correctly display the user input as it is being typed on the LCD
2. Generate a Phase-Correct PWM for an accurate phase when the button is pressed
3. Modify the waveform generated based on user given inputs (duty cycle and frequency)
4. Display a “complete” message on the LCD after waveform generation
5. Connect an LED to test the functionality of device

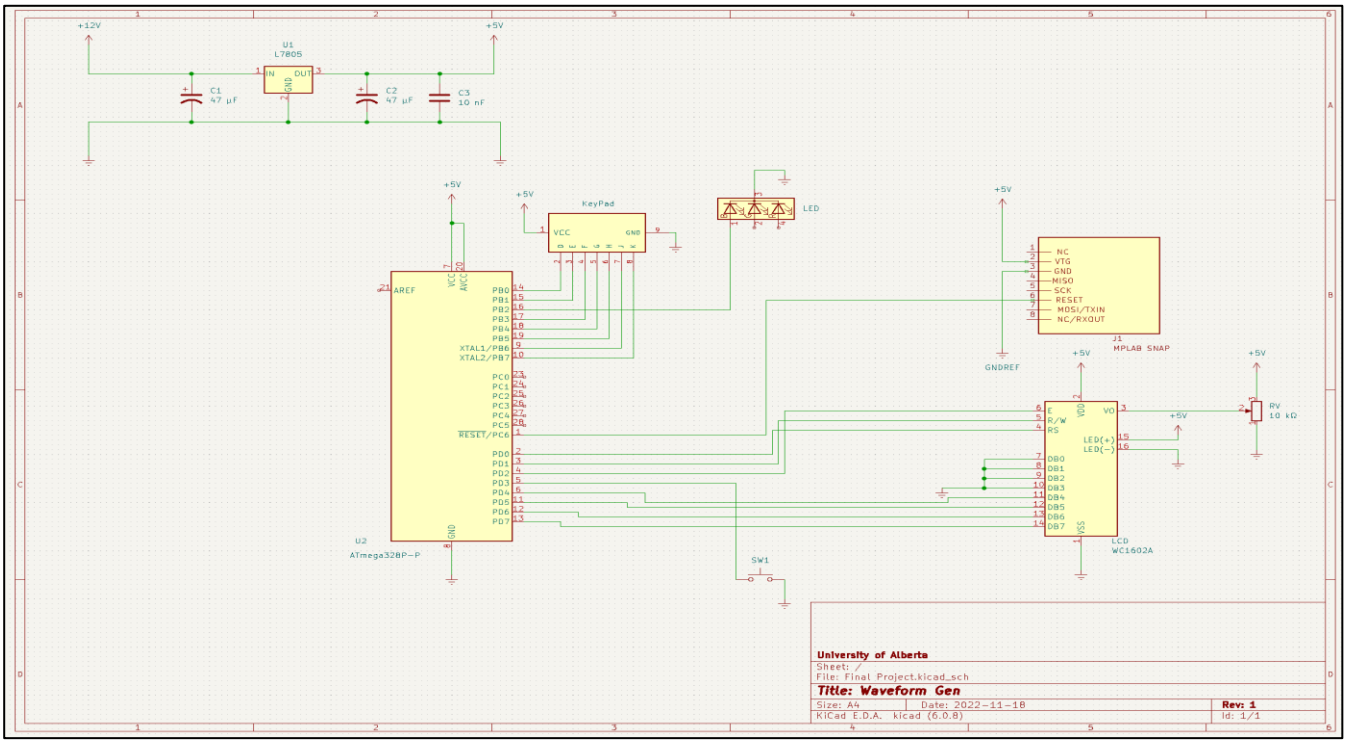
1 If your group is spread across multiple sections, please select the day on which the majority of members are officially scheduled. If there are two members in different sections, please select the earlier day. This will be the day of checkoff.

Hardware Block Diagram

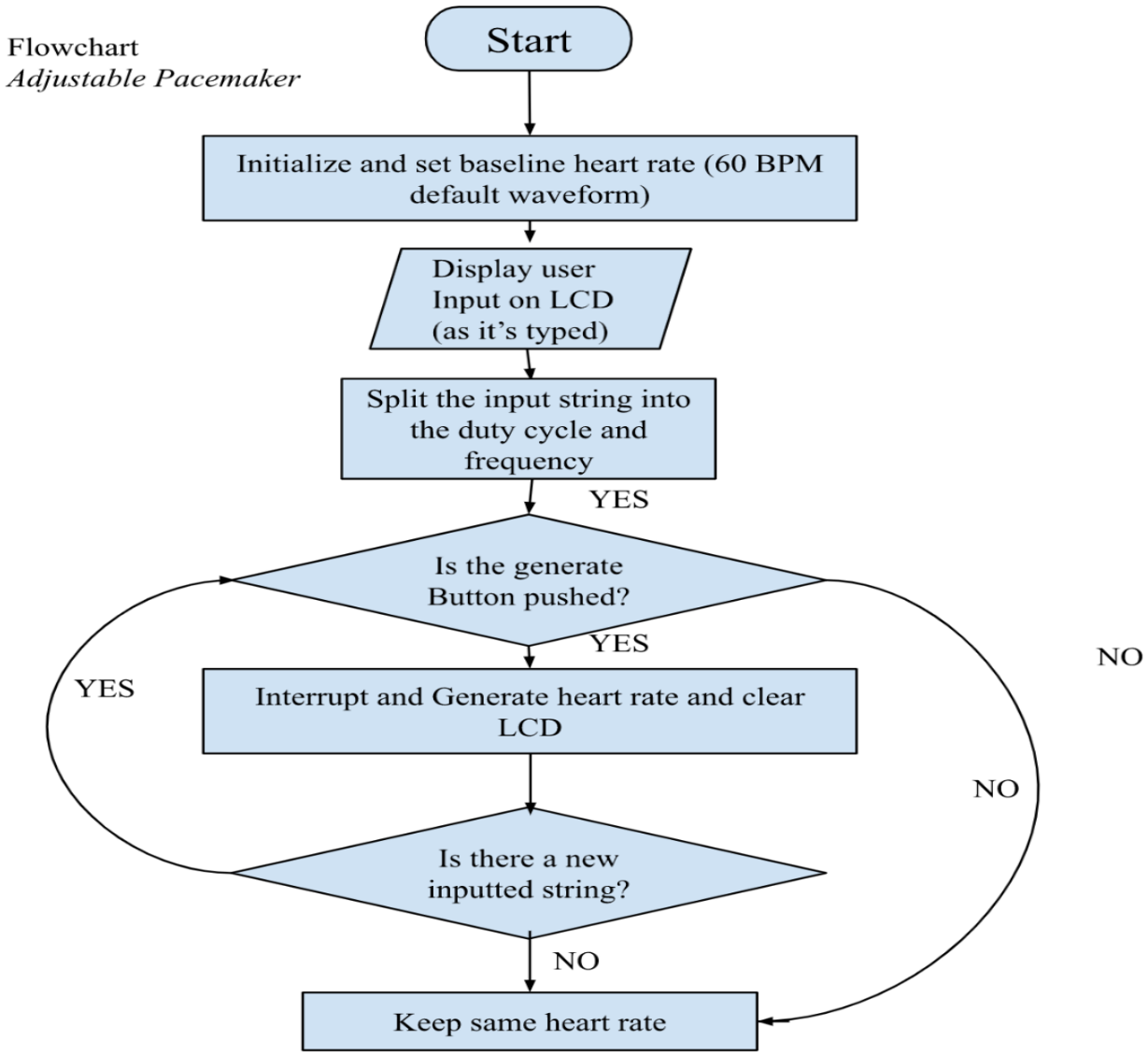


The microcontroller being used is the ATMega328p. A keypad is utilized to obtain inputs from users to set a desired heartbeat/PWM, the LCD displays the information in accordance with the users input and the push button is pressed when the desired heartbeat needs to be generated.

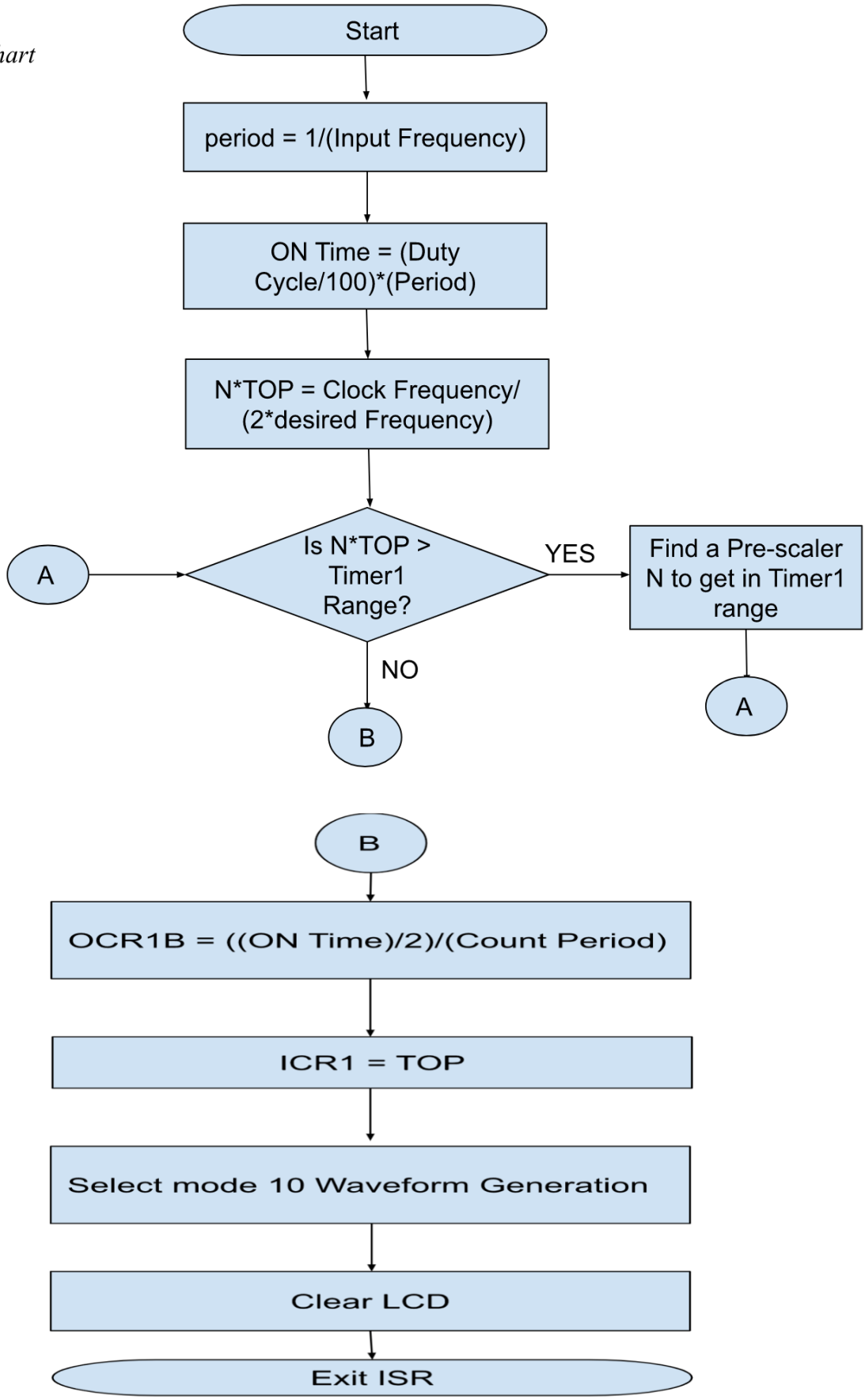
Schematic



Firmware Plan



ISR Flowchart



Parts Needed

Part Description/Number	Number Required	Return
3x4 Keypad	1	□