The problem we are addressing is drowsiness while driving which might lead to fatal accidents and endanger the life of the driver and others on the road. So to tackle this problem we have decided to create the pulse sensor device that will detect when your BPM decreases below a threshold that determines sleepiness, in order to realize the system we have the following circuit. The circuit consists of a light sourcing sensor that will receive light from your body which carries information about oxygen blood level. The signal is filtered amplified through an amplifier which steps up the signal to the seeeduino to process. Our device will sit in a compact form so that we will implement it in a wearable device.

Our next mission in this project was to make sure that the circuit of the pulse sensor will work just fine. Meaning we want to make sure that pur op-amp for example is amplifying the signal as needed and the values chosen for the resistors and capacitors are as required. In the following video here, after changing a few lines in the code that we got from the library on ARDUINO IDE to match our dev board output and input pins, we see the LED flashing which indicates a heart beat. This is our starter code just to test that everything will work fine, our next goal then will be to adapt this code for a seeeduino.

Finally, after making sure that the Circuit of the pulse sensor works fine, here will come the software part. We will be adapting an existing code and adjusting it a little bit for the sake of finding the most accurate results. Here we show the output of the measuring heart beat of the pulse sensor. We came up with an idea of when the pulse sensor first turns on, we will be waiting a few seconds until the heart beat stabilizes. Then we will start taking the avg of the first 10 -20 heart beats. After that we are thinking of taking averages of heartbeat the same way every period and compare with the baseline avg heart beat of a person, ( the baseline value here is the first avg we recorded of a person's heart beat) if the difference between the two averages exceed the threshold that we adapted from the pdf of one of our sources on our website, a person feeling drowsy will be indicated.