

LECTURE/CLASS DOUBT AMPLIFICATION

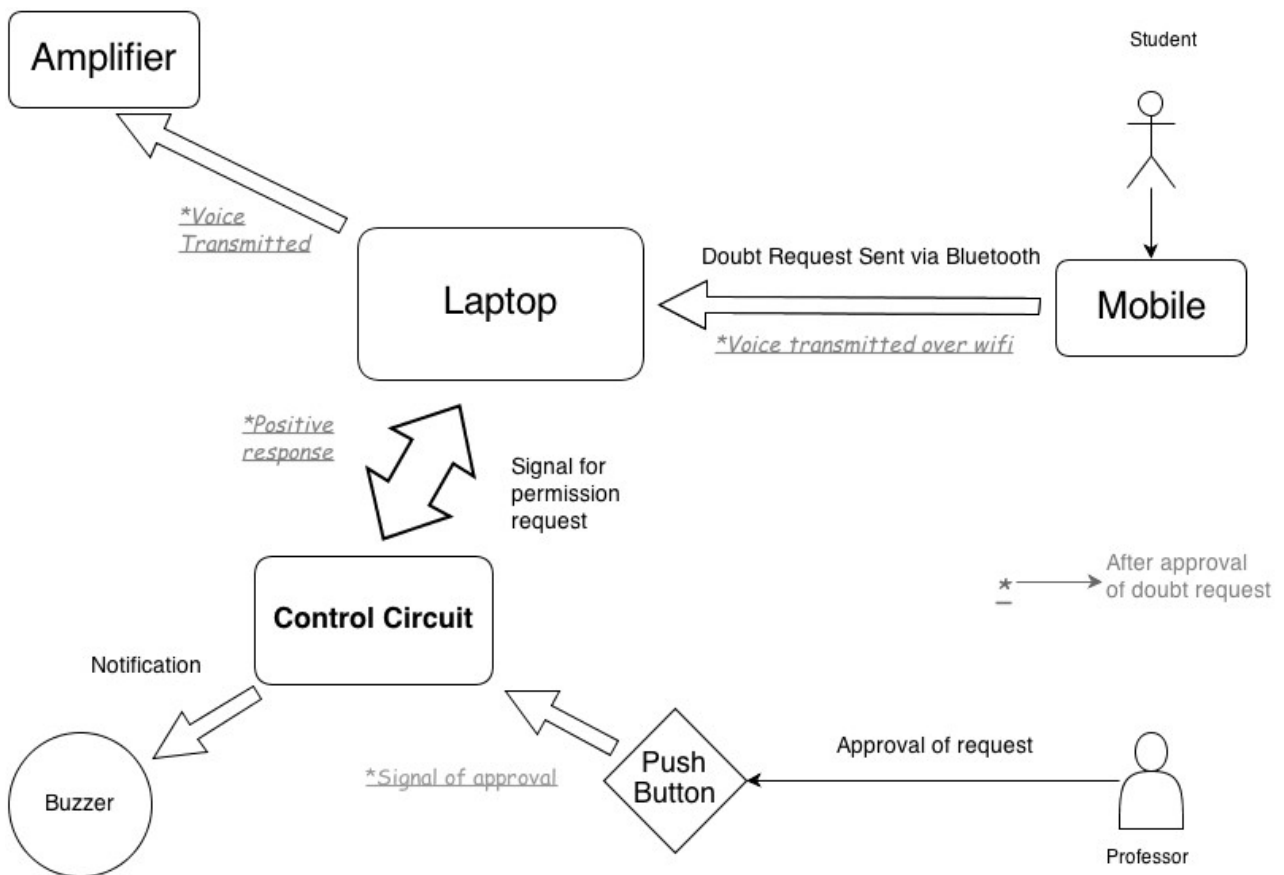
Abstract by KAMENG Hostel

Domain: Wireless

Problem: It cannot be taken for granted that a person sitting at the back of a large size lecture hall is not interested in the class and doesn't want to participate. Even if he/she wants to raise a question in class, they will have to shout it out loud to be audible. This restricts students from being active in class. Also, in large auditoriums during interactive lectures, it becomes difficult for the audience to interact with the speaker. (Traditionally a microphone is passed around)

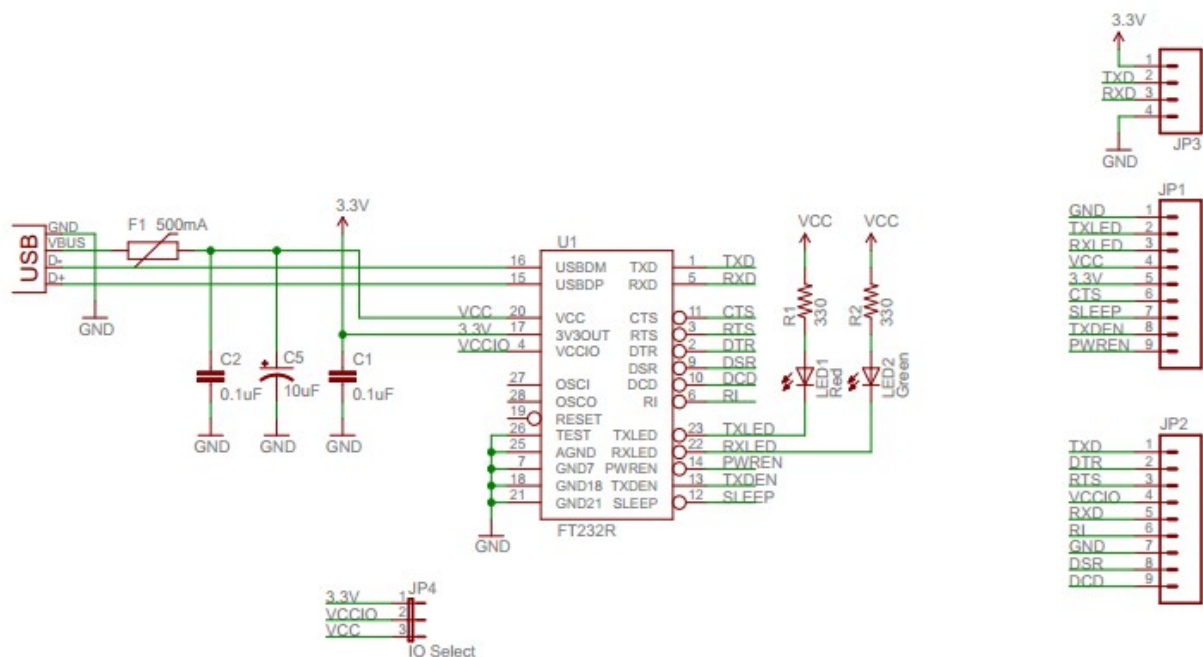
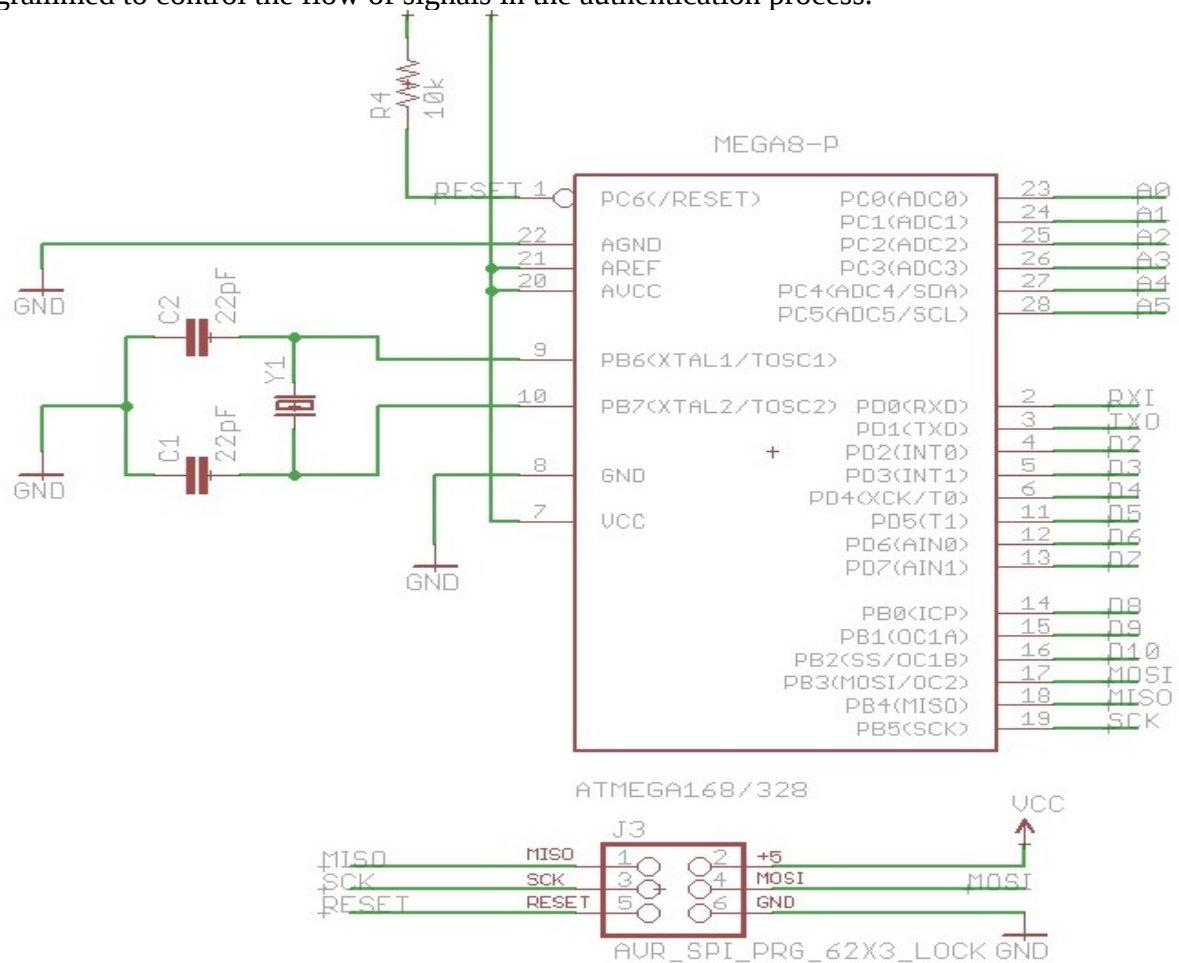
Proposal: This is the age of the smartphone. So instead of limiting its usage as a distraction in classrooms, we have a way to use the mic in the phone to transfer voice to a common amplifier which will amplify the person's voice so that it is audible to the whole class. This could make classrooms more interactive and can also be used in auditoriums during a Q&A round with the speaker.

Working: When a student in the class gets a doubt, he or she can request for clarification through his or her mobile phone. The request is transmitted through Bluetooth to the laptop present in the lecture hall. The laptop is connected to a control circuit, which enables the authentication process. Upon receiving the signal, the control circuit triggers a buzzer, or any other convenient indicator in order to notify the professor. If the professor decides to accept the request he needs to press a push button, which in turn sends a positive response to the control circuit. The student can now speak into his phone's mic and the voice is transmitted over WiFi to the laptop and ultimately to the amplifier/speakers.



Block diagram showing the working of the proposal

Control Circuit: The control circuit communicates to the laptop through serial communication converted to USB with the help of the FT232RL IC, connected to an ATMEGA328 microcontroller programmed to control the flow of signals in the authentication process.



Circuit for implementing FT232RL USB to Serial IC

Requirements:

- Breadboards x 2
- 7805 Voltage regulator x 2
- LEDs x 10
- Resistors:

220 Ohm x 4

10k Ohm resistor x 6

330 Ohm x 4

- Capacitors:

10 uF x 4

22 pF x 4

0.1 uF x 4

- 16 MHz clock crystal x 1
- Push buttons x 2
- FT232RL USB to Serial IC x 1
- ATMEGA328 microcontroller x 1
- USB Serial Bus connector

Software used for prototype:

- Microsoft Windows
- WO Mic client & android application
- Python 2.7
- Microcontroller programming environment
- FTDI VCP drives (x64)

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