

# Lab Assignment 2



Hemanth Prabhu

A. Room - 2334

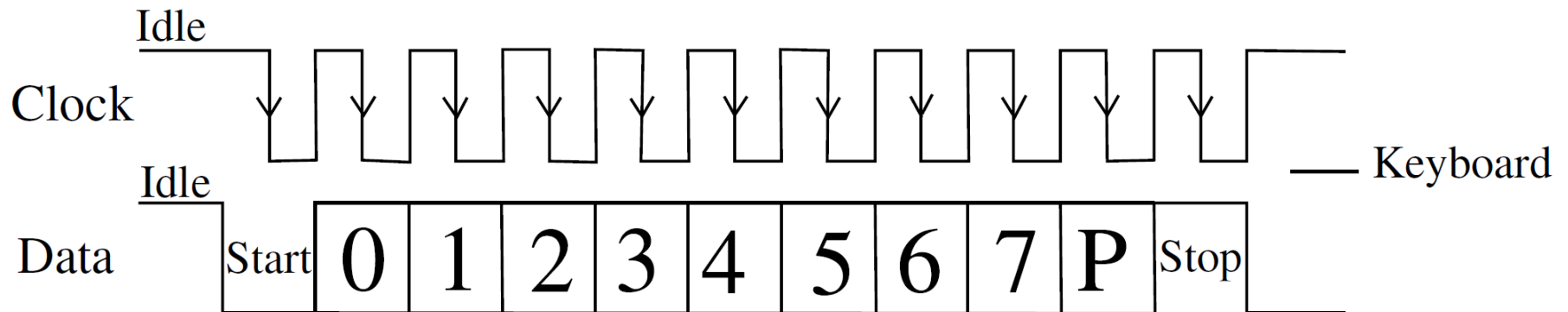
B. ([hemanth.prabhu@eit.lth.se](mailto:hemanth.prabhu@eit.lth.se))

## Interfacing Keyboard with FPGA Board



# Keyboard Clk and Data.

- Interface the good old Ps2 keyboard.
- It uses two signals (keyboard data and clock)
- Interface protocol (LSB first)





# Make code & Break code

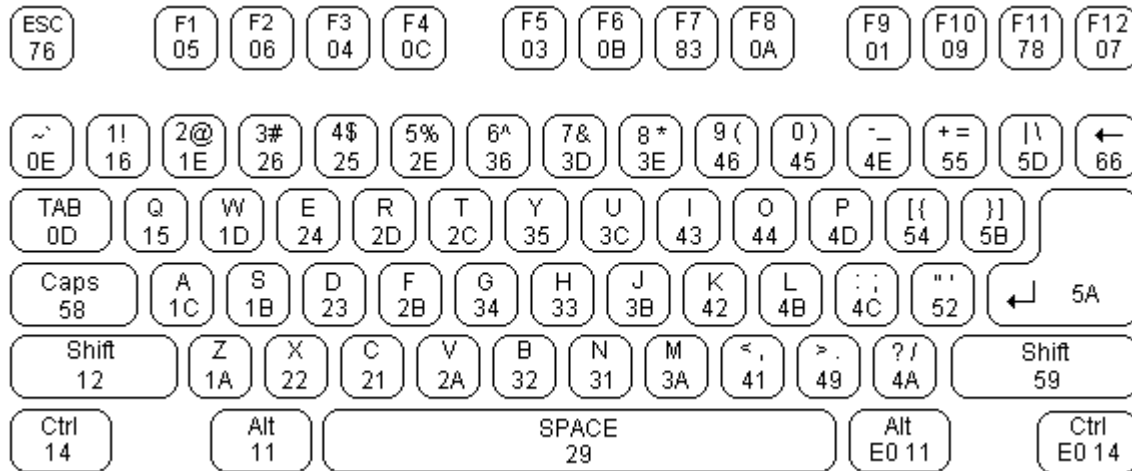
- When key pressed, a make code is generated.
- When key is released a break code is generated.

<b>key</b>	<b>make</b>	<b>break</b>
A	'1C'h	'F0'h '1C'h
B	'32'h	'F0'h '32'h
C	'21'h	'F0'h '21'h

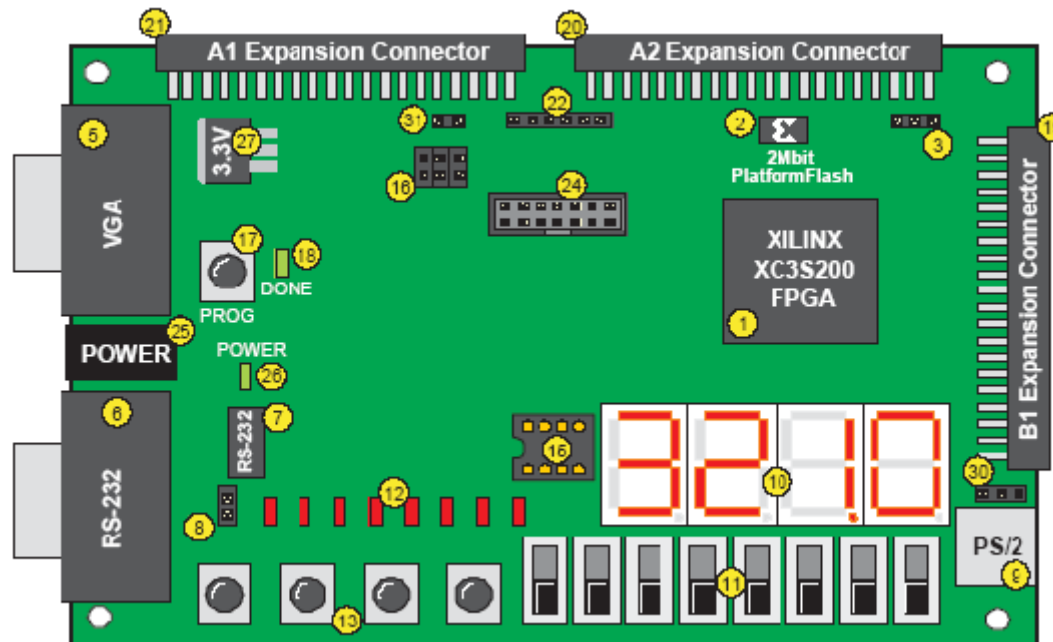


# Scan codes.

- Each key is assigned a unique scan code.



- **FPGA - 7 SEGEMENT DISPLAY**
- **Try to emulate notepad like feature as much as possible !!**





# Main Processes

- **Synchronizing Keyboard with FPGA.**
- **Detection of falling edge of keyboard Clock.**
- **Storing of relevant Data (Scan Code).**
- **Display of 'numbers' keys on Seven Segment.**
- **Keep the previous key displayed when the next number key is pressed.**



## **Deadlines : (Sep 16)**

- Controller for the keyboard (FSM), should basically involve the strategy opted for handling the keyboard.**
- Edge detection circuit**