# Digital Oscilloscope ECE 241 Proposal

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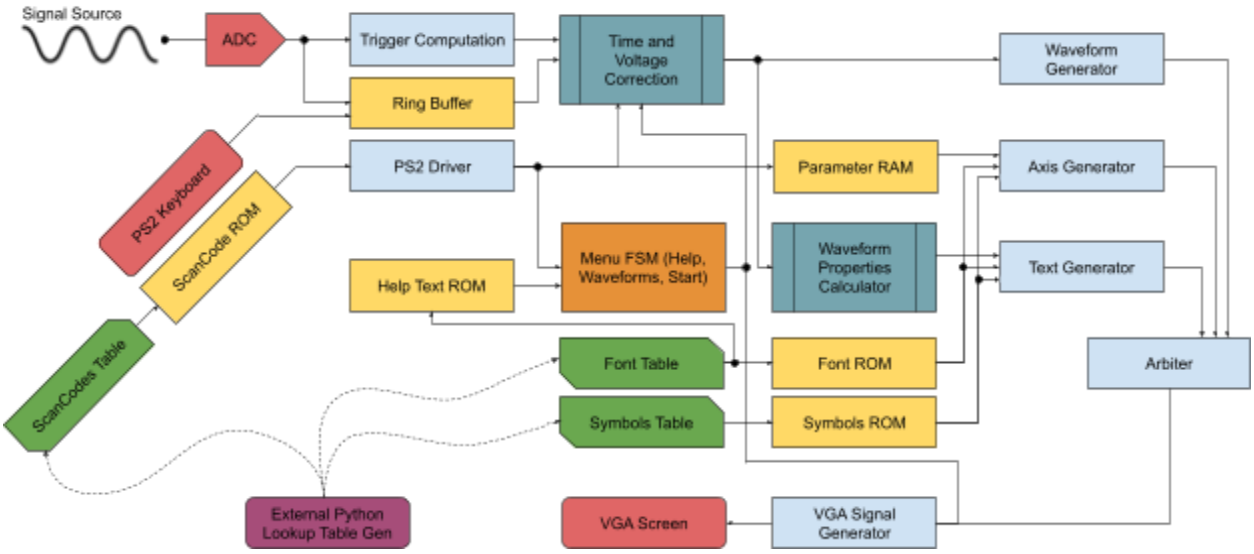
## Summary

This project will involve the use of the DE1-SoC's onboard Analog-to-Digital Converter ADC7928 [1] to take an analog signal from a source and then display it on the VGA screen. It will have three screens: (i) a start menu for idling, (ii) a help screen for usage and keyboard controls (iii) a waveforms screen for the actual display. The waveforms screen will also display crucial waveform information such as $V_{rms}$, $V_{p2p}$, $V_{max}$, $V_{min}$, $V_{delta}$, Frequency, and Time Period; it will also allow the user to switch the time and voltage scale using the PS2 keyboard.




## Timeline

| Dates | Work | Assignee |
|---|---|---|
| 06th Nov → 13th Nov | External Python Lookup Table Gen<br>ScanCode, Font, Help Text, Symbols ROM<br>PS2 Keyboard Driver<br>VGA Signal Generator & Arbiter<br>Menu FSM | Ayan<br>Ayan<br>Ayan<br>Rahil<br>Rahil |
| 13th Nov → 20th Nov | Trigger Computation & Data RAM<br>Time and Voltage Correct<br>Waveform Properties Calculator<br>Text Generator<br>Axis Generator<br>Waveform Generator | Ayan<br>Ayan<br>Rahil<br>Rahil<br>Rahil<br>Ayan |
| 20th Nov → 27th Nov | Finalize Help Text ROM<br>**Write Final Presentation**<br>**DEBUG** | Ayan<br>Together<br>Together |

[1] Altera, "DE1-SoC User Manual," ADC Basics (Page 17), http://www.ee.ic.ac.uk/pcheung/teaching/ee2_digital/DE1-SoC_User_manual.pdf (accessed Nov. 5, 2025).