Clock

File: clock.kicad_sch

Status

File: status.kicad_sch

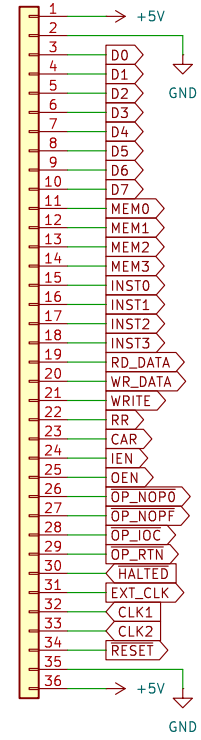
Bell

File: bell.kicad_sch

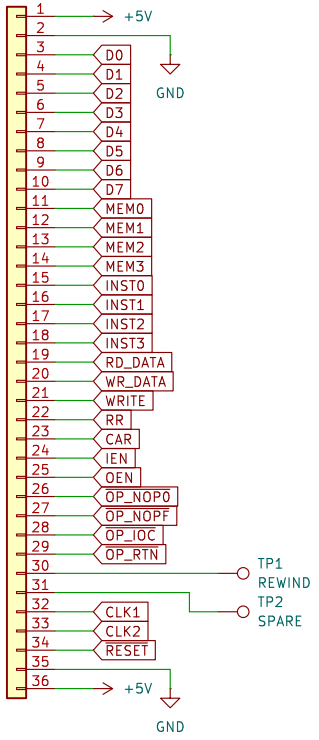
Run Stop

File: run_stop.kicad_sch

J1
Edge 1



J2
Edge 2



H1
3mm

H2
3mm

H3
3mm

H4
3mm

Edge Connectors

Sheet: /
File: UE1-TTL-Clock.kicad_sch

Title: UE1-TTL Clock and Front Panel

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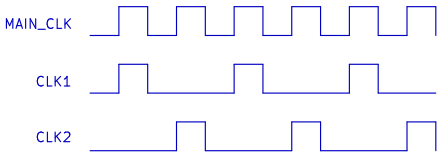
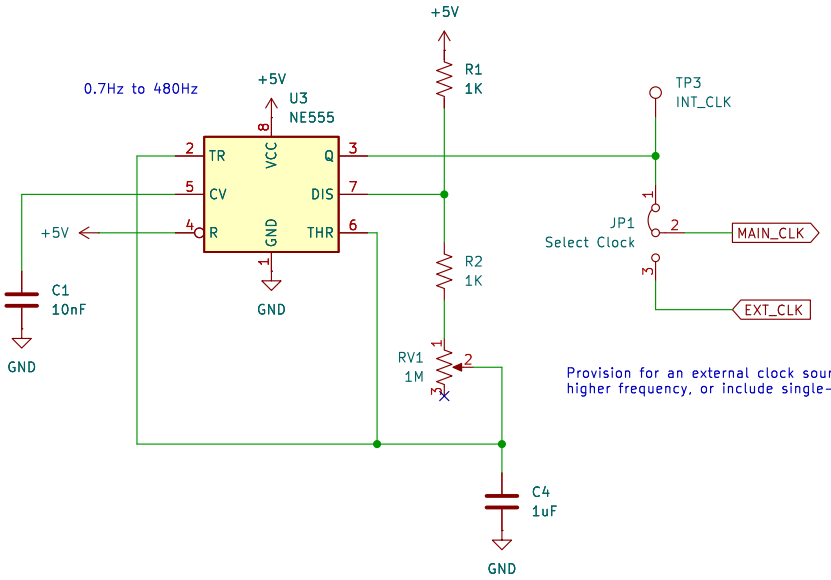
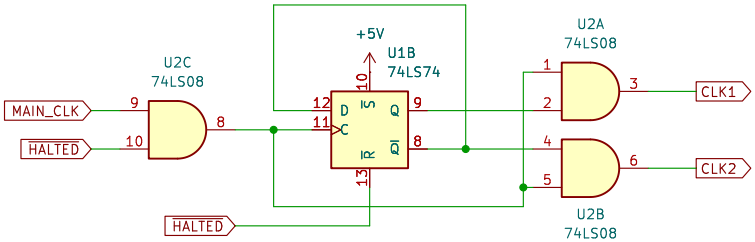
555-based clock generator inspired by Ben Eater's design:
https://eater.net/8bit/schematics

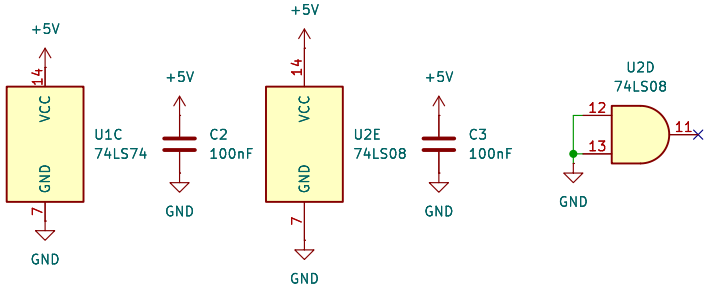


CLK1 rising edge – Load instruction into instruction register
CLK1 falling edge – Update registers and memory
CLK2 rising edge – Update skip register
CLK2 falling edge – Increment program counter / advance tape position



Provision for an external clock source that can run at a higher frequency, or include single-step capability.





Clock

Sheet: /Clock/
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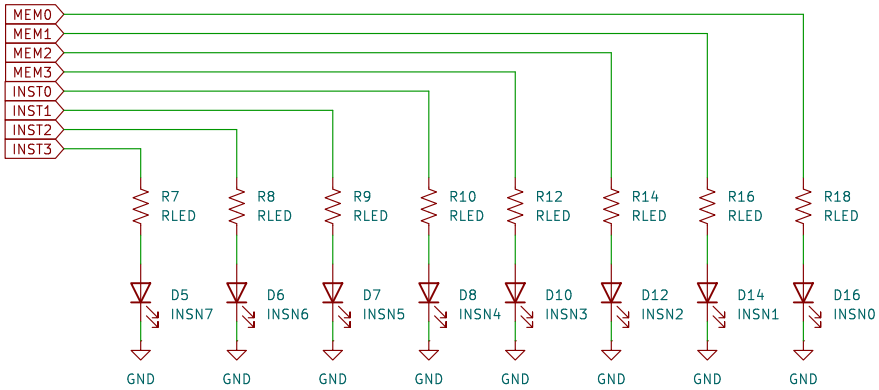
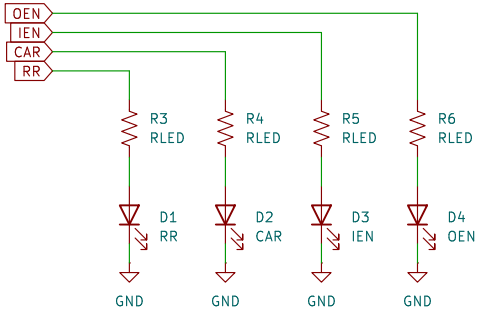
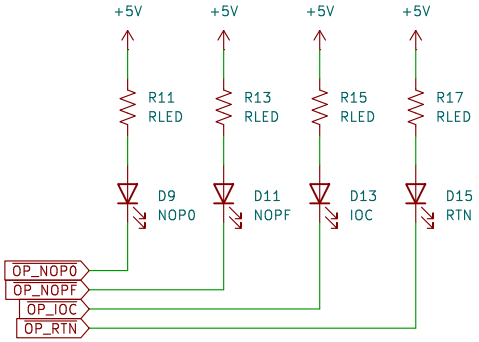
Current instruction being executed



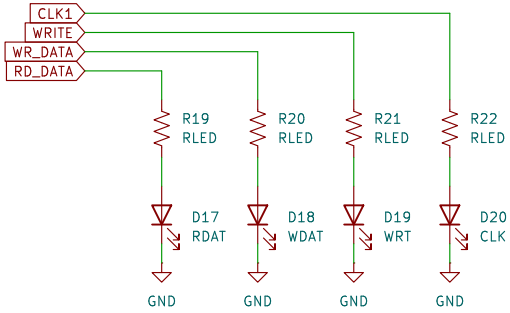
Registers



Special Instructions



Control Lines



Choose RLED values to match the properties of the LED's you are using.

RLED = (5 − VLED) / ILED

Examples:

VLED = 1.7V, ILED = 15mA, RLED = 220R
VLED = 1.9V, ILED = 2mA, RLED = 1550R (1K8 should be fine)
VLED = 1.9V, ILED = 10mA, RLED = 310R (330R should be fine)

Recommend 2mA LED's to reduce current draw on TTL outputs

Sheet: /Status/
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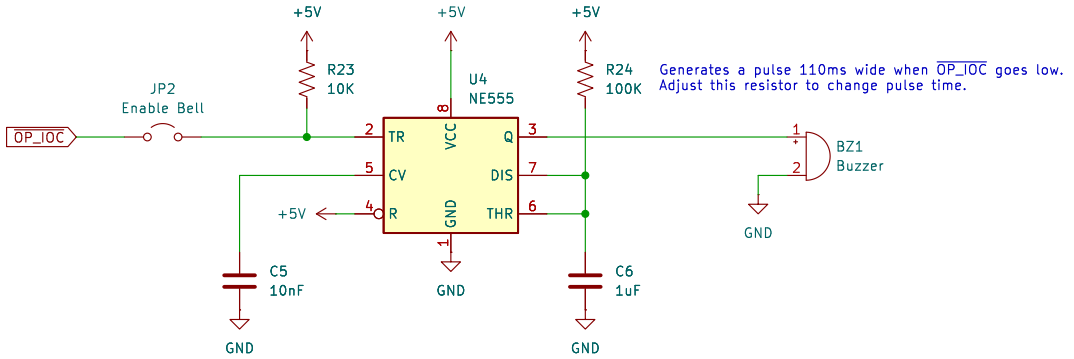

Bell

Sheet: /Bell/
File: bell.kicad_sch

Title: UE1–TTL Clock and Front Panel

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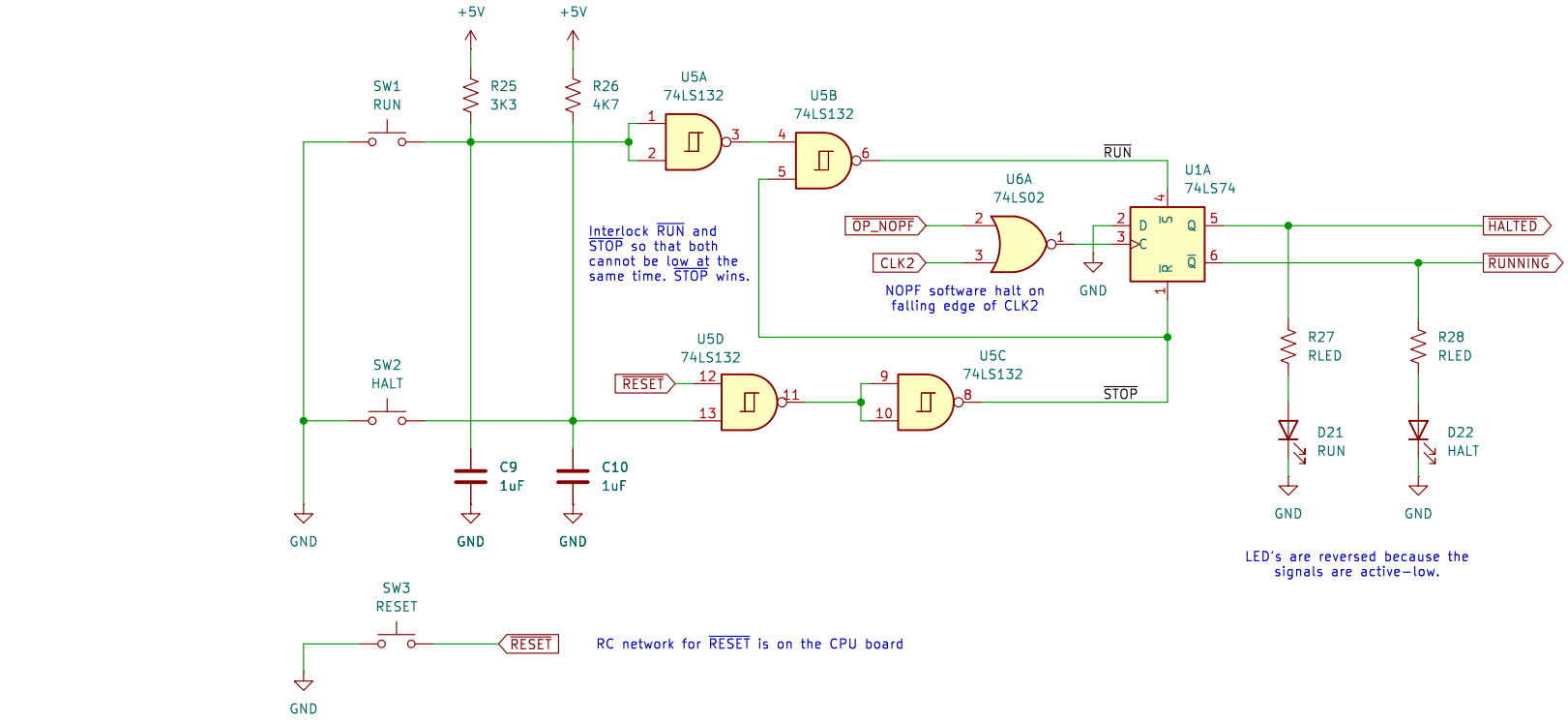

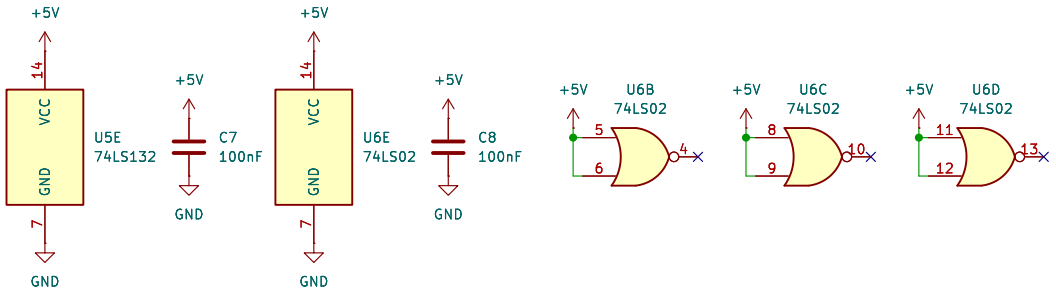

Run/Stop Control

Sheet: /Run Stop/
File: run_stop.kicad_sch

Title: UE1-TTL Clock and Front Panel

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