Generic Parts

Part	Amount	Description	Datasheet
22 gauge wire	-		
Breadboard	16	830 tie point solderless breadboard	
EEPROM programmer (optional)	1	Used to program the EEPROM chips	http://www.ebay.com/itm/191816776888
Jumper wires	-		

Clock Module

Part	Amount	Description	Datasheet
555 timer	3		http://www.ti.com/lit/ds/symlink/lm555.pdf
74LS04	1	Hex inverter	http://www.ti.com/lit/ds/symlink/sn74ls04.pdf
74LS08	1	Quad AND gate	http://www.ti.com/lit/ds/symlink/sn74ls08.pdf
74LS32	1	Quad OR gate	http://www.ti.com/lit/ds/symlink/sn54ls32.pdf
Capacitor 0.01μF	3		
Capacitor 0.1μF	2		
Capacitor 2μF	1		
LED (blue)	1		
Momentary switch	1	Microtivity 6mm tact switch	
Resistor 1kΩ	5		
Resistor 1MΩ	1		
Toggle switch	1	Double-pole toggle switch	
Trimpot 1MΩ	1	Variable resistor	

A Register

Part	Amount	Description	Datasheet
74LS173	2	4-bit D-type register	http://www.ti.com/lit/ds/symlink/sn74173.pdf
74LS245	1	Octal bus transceiver	http://www.ti.com/lit/ds/symlink/sn74ls245.pdf
LED (red)	8		

B Register

Part	Amount	Description	Datasheet
74LS173	2	4-bit D-type register	http://www.ti.com/lit/ds/symlink/sn74173.pdf

Part	Amount	Description	Datasheet
74LS245	1	Octal bus transceiver	http://www.ti.com/lit/ds/symlink/sn74ls245.pdf
LED (red)	8		

Instruction Register
https://www.youtube.com/watch?v=9WE3Obdjtv0

Part	Amount	Description	Datasheet
74LS173	2	4-bit D-type register	http://www.ti.com/lit/ds/symlink/sn74173.pdf
74LS245	1	Octal bus transceiver	http://www.ti.com/lit/ds/symlink/sn74ls245.pdf
LED (blue)	4		
LED (yellow)	4		

ALU
https://www.youtube.com/watch?v=S-3fXU3FZQc

Part	Amount	Description	Datasheet
74LS245	1	Octal bus transceiver	http://www.ti.com/lit/ds/symlink/sn74ls245.pdf
74LS283	2	4-bit binary full adder	http://www.ti.com/lit/ds/symlink/sn54s283.pdf
74LS86	2	Quad XOR gate	http://www.ti.com/lit/ds/symlink/sn74ls86a.pdf
LED (red)	8		

RAM Module
https://www.youtube.com/watch?v=5rl1tEFXKt0

Part	Amount	Description	Datasheet
74LS00	1	Quad NAND gate	http://www.ti.com/lit/ds/symlink/sn7400.pdf
74LS04	2	Hex inverter	http://www.ti.com/lit/ds/symlink/sn74ls04.pdf
74LS157	4	Quad 2-to-1 line data selector	http://www.ti.com/lit/ds/symlink/54ls157.pdf
74LS173	1	4-bit D-type register	http://www.ti.com/lit/ds/symlink/sn74173.pdf
74LS189	2	64-bit RAM	http://www.ndatasheet.com/datasheet-frame/300/mdownload.php?id=529296
74LS245	1	Octal bus transceiver	http://www.ti.com/lit/ds/symlink/sn74ls245.pdf
DIP switch (4 bit)	1		
DIP switch (8 bit)	1		
LED (green)	1		
LED (red)	9		
LED (yellow)	4		
Momentary switch	1	Microtivity 6mm tact switch	
Resistor 1kΩ	2		
Toggle switch	1	Double-pole toggle switch	

EEPROM Programmer (optional)

https://www.youtube.com/watch?v=K88pgWhEb1M

Part	Amount	Description	Datasheet
74HC595	2	8-bit serial-in, parallel-out shift register	http://www.nxp.com/documents/data_sheet/74HC_HCT595.pdf
Arduino Nano	1	Microcontroller	https://www.arduino.cc/en/uploads/Main/ArduinoNanoManual23.pdf

Output Module

https://www.youtube.com/watch?v=5rl1tEFXKt0

Part	Amount	Description	Datasheet
555 timer	1		http://www.ti.com/lit/ds/symlink/lm555.pdf
74LS139	1	Dual 2-to-4 line decoder	http://www.ti.com/lit/ds/symlink/sn54ls139a.pdf
74LS76	1	Dual JK flip-flop	http://www.ti.com/lit/ds/symlink/sn5476.pdf
7-segment display	4	Common cathode 7-segment display	
Capacitor 0.01µF	2		
CAT28C16AP	1	16 Kbit CMOS parallel EEPROM	http://www.alldatasheet.com/datasheet-pdf/pdf/57374/CATALYST/CAT28C16AP-20T.html
Resistor 100kΩ	1		
Resistor 1kΩ	1		

Program Counter Module

https://www.youtube.com/watch?v=tNwU7pK_3tk

Part	Amount	Description	Datasheet
74LS161	1	4-bit synchronous binary counter	http://www.ti.com/lit/ds/symlink/sn74ls161a.pdf
74LS245	1	Octal bus transceiver	http://www.ti.com/lit/ds/symlink/sn74ls245.pdf
LED (green)	4		

Output Register

https://www.youtube.com/watch?v=-6JAgFWCL9w

This module can also be build in the same way as the A/B/Instruction Register if you don't have the additional 74LS273 which is not used in any other module (so far)

Part	Amount	Description	Datasheet
74LS08	1	Quad AND gate	http://www.ti.com/lit/ds/symlink/sn74ls08.pdf
74LS273	1	Octal D-type flip-flop with clear	http://www.ti.com/lit/ds/symlink/sn74ls273.pdf

Data Bus

https://www.youtube.com/watch?v=-6JAgFWCL9w

Part	Amount	Description	Datasheet
LED (red)	8	Data bus LEDs	

| Resistor 470Ω | 8 | Current limiting resistors for the LEDs | |
| Resistor 10kΩ | 8 | Pull down resistors | |

Control Word

https://www.youtube.com/watch?v=AwUirxi9eBg

Part	Amount	Description	Datasheet
74LS04	2	Hex inverter	http://www.ti.com/lit/ds/symlink/sn74ls04.pdf
Resistor 470Ω	15		
LED (blue)	15		

Control Module

https://www.youtube.com/watch?v=dHWFpkGsxOs

Part	Amount	Description	Datasheet
CAT28C16AP	2	16 Kbit CMOS parallel EEPROM	http://www.alldatasheet.com/datasheet-pdf/pdf/57374/CATALYST/CAT28C16AP-20T.html
74LS161	1	4-bit synchronous binary counter	http://www.ti.com/lit/ds/symlink/sn74ls161a.pdf
74LS139	1	Dual 2-to-4 line decoder	http://www.ti.com/lit/ds/symlink/sn54ls139a.pdf
LED (blue)	1		
LED (red)	3		
LED (green)	5		