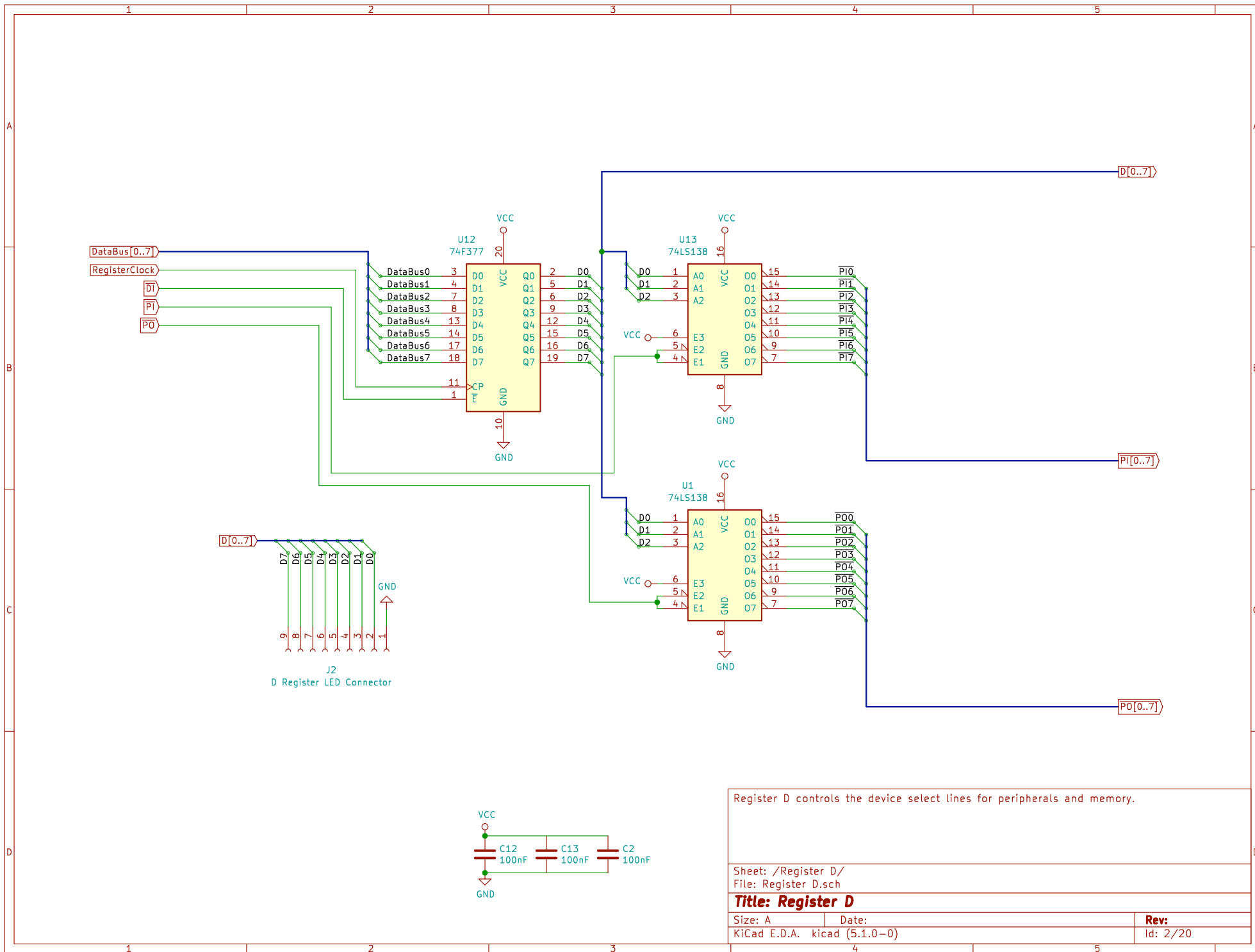
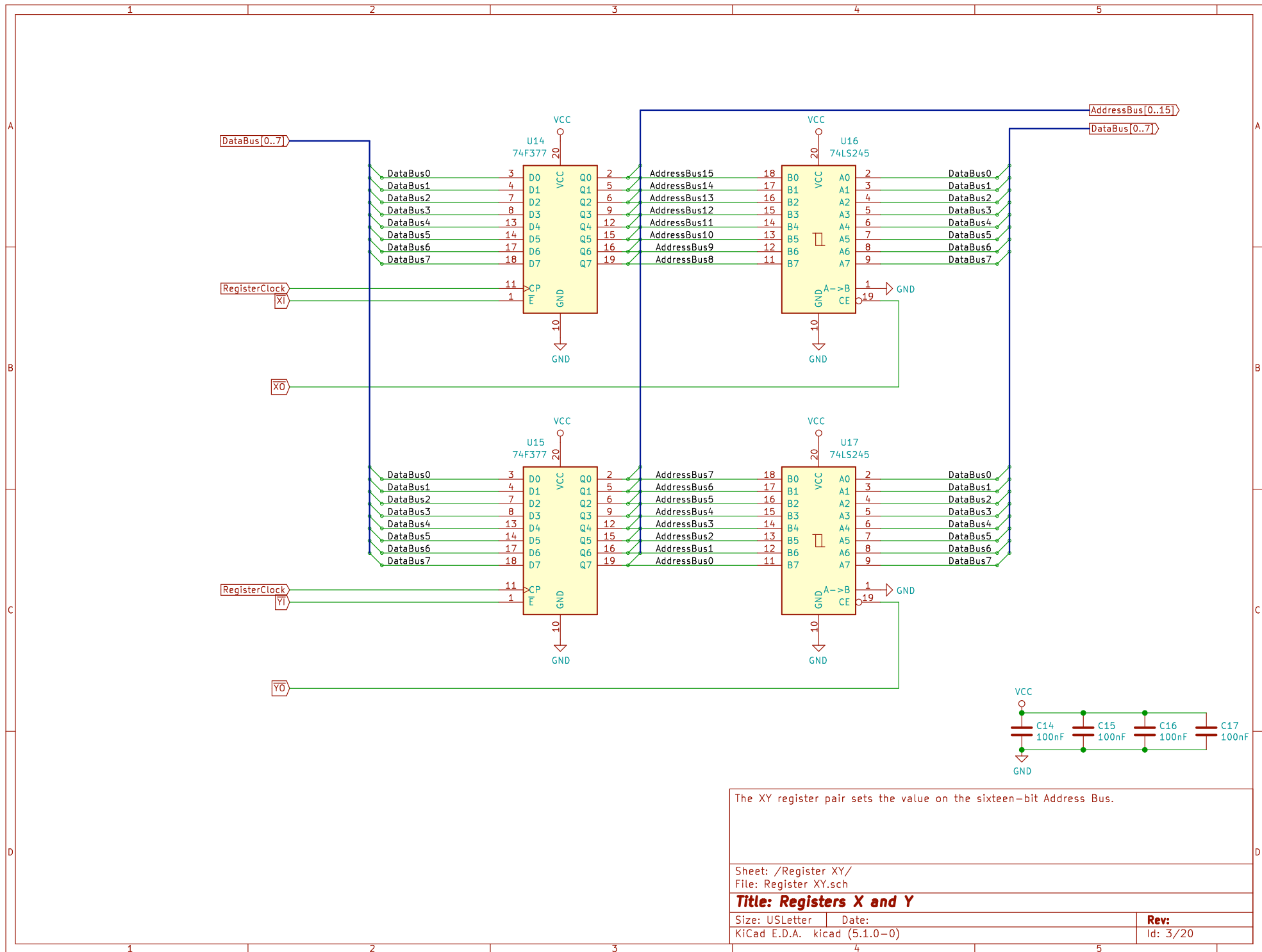


TTL microcomputer built from 74xx series logic chips.

Sheet: /		
File: MainBoard.sch		
Title: TurtleTTL: Main Board		
Size: A	Date:	Rev:
KiCad E.D.A. kicad (5.1.0-0)		Id: 1/20



Register D controls the device select lines for peripherals and memory.		
Sheet: /Register D/ File: Register D.sch		
<b>Title: Register D</b>		
Size: A	Date:	Rev:
KiCad E.D.A. kicad (5.1.0-0)		Id: 2/20

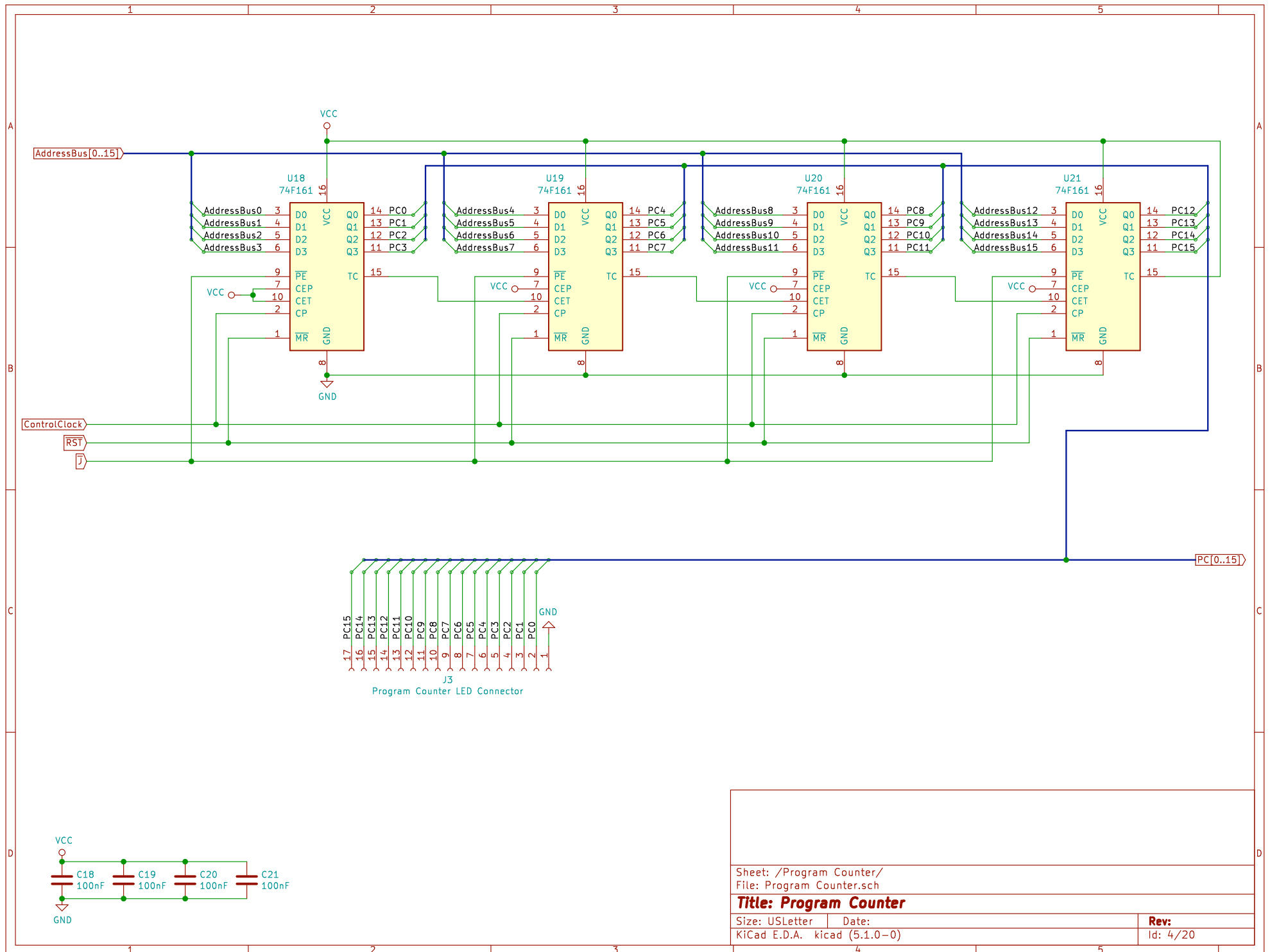


The XY register pair sets the value on the sixteen-bit Address Bus.

Sheet: /Register XY/  
File: Register XY.sch

**Title: Registers X and Y**

Size: USLetter	Date:
KiCad E.D.A. kicad (5.1.0-0)	Rev: Id: 3/20



Sheet: /Program Counter/  
File: Program Counter.sch

# **Title: Program Counter**

Size: USLetter Date:  
KiCad E.D.A. kicad (5.1.0-0)

Rev:  
Id: 4/20

1	2	3	4	5	6
A					A
B					B
C					C
D					D
1	2	3	4	5	6

Sheet: PC/IF

File: PC\_IF.sch  
Sheet: Instruction ROM

Sheet: Instruction RAM Address

File: Instruction RAM Address.sch  
Sheet: Instruction RAM

File: Instruction ROM.sch  
Sheet: Instruction Register

File: Instruction RAM.sch

File: Instruction Register.sch

Instructions can be fetched from either Instruction ROM or Instruction RAM.  
The lower 32KB of the address space is mapped to ROM, the remainder to RAM.

Sheet: /Instruction Fetch/  
File: Instruction Fetch.sch

Title: **Instruction Fetch**

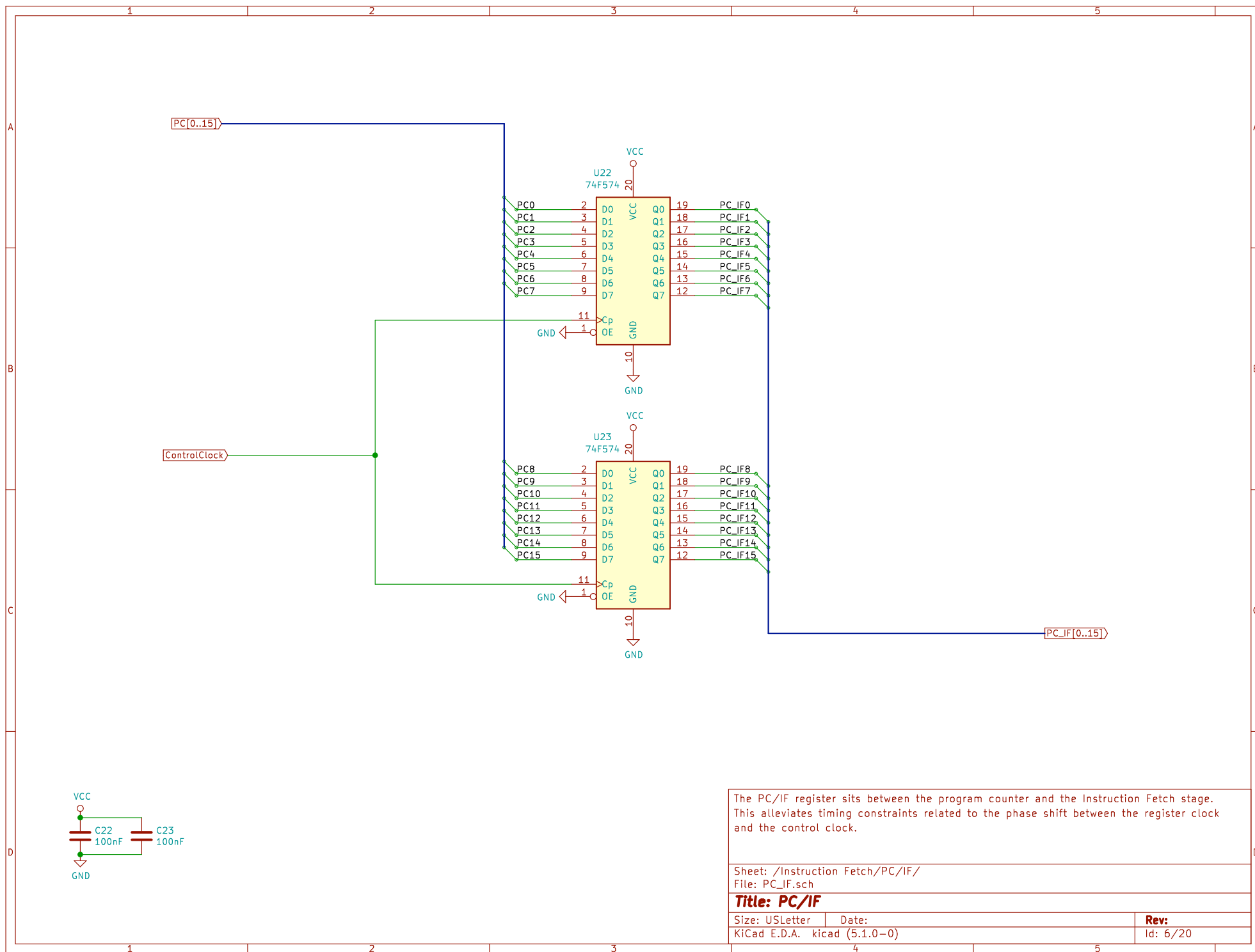
Size: A4

Date:

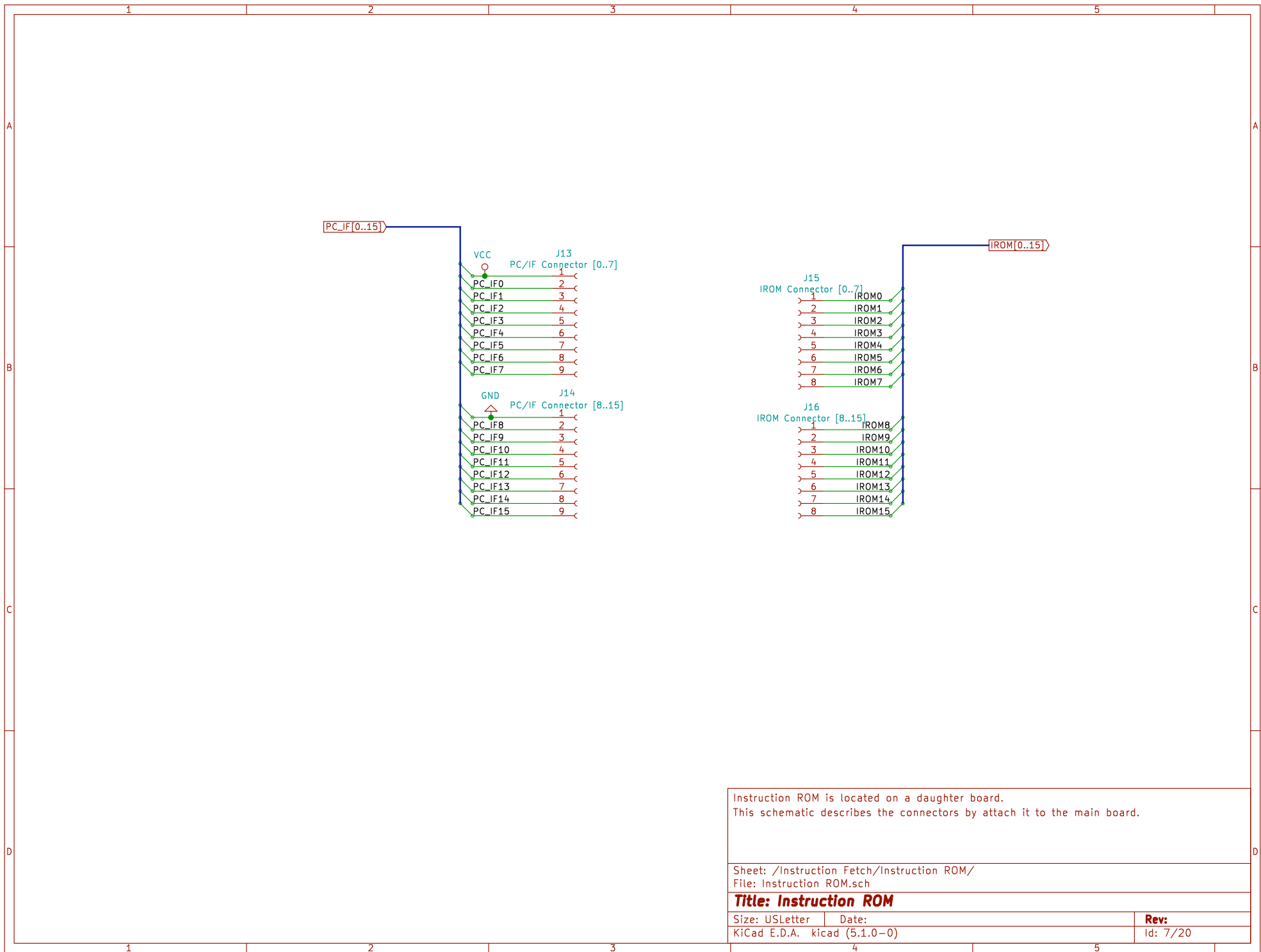
Rev:

KiCad E.D.A. - kicad (5.1.0-0)

Id: 5/20

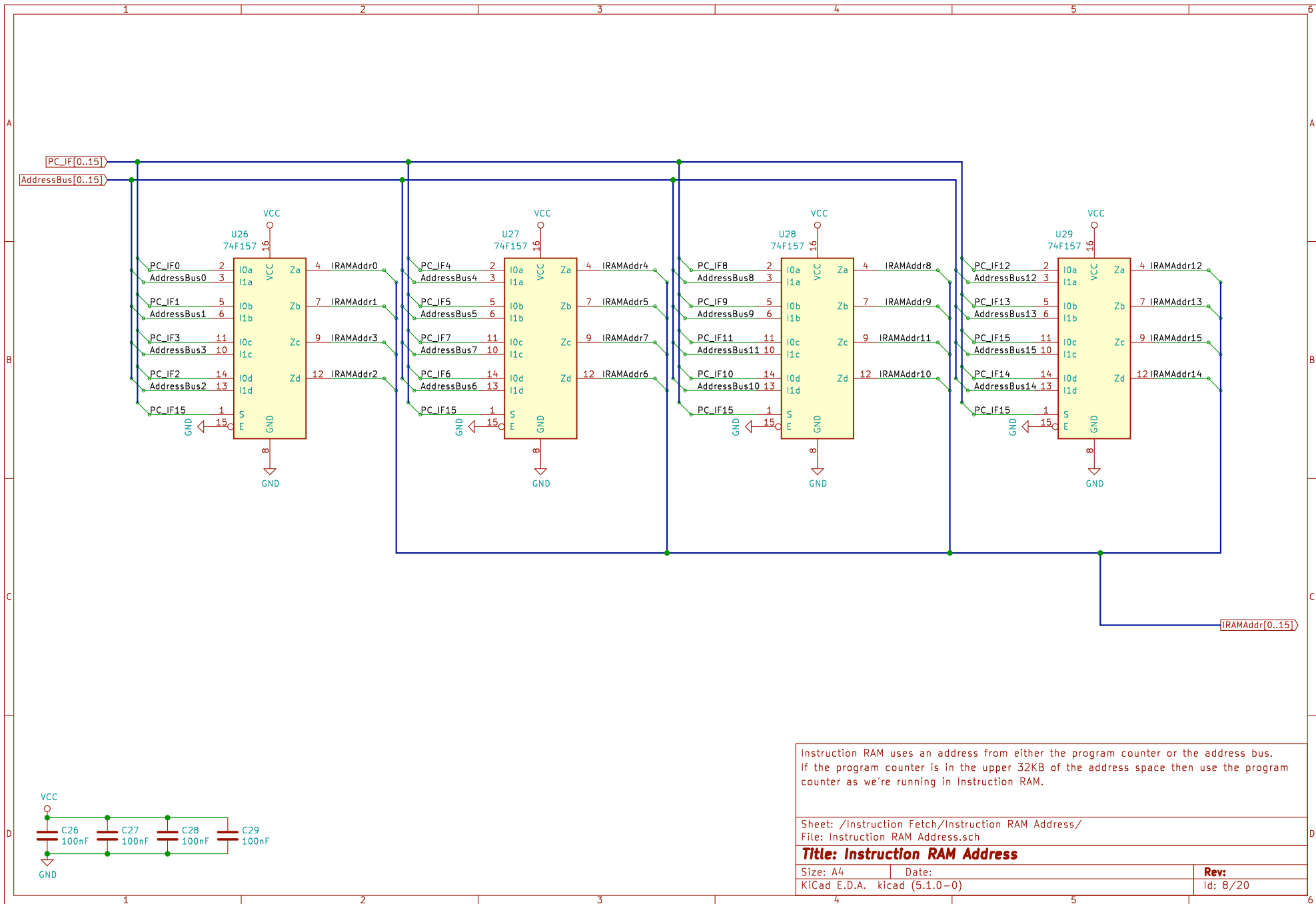


The PC/IF register sits between the program counter and the Instruction Fetch stage. This alleviates timing constraints related to the phase shift between the register clock and the control clock.	
Sheet: /Instruction Fetch/PC/IF/ File: PC_IF.sch	
<b>Title: PC/IF</b>	
Size: USLetter	Date:
KiCad E.D.A. kicad (5.1.0-0)	Rev:
	Id: 6/20

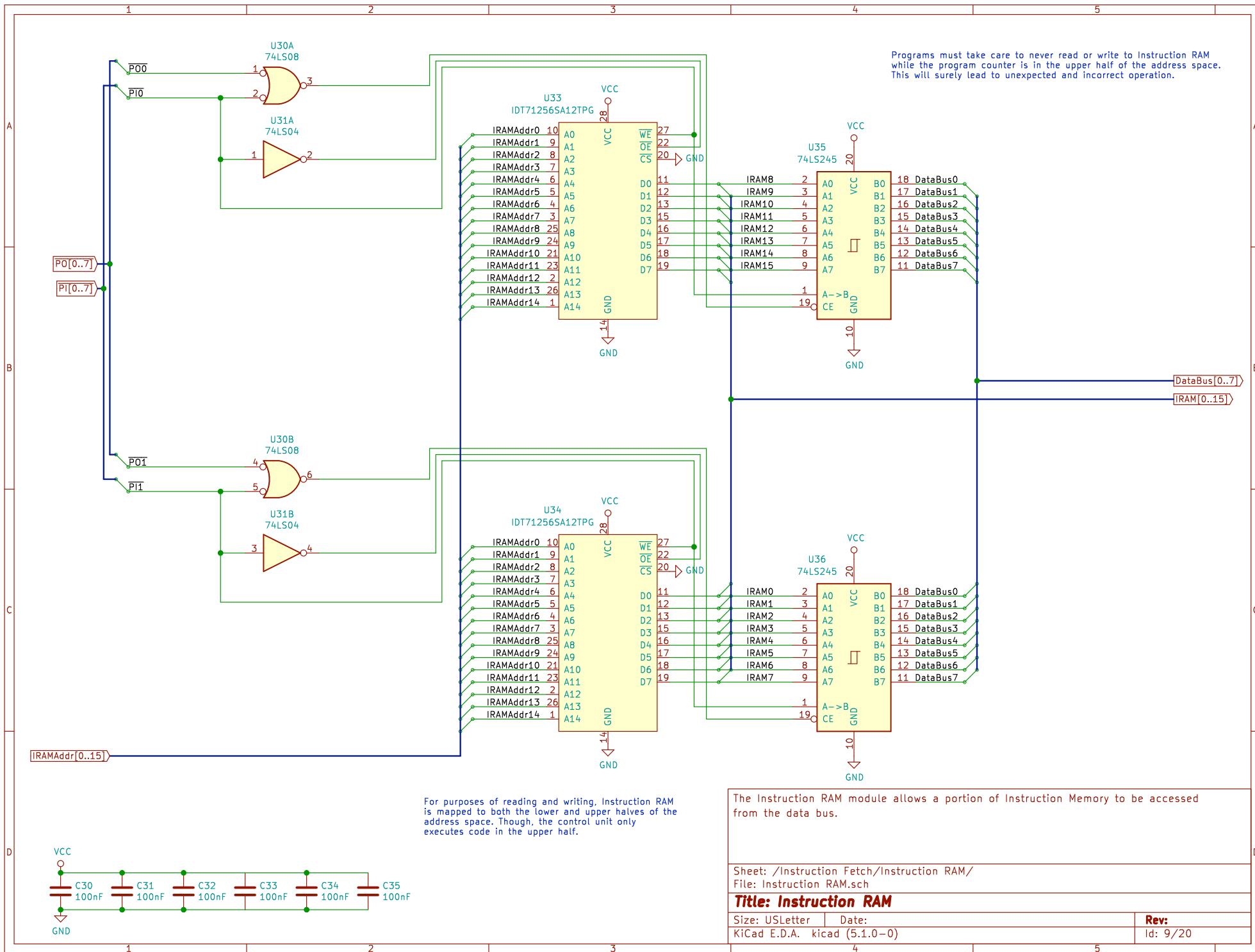


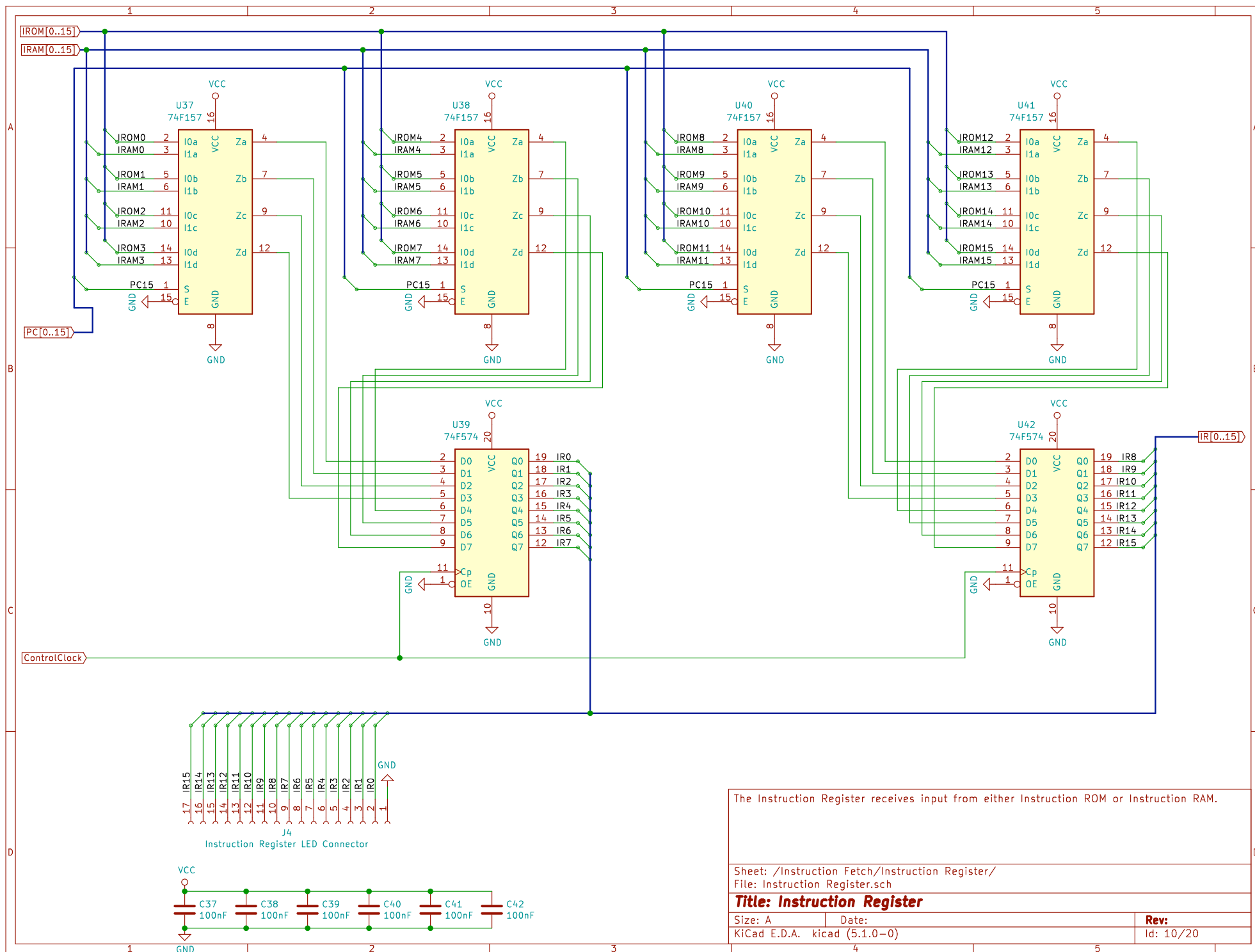
Instruction ROM is located on a daughter board.  
This schematic describes the connectors to attach it to the main board.

Sheet: /Instruction Fetch/Instruction ROM/ File: Instruction ROM.sch		
<b>Title: Instruction ROM</b>		
Size: USLetter	Date:	Rev:
KiCad E.D.A. kicad (5.1.0-0)		Id: 7/20









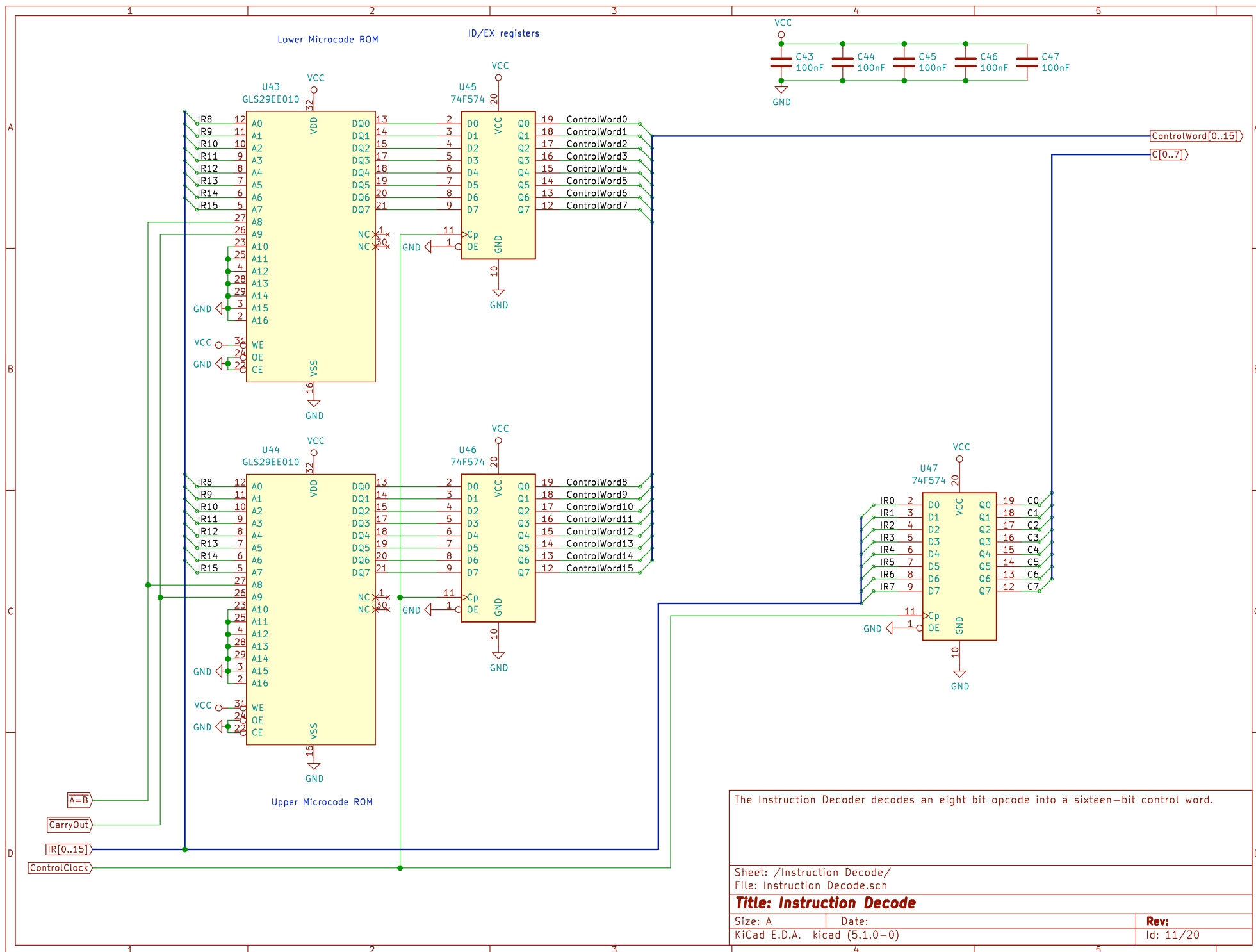
The Instruction Register receives input from either Instruction ROM or Instruction RAM.

Sheet: /Instruction Fetch/Instruction Register/  
File: Instruction Register.sch

### Title: Instruction Register

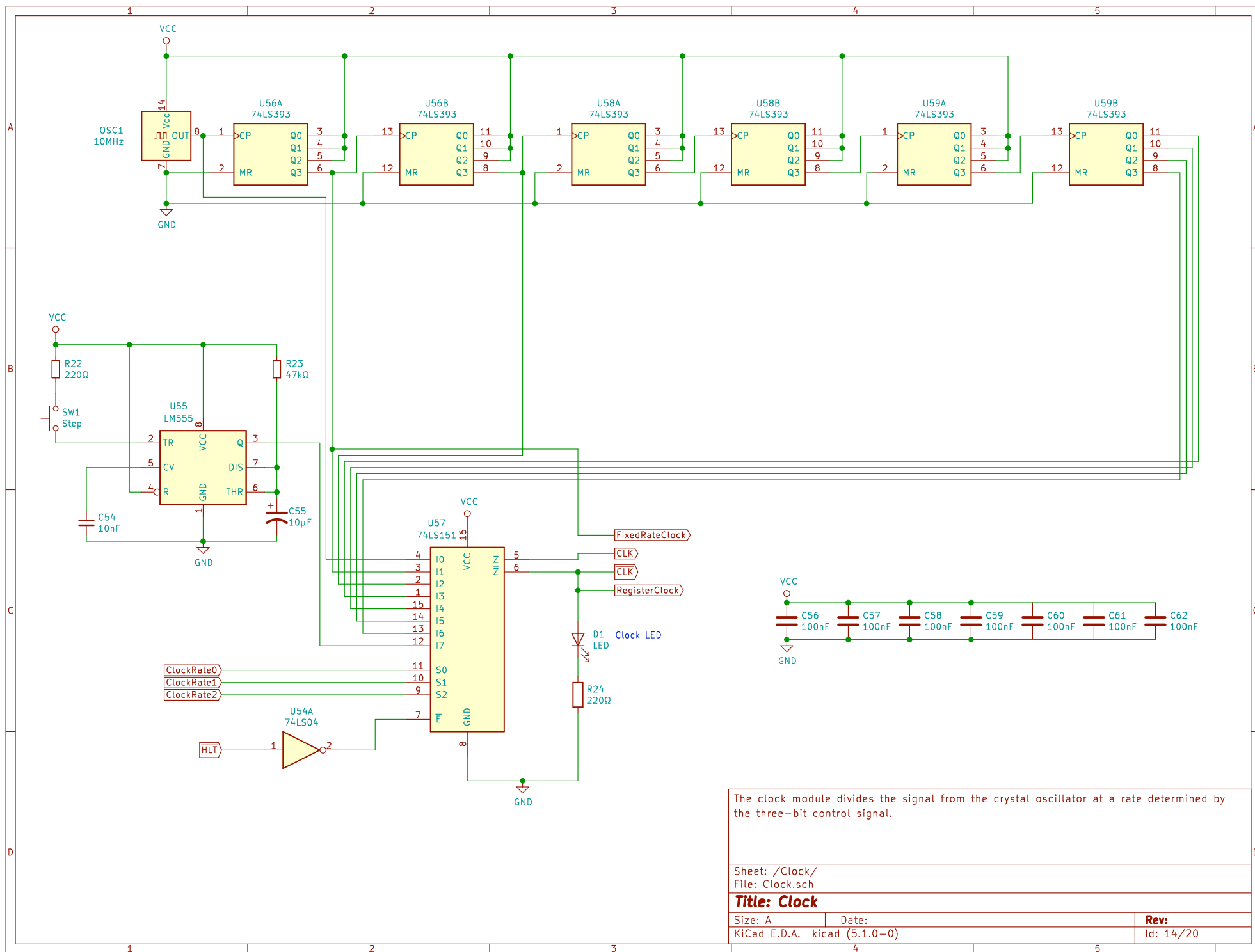
Size: A Date:  
KiCad E.D.A. kicad (5.1.0-0)

Rev:  
Id: 10/20









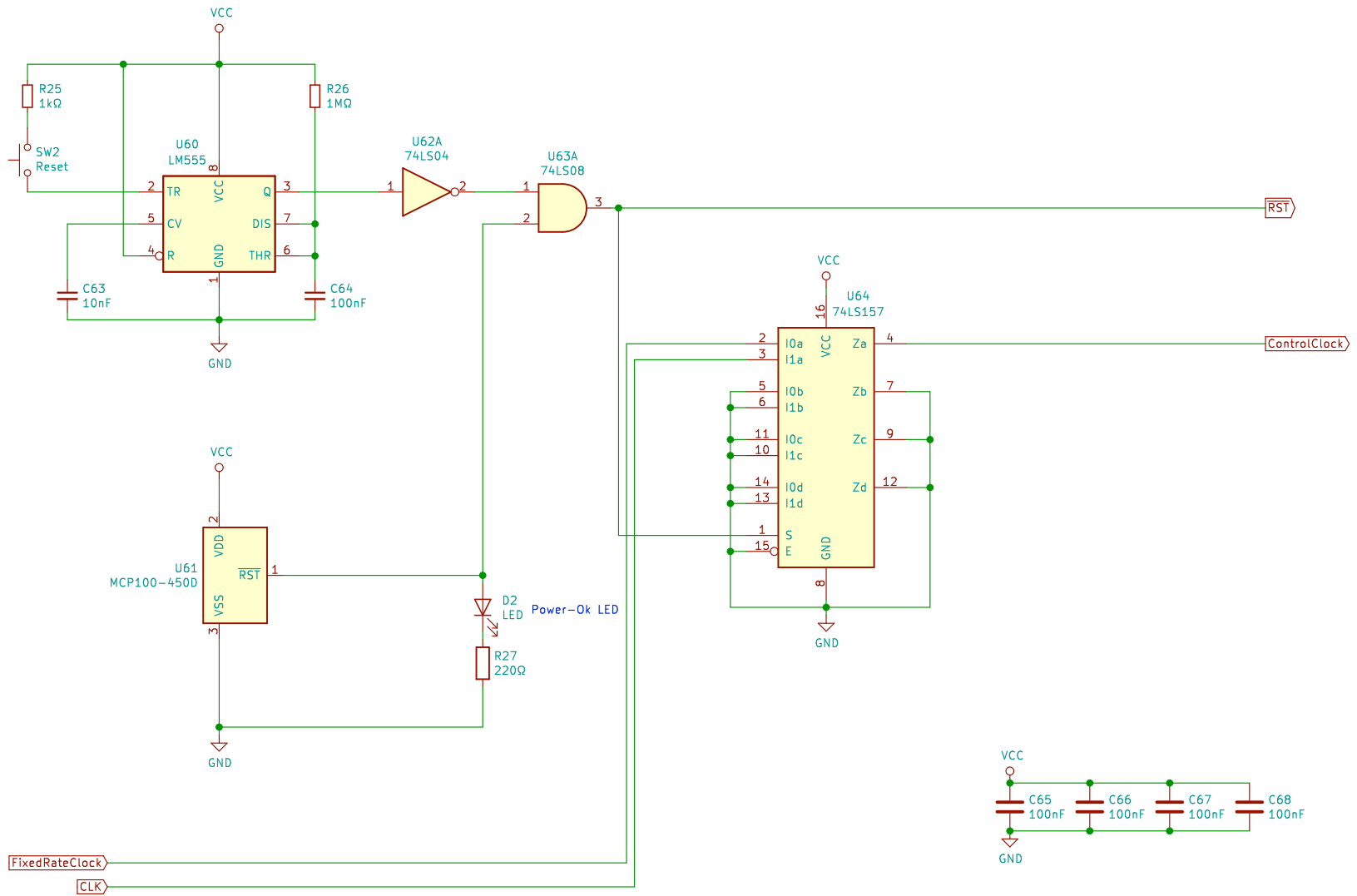
The clock module divides the signal from the crystal oscillator at a rate determined by the three-bit control signal.

Sheet: /Clock/  
File: Clock.sch

**Title: Clock**

Size: A Date:  
KiCad E.D.A. kicad (5.1.0-0)

Rev:  
Id: 14/20

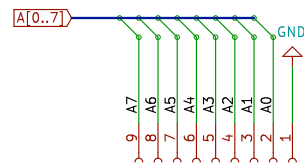
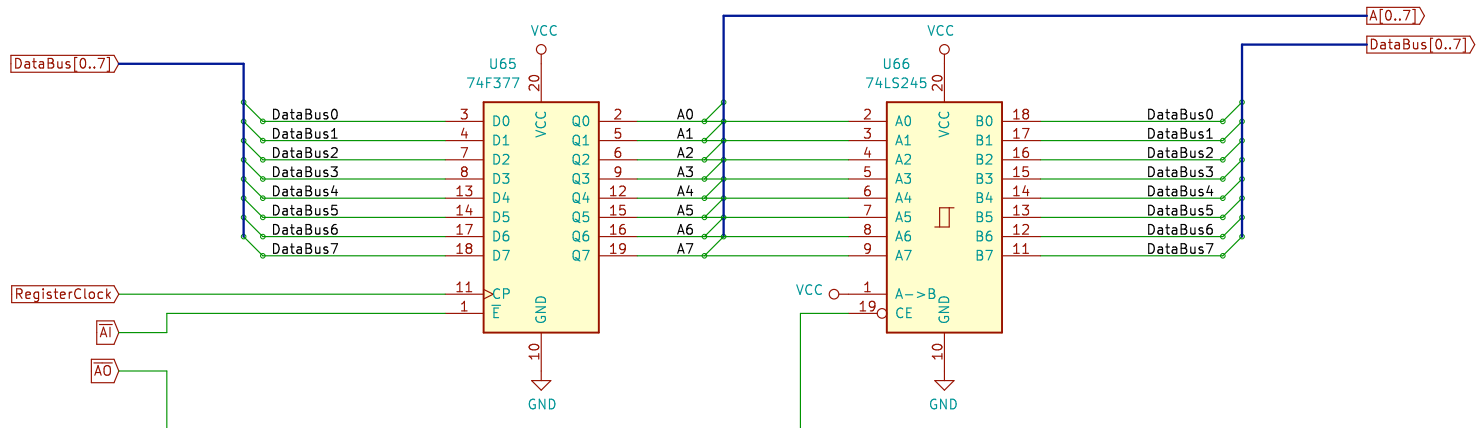


The MCP100 provides Power-on Reset functionality.  
A button is also provided to manually reset the machine.  
During reset, the control clock is pulsed repeatedly to flush the pipeline.

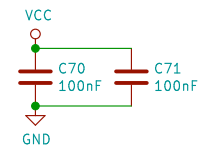
Sheet: /Power-on Reset/  
File: Power-on Reset.sch

### Title: Power-on Reset

Size: A	Date:	Rev:
KiCad E.D.A. kicad (5.1.0-0)		Id: 15/20



J8  
A Register LED Connector



Register A is wired to the ALU's A operand.

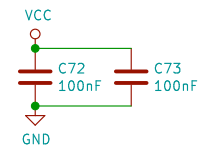
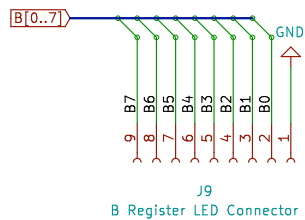
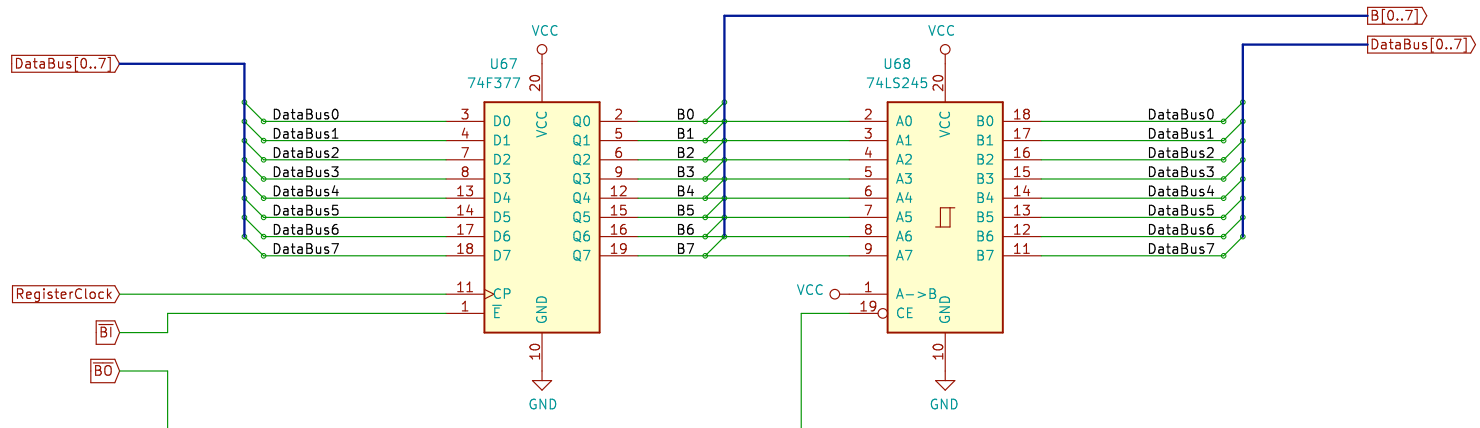
Sheet: /Register A/  
File: Register A.sch

**Title: Register A**

Size: A Date:  
KiCad E.D.A. kicad (5.1.0-0)

Rev:  
Id: 16/20





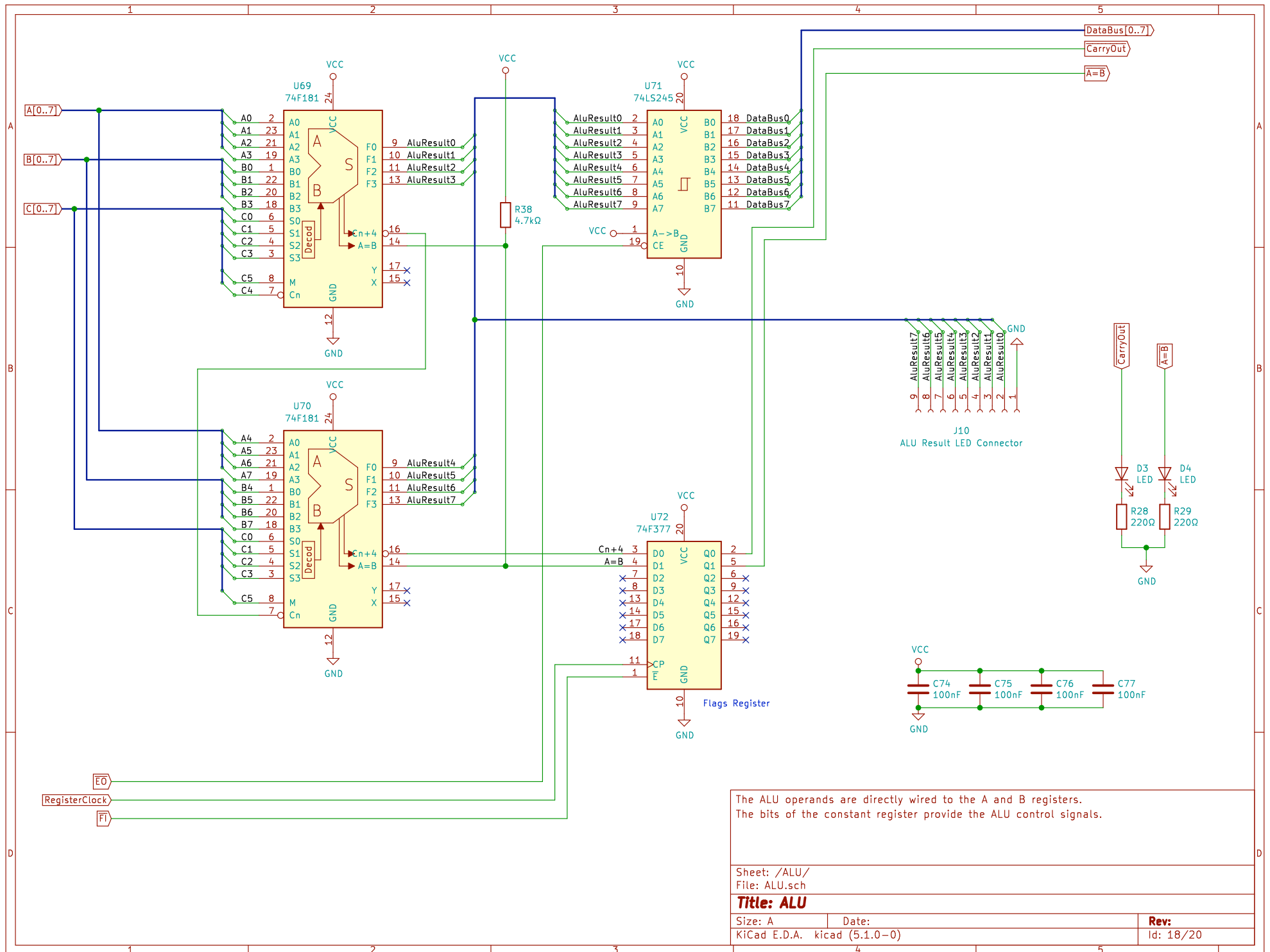
Register B is wired to the ALU's B operand.

Sheet: /Register B/  
File: Register B.sch

**Title: Register B**

Size: A Date:  
KiCad E.D.A. kicad (5.1.0-0)

Rev:  
Id: 17/20



The ALU operands are directly wired to the A and B registers.  
The bits of the constant register provide the ALU control signals.

