Recitation R12
L12 - Concurrency Worksheet

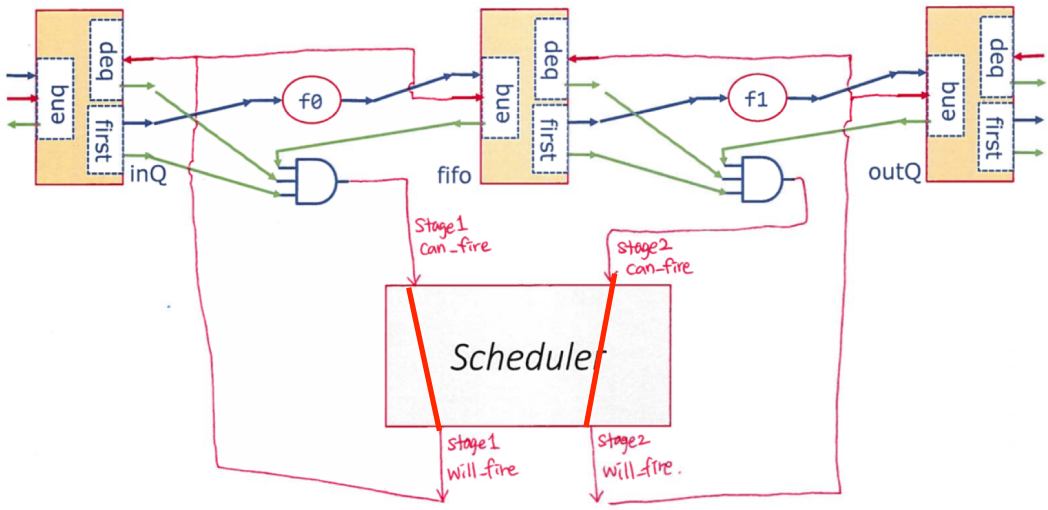
Problem 1

```
rule stage1;
  fifo.enq(f0(inQ.first));
  inQ.deq;
endrule
rule stage2;
  outQ.enq(f1(fifo.first));
  fifo.deq;
endrule
```

a) Fill in the conflict matrix for this design. You may assume that the fifo we've provided allows for concurrent calls to enq and deq.

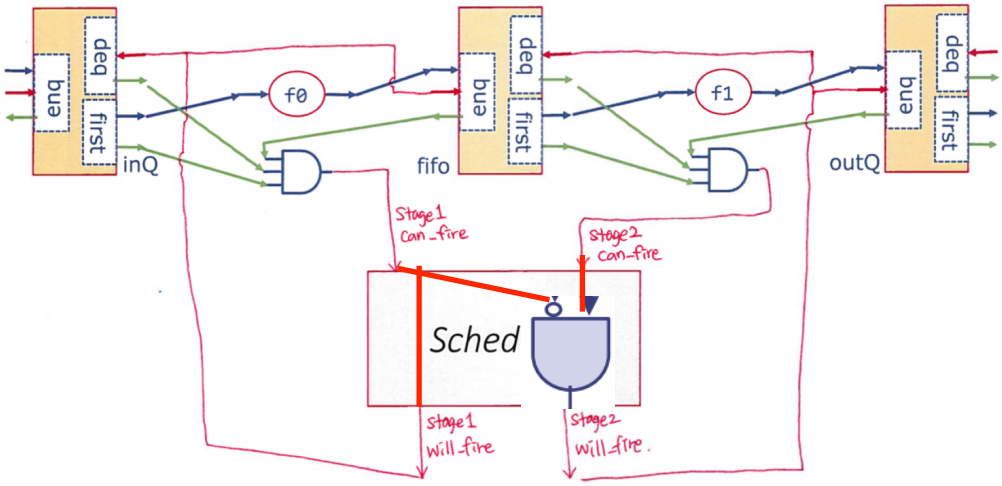
	r1	r2
r1	C	CF
r2	CF	C

b) Draw a hardware circuit for this design, ignoring the internals of the fifo design. Include the internals of the bluespec scheduler generated for this design.



c) Repeat the previous two parts, but this time you may assume that the fifo we've provided doesn't allow for concurrent calls to enq and deq.

	r1	r2
r1	C	C
r2	C	C



Problem 2

```
rule ra(p1);
  x <= y + 1;
endrule
rule rb(p2);
  y <= z + 2;
endrule
rule rc(p3);
  z <= x + 2;
endrule
```

a) Fill in the Conflict Matrix for this design.

	ra	rb	rc
ra	C	<	>
rb	>	C	<
rc	<	>	C

b) Can all three rules execute concurrently?

No, ra < rb, rb < rc but rc < ra

c) Can any two rules execute concurrently?

Yes