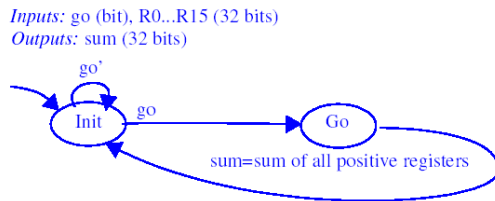


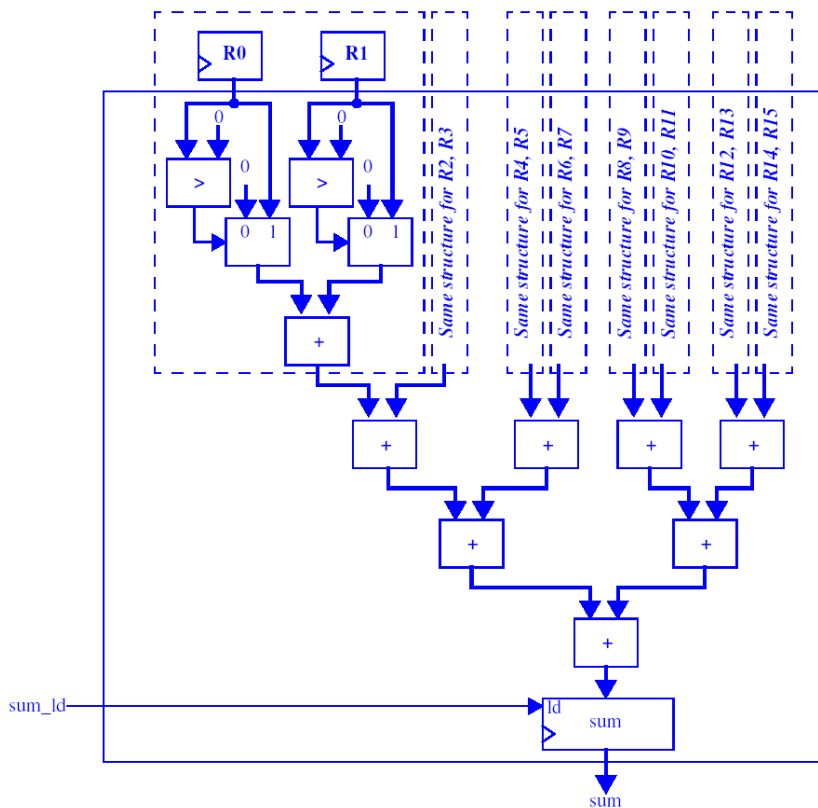
5.15 Using the RTL design method shown in Table 5.1, create an RTL design that computes the sum of all numbers positive numbers from a set of 16 separate 32-bit registers storing numbers in two's complement form. Make the design as fast as possible by performing as many computations concurrently as possible. *Hint:* this is a data-dominated design.

### Step 1 - Capture a high-level state machine

Since this problem is a data-dominated design, the problem's high-level state machine is fairly simple:



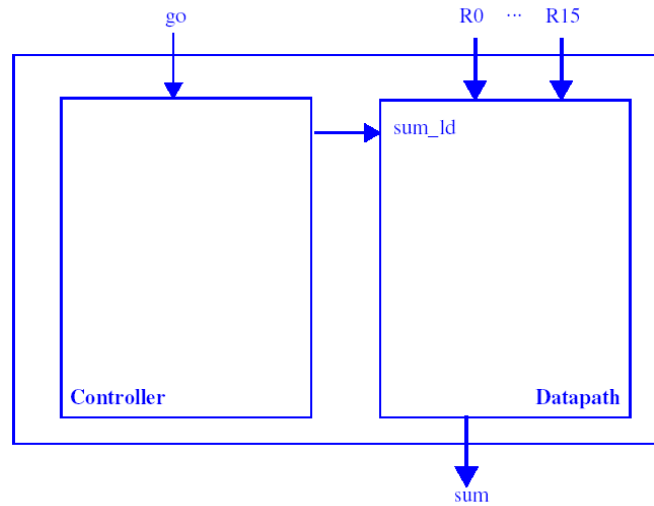
### Step 2 - Create a datapath



Continued on next page

Problem 5-15 continued

**Step 3 - Connect the datapath to a controller**



**Step 4 - Derive the controller's FSM**

