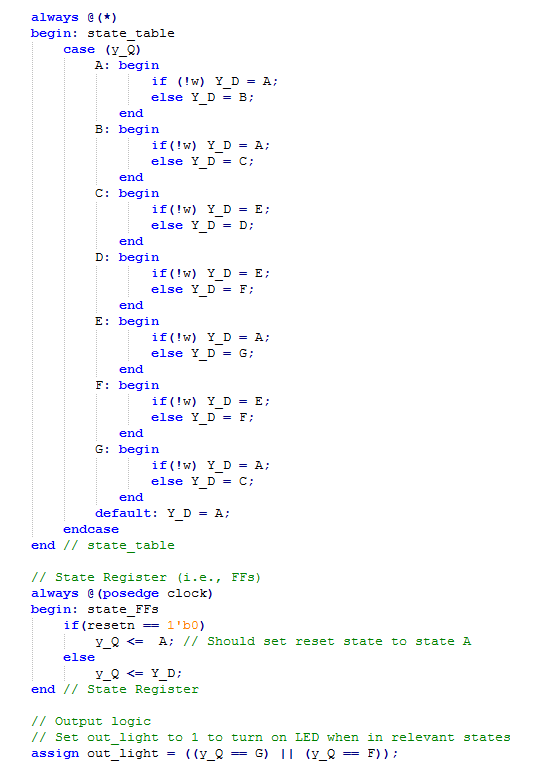
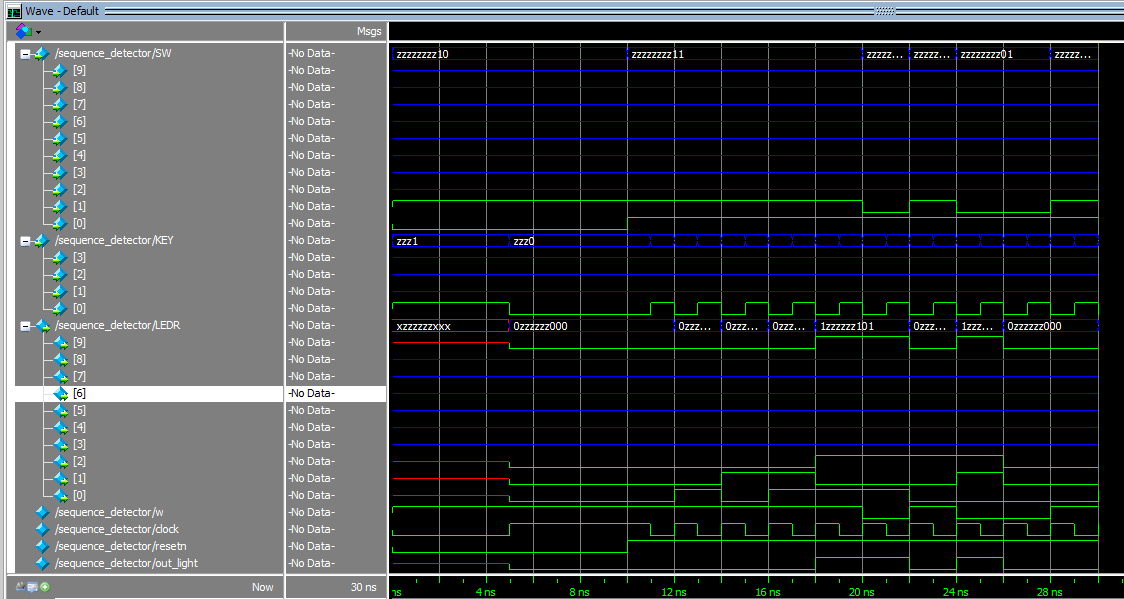
CSC258 Prelab

Part1

1. It is an active low synchronous reset. If reset is low, and after the key be released, the state should become to A.
2. 

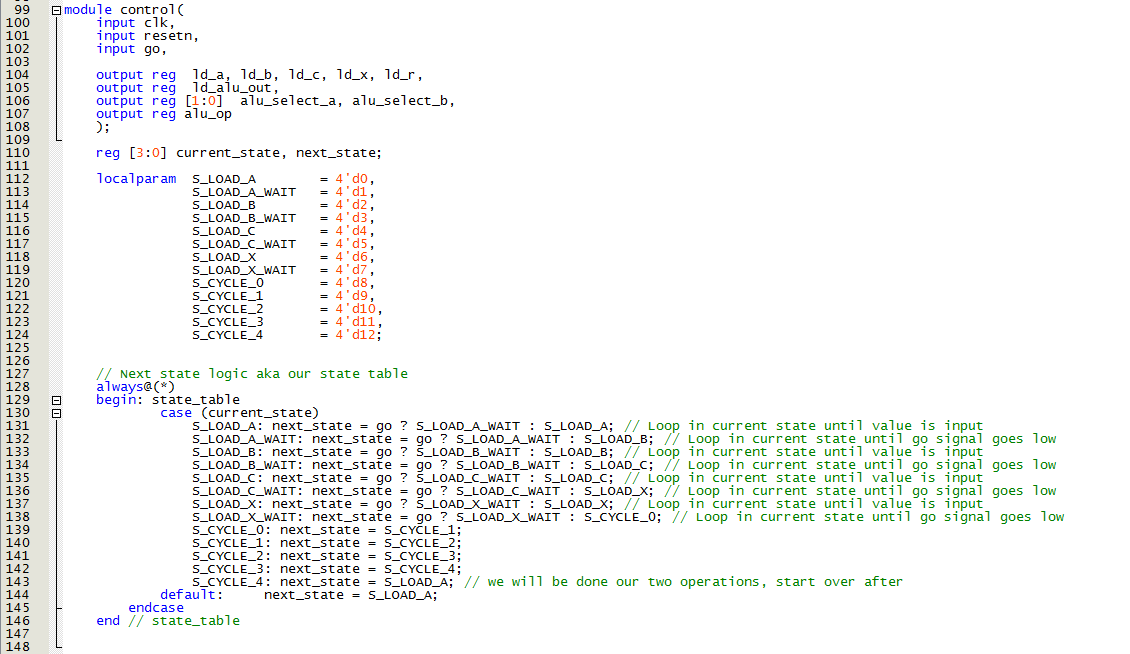


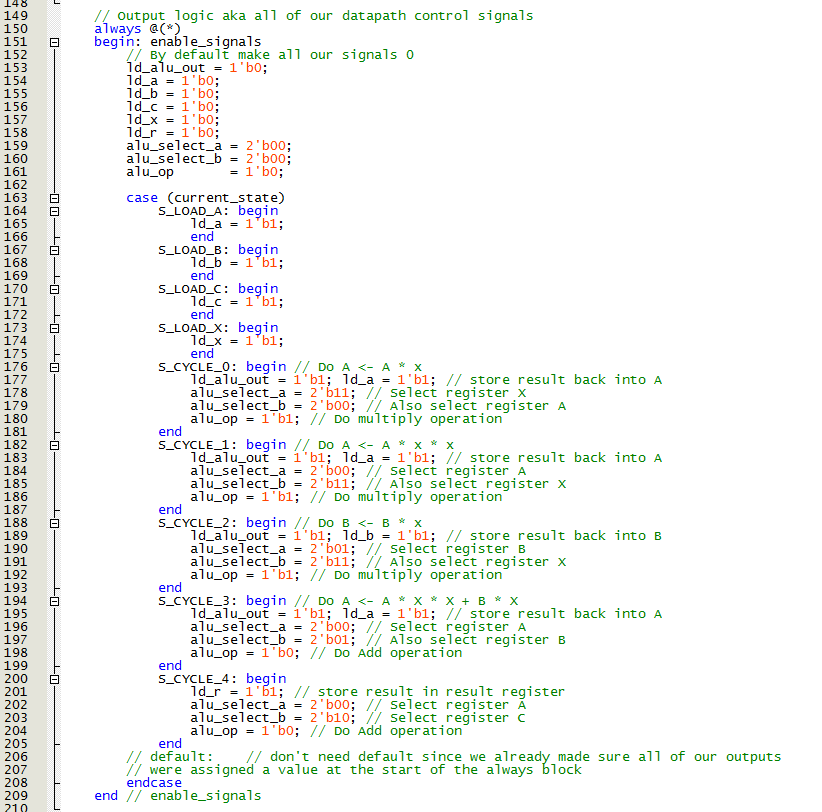
Part2:

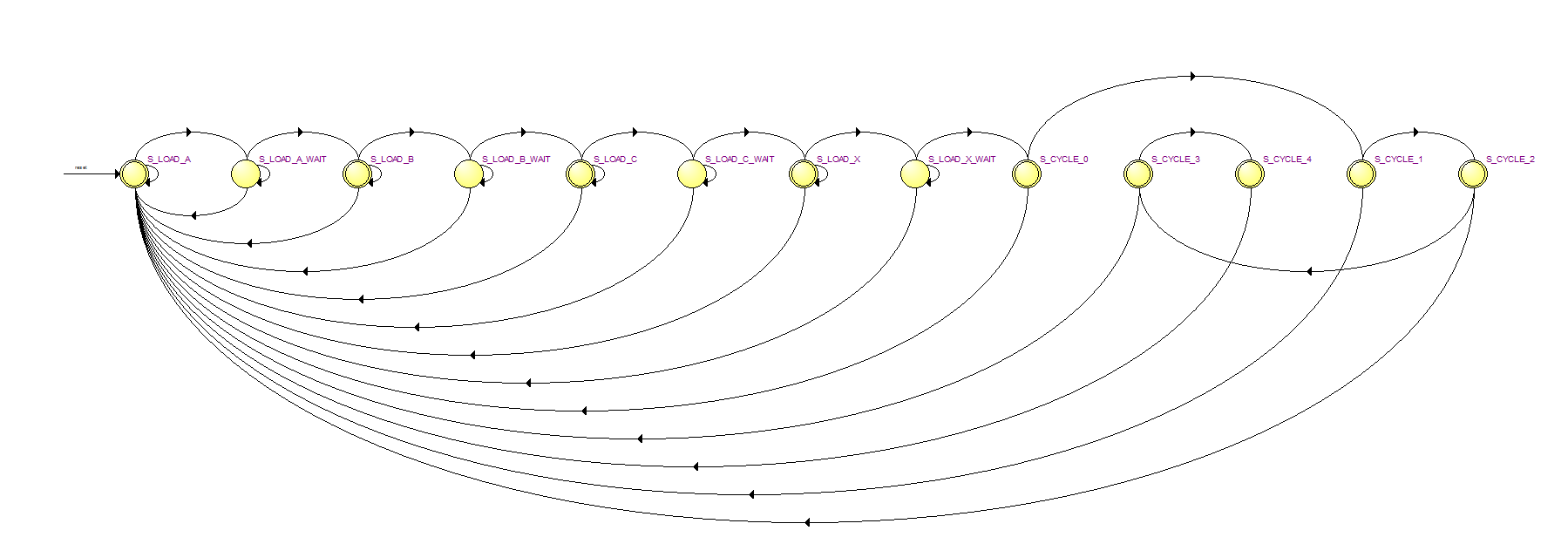
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| High-level Step | Control Signals | Register A | Register B | Register C | Register X |
| Load data into A | ld\_a = 1 | A | 0 | 0 | 0 |
| Load data into B | ld\_b = 1 | A | B | 0 | 0 |
| Load data into C | ld\_c = 1 | A | B | C | 0 |
| Load data into X | ld\_x = 1 | A | B | C | X |
| multiply A & X, store | ld\_alu\_out = 1'b1; ld\_a = 1'b1; | A \* X | B | C | X |
| result in A | alu\_select\_a = 2'b11; alu\_select\_b = 2'b00; |  |  |  |  |
|  | alu\_op = 1'b1; |  |  |  |  |
| multiply A & X, store | ld\_alu\_out = 1'b1; ld\_a = 1'b1; | A \* X \* X | B | C | X |
| result in A | alu\_select\_a = 2'b11; alu\_select\_b = 2'b00; |  |  |  |  |
|  | alu\_op = 1'b1; |  |  |  |  |
| multiply B & X, store | ld\_alu\_out = 1'b1; ld\_b = 1'b1; | A\*X\*X | B\*X | C | X |
| result in B | alu\_select\_a = 2'b01; alu\_select\_b = 2'b11; |  |  |  |  |
|  | alu\_op = 1'b1; |  |  |  |  |
| add B to A, store | ld\_alu\_out = 1'b1; ld\_a = 1'b1; | A\*X\*X+B\*X | B\*X | C | X |
| result in A | alu\_select\_a = 2'b00; alu\_select\_b = 2'b01; |  |  |  |  |
|  | alu\_op = 1'b0; |  |  |  |  |
| add C to A, store | ld\_r = 1'b1; alu\_select\_a = 2'b00; | A\*X\*X+B\*X+C | B\*X | C | X |
| result in result register | alu\_select\_b = 2'b10; alu\_op = 1'b0; |  |  |  |  |

2.

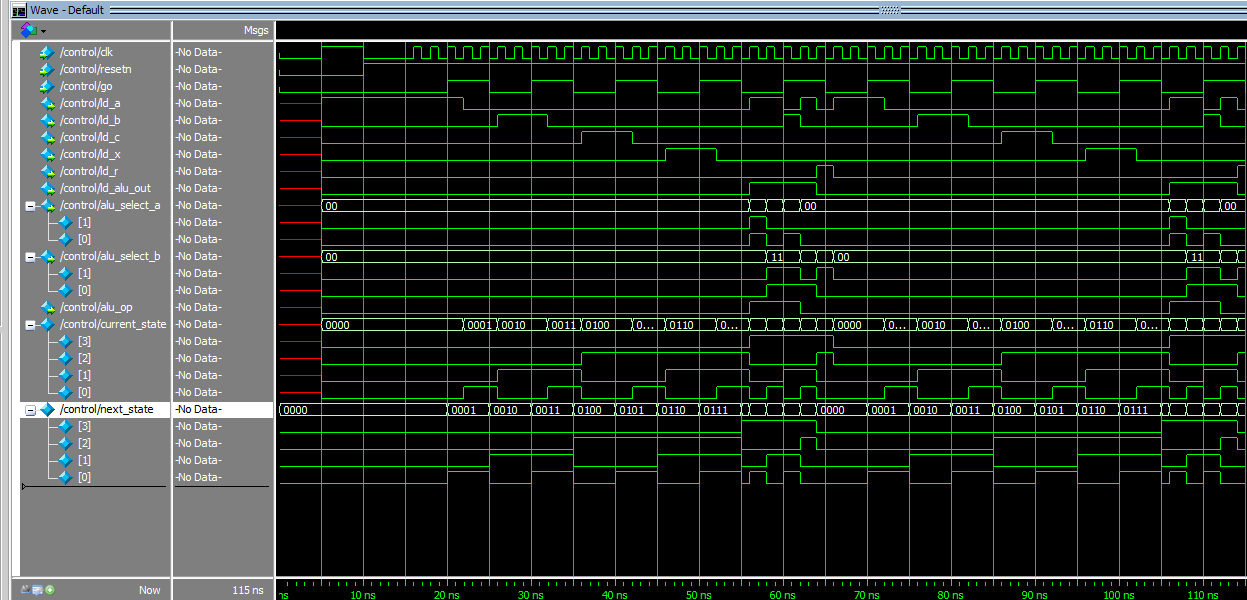
4.



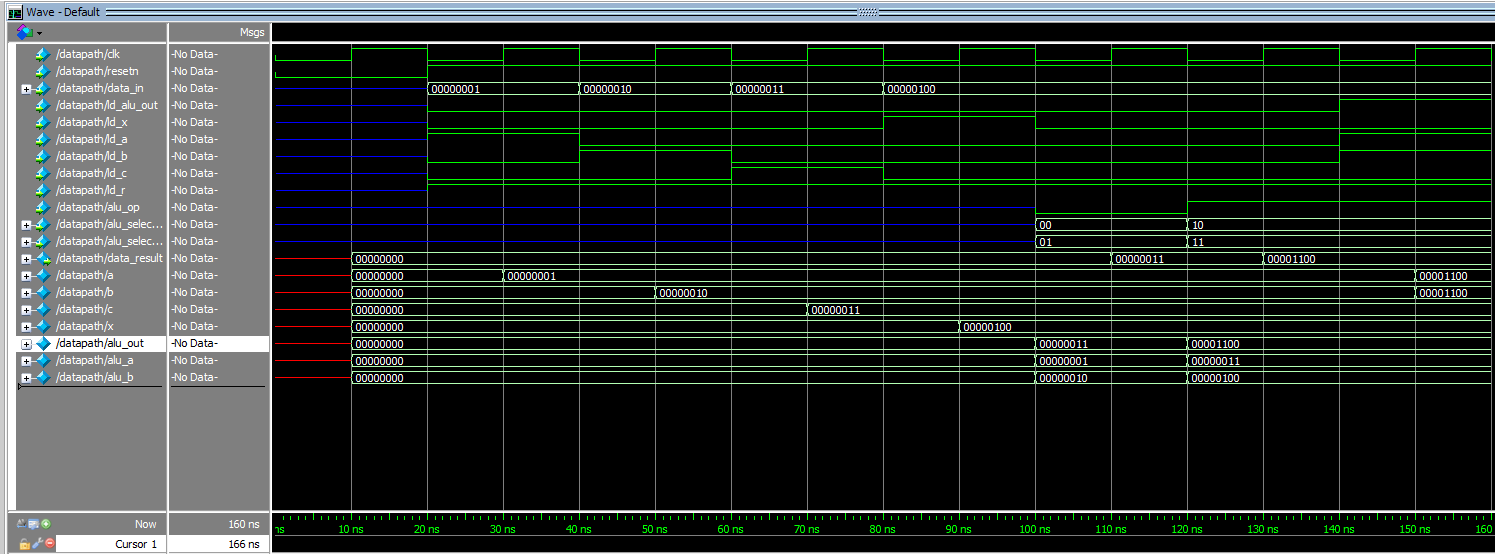


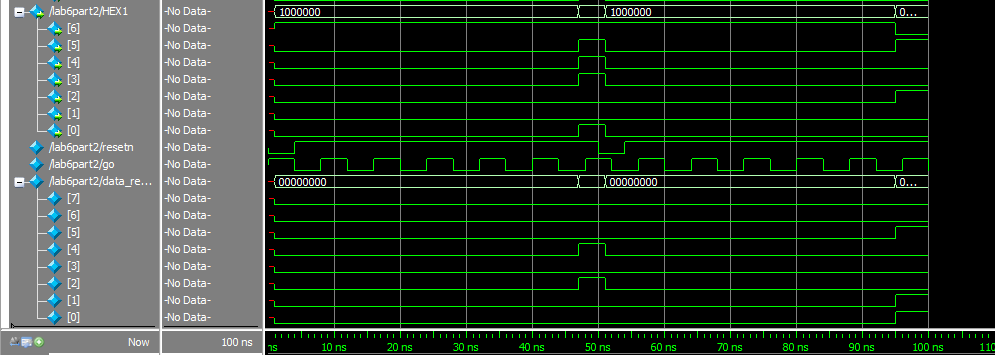


1. Simulation for controller



Simulation for datapath



Simulation for whole program

