Student Names: Muhammet Ali Topcu
Student IDs: 2020400147
Group ID: 8
Session: 2

CMPE 240 2022 Experiment 6 Preliminary Work

(For illustrations you can use any drawing tool that you want including Microsoft Word Shapes. Do not use scanned images of hand drawn state machines and architecture diagrams.)
(For tables please use insert table feature of Microsoft Word)

Step 1: Capture the High-Level State Machine: Describe the system's desired behavior as a high-level state machine.

Inputs: start (bit), input_array (64 bits)
Outputs: completed (bit), max_index (4 bits)
Local storages: index (4 bits), max (8 bits)

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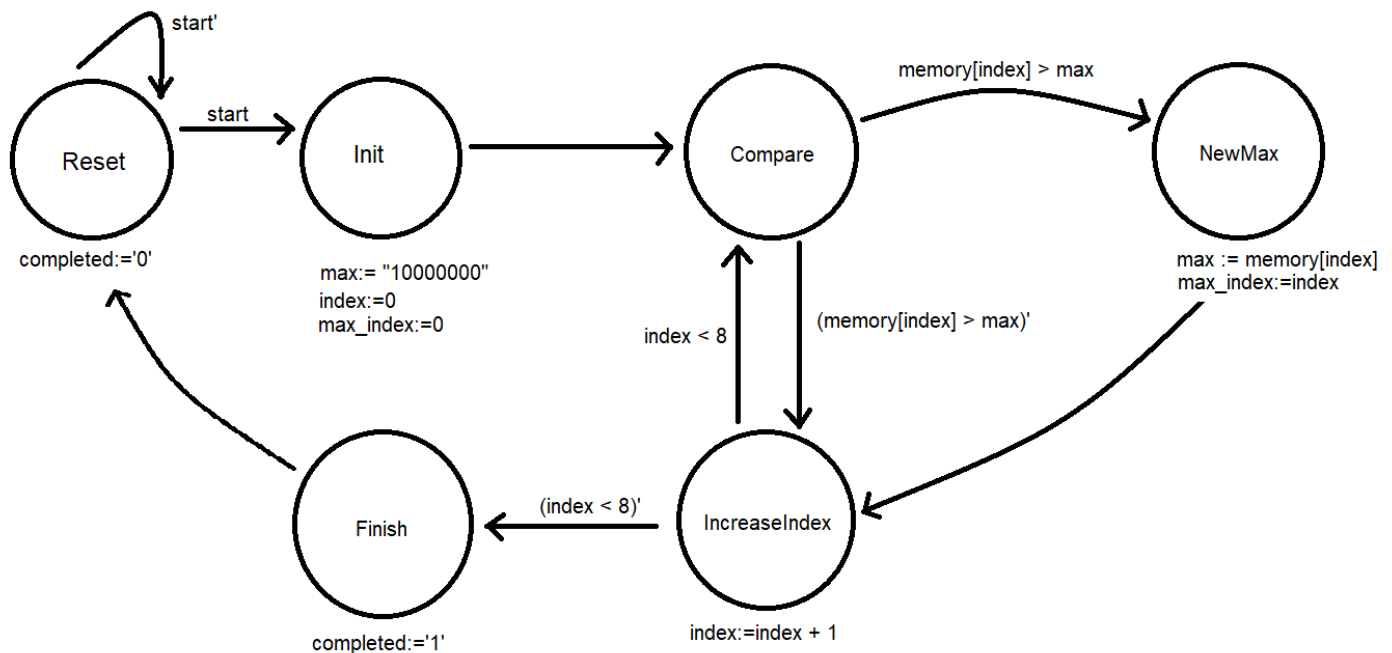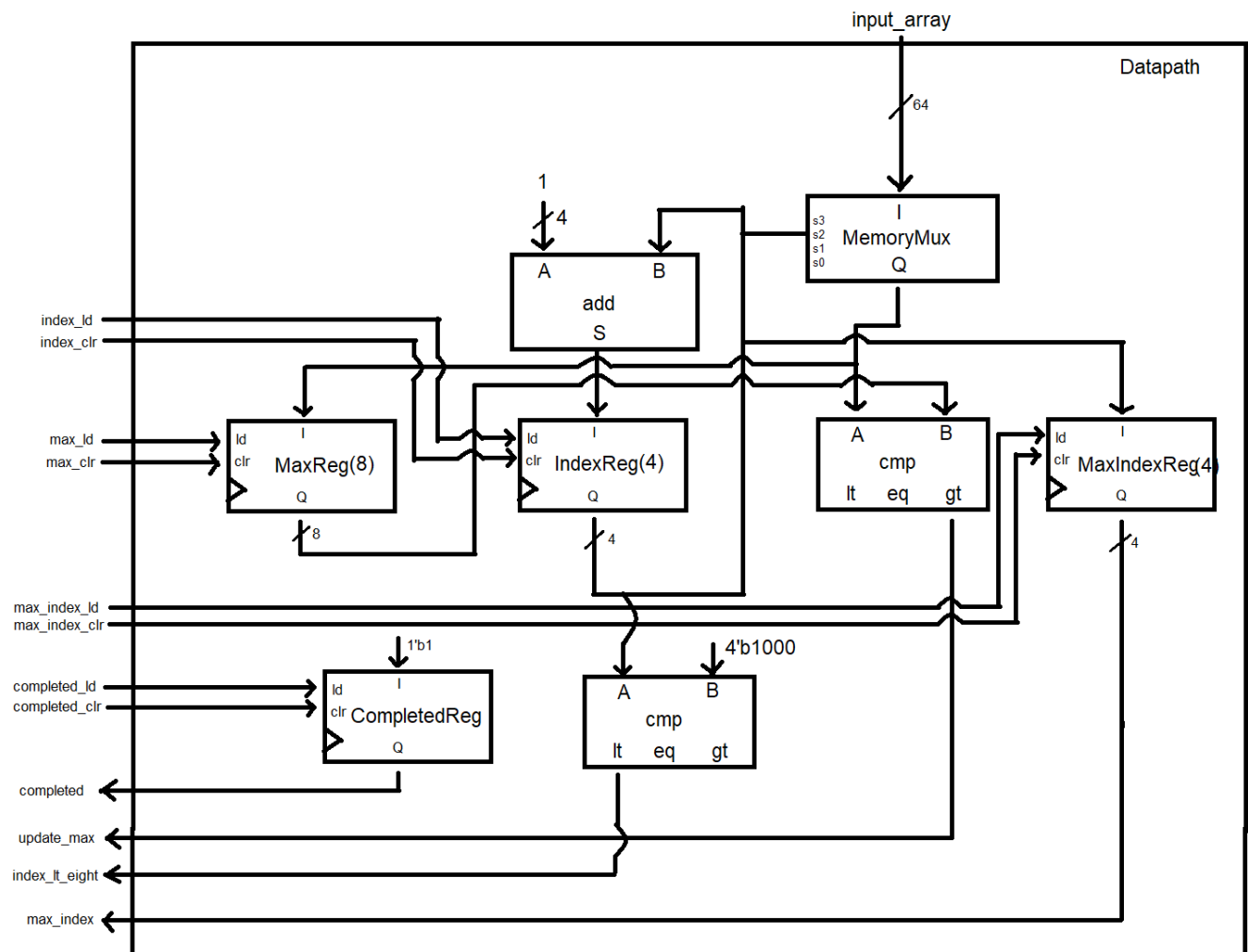Student IDs: 2020400147
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Step 2: Construct the Datapath: Create a datapath to carry out the data operations of the high-level state machine.
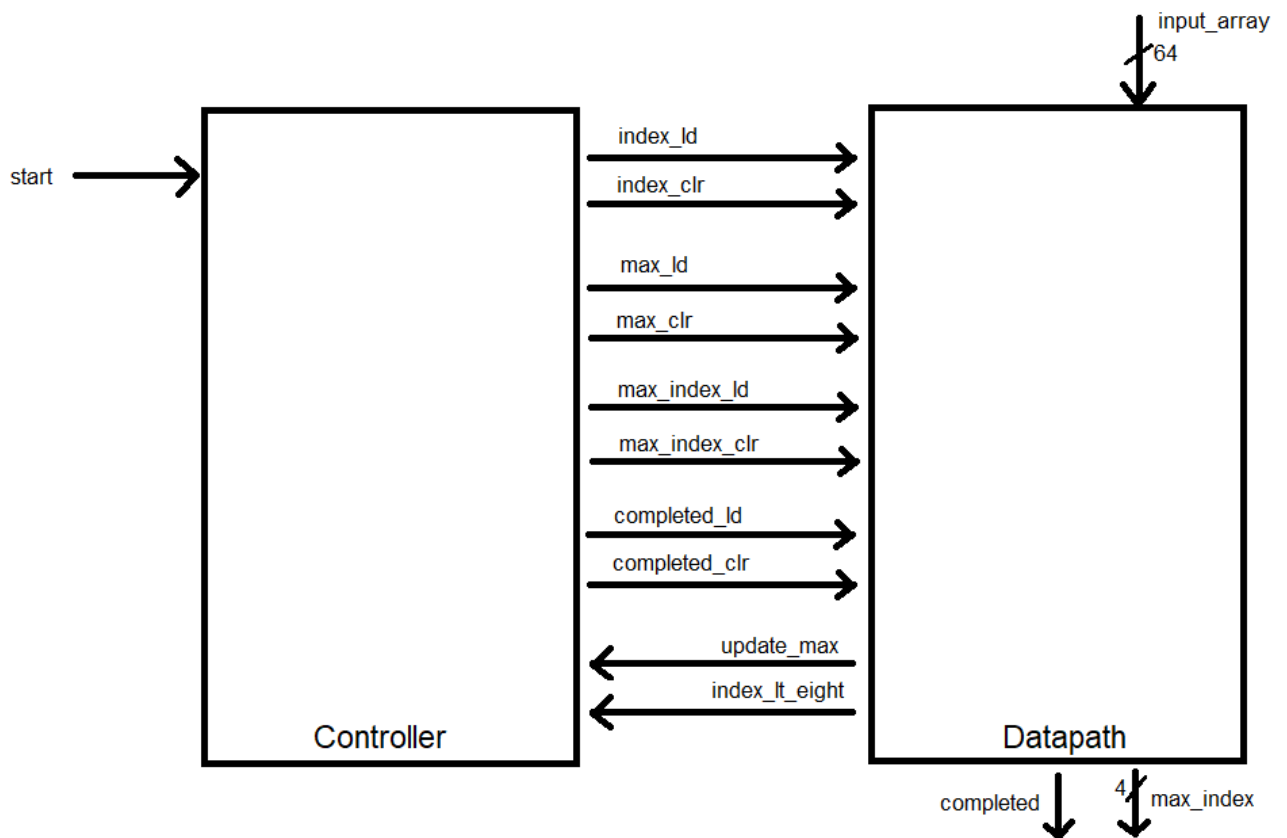
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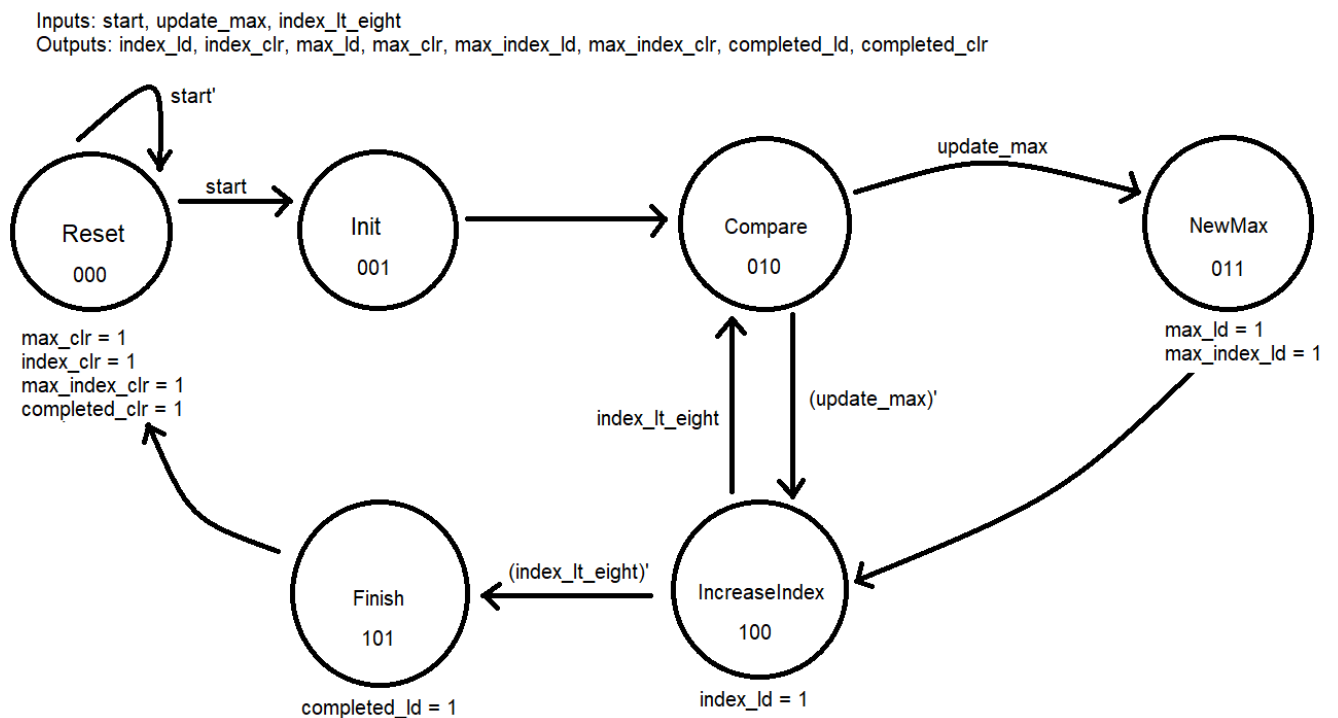**Step 3: Connect the Datapath to a Controller: Connect the datapath to a controller block.**

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Step 4: Derive the Controller's Finite State Machine: Convert the high-level state machine to a finite state machine for the controller, by replacing data operations with setting and reading of control signals to and from the datapath.

Inputs: start, update_max, index_lt_eight
Outputs: index_ld, index_clr, max_ld, max_clr, max_index_ld, max_index_clr, completed_ld, completed_clr

(Used convention of unassigned outputs implicitly assigned 0)

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Step 5: Implement the controller's combinational logic: