

<h3 style="margin: 0;">Term Project Milestone 3 Evaluation (Datapath and Control Specifications)</h3>
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Evaluation Criteria Categories	Specific Criteria	Comments	Score
Consistency with higher level specifications	<ul style="list-style-type: none"> <input type="checkbox"/> State elements that are assigned or referenced in Register Transfer Language (RTL) statements appear in datapath <input type="checkbox"/> Operations that are required to implement RTL statements have corresponding components <input type="checkbox"/> Inputs, outputs, and control signals of components in datapath are consistent with RTL specification <input type="checkbox"/> Connections between components in datapath are consistent with RTL specification <input type="checkbox"/> The control signals specified for each state (or microstep) produce the register transfers specified in the corresponding cycle of the RTL description 	<p>The proper state elements appear in datapath.</p> <p>The datapath appears to correctly implement the RTL.</p> <p>Connections between components are reasonable.</p> <p>Control signals implement the RTL instructions.</p>	3/3
Self-consistency	<ul style="list-style-type: none"> <input type="checkbox"/> Input signals that have multiple sources have associated multiplexers <input type="checkbox"/> Multiplexers have appropriately sized control signals <input type="checkbox"/> Datapath includes one or more control units that generate the necessary control signals and have the appropriate input signals <input type="checkbox"/> The value of each control signal is defined for every state (or microstep) 	<p>Multiplexors are used to combine multiple inputs. A control unit generates control signals.</p> <p>Control values are defined for each instruction cycle.</p> <p>Not all bus signal widths are shown on datapath. Some control signal lines are unlabeled.</p> <p>Control signals for some muxes are confusing (such as on the inputs to the register file). Use of color helps to mitigate this somewhat.</p>	2/3
Demonstration of design principles 1. Simplicity favors regularity 2. Smaller is faster 3. Good design demands good compromises 4. Make the common case fast	<ul style="list-style-type: none"> <input type="checkbox"/> Components are kept as simple as possible <input type="checkbox"/> Similar components used by multiple instructions or in multiple cycles are combined where possible <input type="checkbox"/> Tradeoffs between the preceding criteria favor the common case, not the special case <input type="checkbox"/> Regularity in the machine language format is exploited by using combinational logic where feasible <input type="checkbox"/> Identical states (or microsteps) are combined 	<p>Components are reasonably simple.</p> <p>Similar components are combined when possible.</p> <p>Identical states are combined.</p> <p>Concatenation is a trivially fast operation—it is not necessary to buffer the results in a temporary register for another cycle.</p>	3/3

<p>Documentation (see below)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Organization <input type="checkbox"/> Completeness <input type="checkbox"/> Conciseness <input type="checkbox"/> Grammar and style 	<ul style="list-style-type: none"> <input type="checkbox"/> Datapath diagram <input type="checkbox"/> Clear English specifications <ul style="list-style-type: none"> o Effects of control signals <input type="checkbox"/> Datapath tests <input type="checkbox"/> State transition diagram or microprogram specifying the finite state machine <input type="checkbox"/> Truth tables or Boolean equations specifying any combinational units <input type="checkbox"/> Clear English specifications as necessary <input type="checkbox"/> Control unit tests 	<p>Memo should be in memo format, is rather long, but does a good job of indicating progress on milestone.</p> <p>Design Process Documentation provides a good record of the evolution of your design.</p> <p>Design Documentation is clean, clear, and well specified.</p> <p>Webpage should link to relevant files (such as milestone 3 memo).</p>	<p>14/16</p>
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Required Documents

- Memo
 - Objective assessment of design and status
- Design Documentation
 - Demonstration of conceptual understanding
 - Highlights interesting features
- Design Process Journal
 - Alternatives considered
 - Tradeoffs
 - Decisions
- Website