# EECS 470 Milestone 2 Report

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Since Milestone 1, our group has made significant progress toward completing the processor. We met extensively prior to Spring Break to discuss system architecture and module assignments. Most modules were completed the week following Spring Break, ready for integration, but issues arose when the CDB and its Early Tag Broadcast approach were reevaluated due to conflicting information. After thorough group discussions and collaboration with other teams, we redesigned a detailed architecture for how the Reservation Station, CDB Arbiter, and Functional Unit pipelines communicate, and reassigned module expectations. This adjustment pushed back our timeline, preventing us from completing the Milestone 2 test cases on schedule. However, with our refined architecture, we were able to complete Milestone 2 expectations within the following week. Discussing these architectural details thoroughly has also made future integration and debugging easier.

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We now have a fully functioning and reasonably tested Reservation Station operating with Early Tag Broadcast in mind. While the logic is sound, it is currently slow and cumbersome. Using prefix sums for instruction dispatching and issuing made understanding the operation easier. In the future, this logic will be replaced with priority selectors to make the ETB interface cleaner and the module faster—critical given the long path in CDB arbitration.

Additionally, we have fully functional modules for the Reorder Buffer, Free List, Map Table, CDB Arbiter, and Decoder, all ready to be integrated into the CPU. Significant progress has also been made on the BTB and GShare branch predictor, including proper signaling to the ROB, RS, and branch stack (to be swapped from the architecture table).

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Our overall project management has improved significantly since Milestone 1, though there is still room for growth. For this milestone, we created a list of tasks in Slack and assigned each task to one or two team members. While we communicated progress well, we did not fully utilize the Slack list after its creation. Moving forward, we plan to improve scheduling and task assignment to ensure timely completion. Additionally, module design and communication will be more thoroughly deliberated rather than assumed, with adaptability in mind.

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As of Milestone 2, our goals for final processor features have changed slightly since Milestone 1. With the update to Early Tag Broadcast, we have decided to drop the non-blocking cache for the final processor unless there is significant time remaining. Otherwise, our goals remain the same.