CDA 4253 FPGA System Design

Final Project

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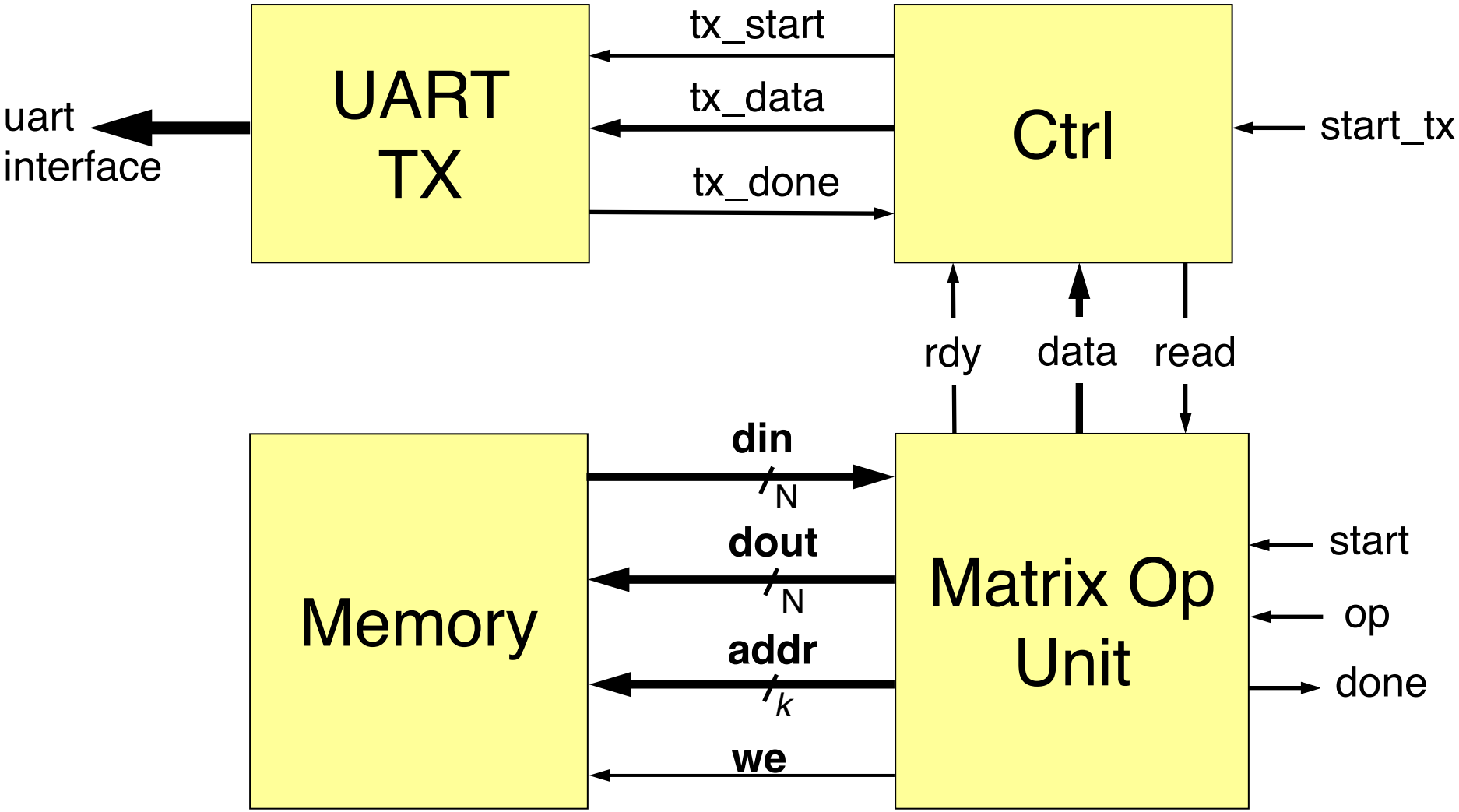
Final Project – Groups of Two

- Implement and test matrix multiplication/addition algorithms on FPGA boards.
  - Two input matrices are stored in Block RAMs.
  - Initialization of the Block RAMs should be done through an external file.
  - After the algorithm is finished, the results are displayed in a terminal on the host system through a UART transmitter (study Chapter 7 about UART interface).

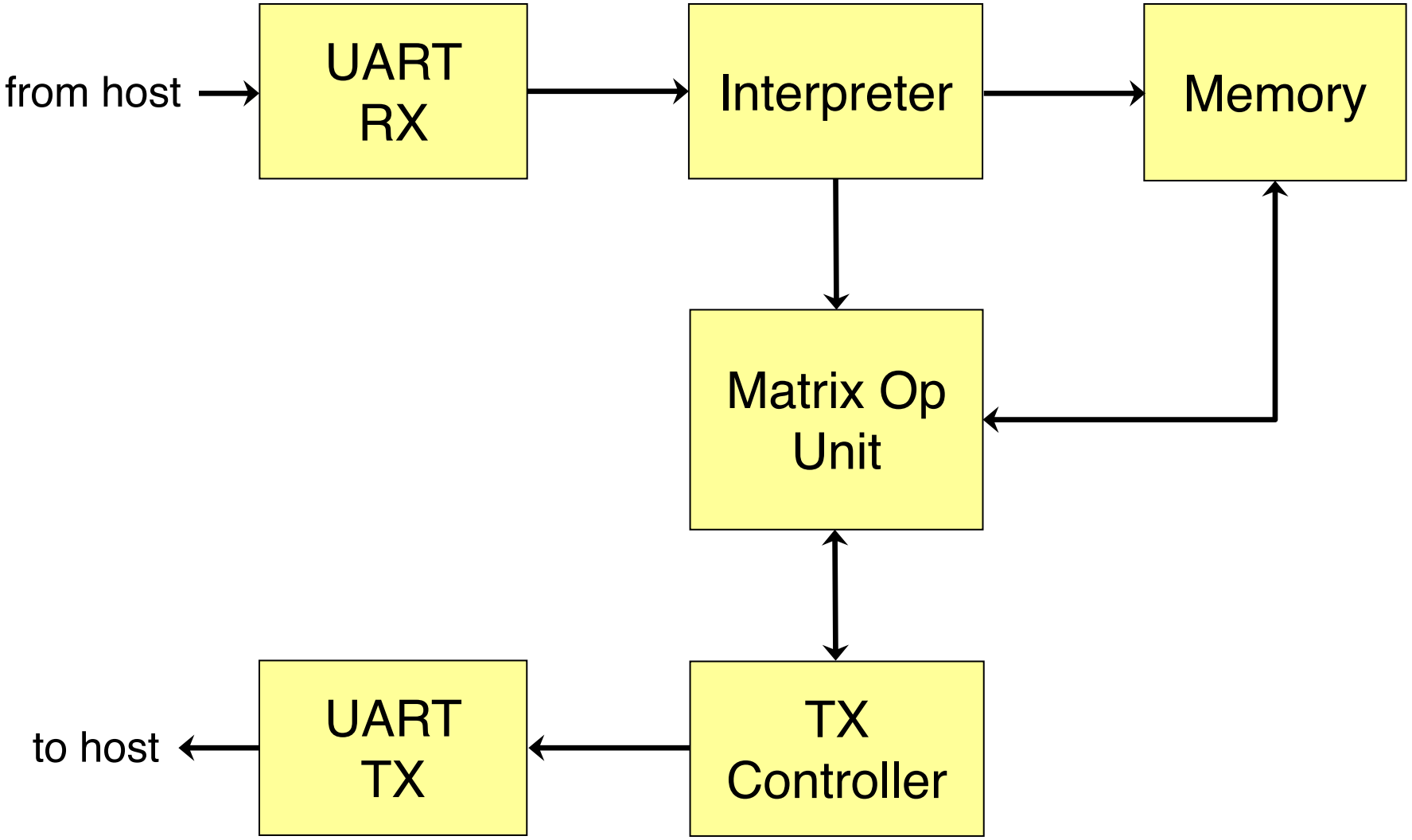
Final Project – Groups of Two



Final Project – Groups of Three

- Implement and test matrix multiplication/addition algorithms on FPGA boards.
  - Input matrices are sent to FPGA from host terminal
  - Operations of FPGA are sent from host terminal
    - The above two need UART receiver
  - After the algorithm is finished, the results are displayed in a terminal on the host system through a UART transmitter (study Chapter 7 about UART interface).

Final Project – Groups of Three



Final Project – Specific Requirements

- Elements of input matrices are unsigned numbers and 8-bit wide.
- Input matrices can be either 1 or 2 dimensions
- Sizes of input matrices are arbitrary but fixed
- Data inputs are defined in hexadecimal format in an external file to initialize the block RAM.
- Data outputs are 16-bit wide.
- The results displayed on the terminal through UART are also in hexadecimal format.
  - The display should be organized in a matrix format in order for them to be understandable.

Final Project Management

- Each team has either two or three members.
  - Make sure you find a partner you can work with.
  - Both team members get the same project grade.
- Project Review
  - Each team schedules a project review in the final/final exam week.
  - Demonstration the successful completion of the chosen project. *Your design may be required to re-configured on-site to verify its correctness*.
  - A written report is due at the end of review.

Final Project – Examination

- Every group gives a project demonstration for examination
  - Additional tests will be used to exercise your design
- Demonstration peroid
  - July 16th – 20th
  - Each group has 20 minutes
  - Appointments on first-come-first serve - schedule your appointment asap