EHB 326E Introduction to Embedded Systems Final Project, 2019

Hardware and Software Codesign for Booth Algorithm

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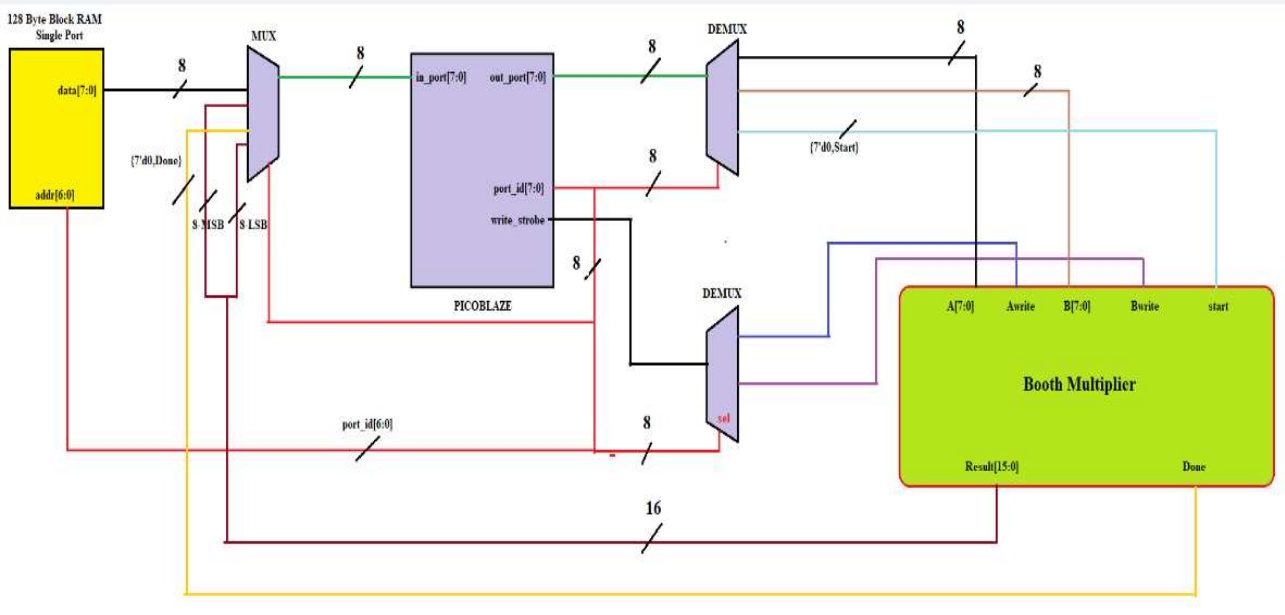
Introduction

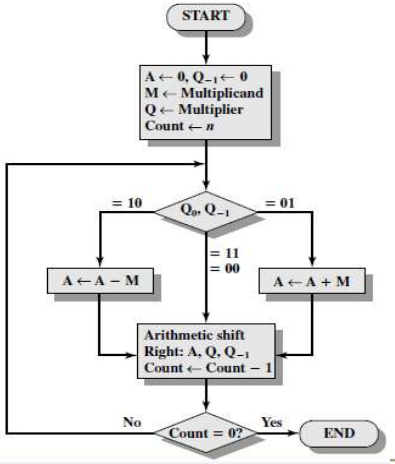
- Multiplication is difficult to implement for Picoblaze and is a long process to get results. For this reason, it is possible to design a single-purpose processor using the Booth algorithm to perform multiple multiplication operations in a short time.

Methodology

- Picoblaze reads data from block RAM
- Received numbers are sent to the multiplication block
- The multiplication operation which uses Booth algorithm is started by Picoblaze
- When the multiplication is over, the result is written to the Picoblaze registers

System Overview





Booth Algorithm

Future Work

- In cases where the multiplication is used intensively, the multiplication process can be carried out easily without imposing any workload on the Picoblaze. In this way, different operations with Picoblaze can be implemented besides multiplication.