

Pattern Matching Engine using Bloom Filters

Functional Description:

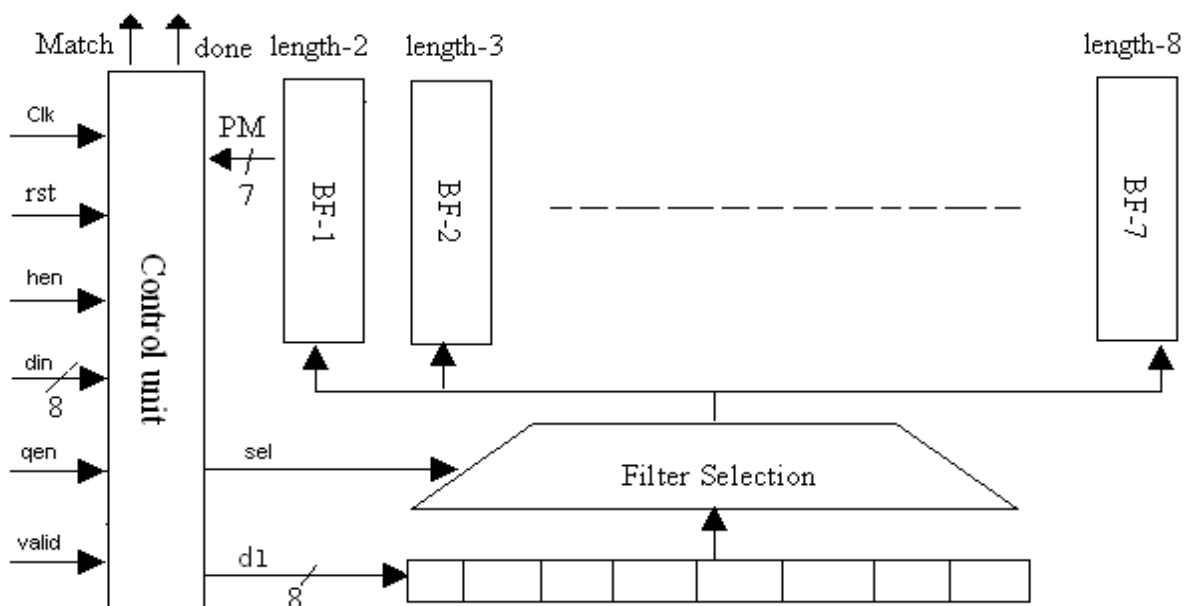
The pattern matching engine is a module to accelerate computationally intensive task of string matching. These modules will find use in virus detection, intrusion detection and prevention etc. The module uses the bloom filters to achieve this

task.

Features:

- The module can search for patterns up to 8 characters in length.
- Each bloom filter can store 1121 patterns.
- Low false positive probability of 1 in 1000.
- Patterns have to loaded one time at reset.

Block Diagram:



Performance:

| Device | BRAM count | Slice Count | Frequency |
|------------------------------|------------|-------------|-----------|
| Virtex-4 (xc4vlx25-ff668) | 28 | 1887 | 133.568 |

Verification:

The module has been verified with following approaches:

- Exhaustive Functional/Timing simulation
- Prototyped on Xilinx Virtex-4 ML401 development board

Deliverables:

- Verilog RTL source code
- Test benches
- Synthesis and Simulation scripts
- Detailed user documentation, including RTL source code documentation