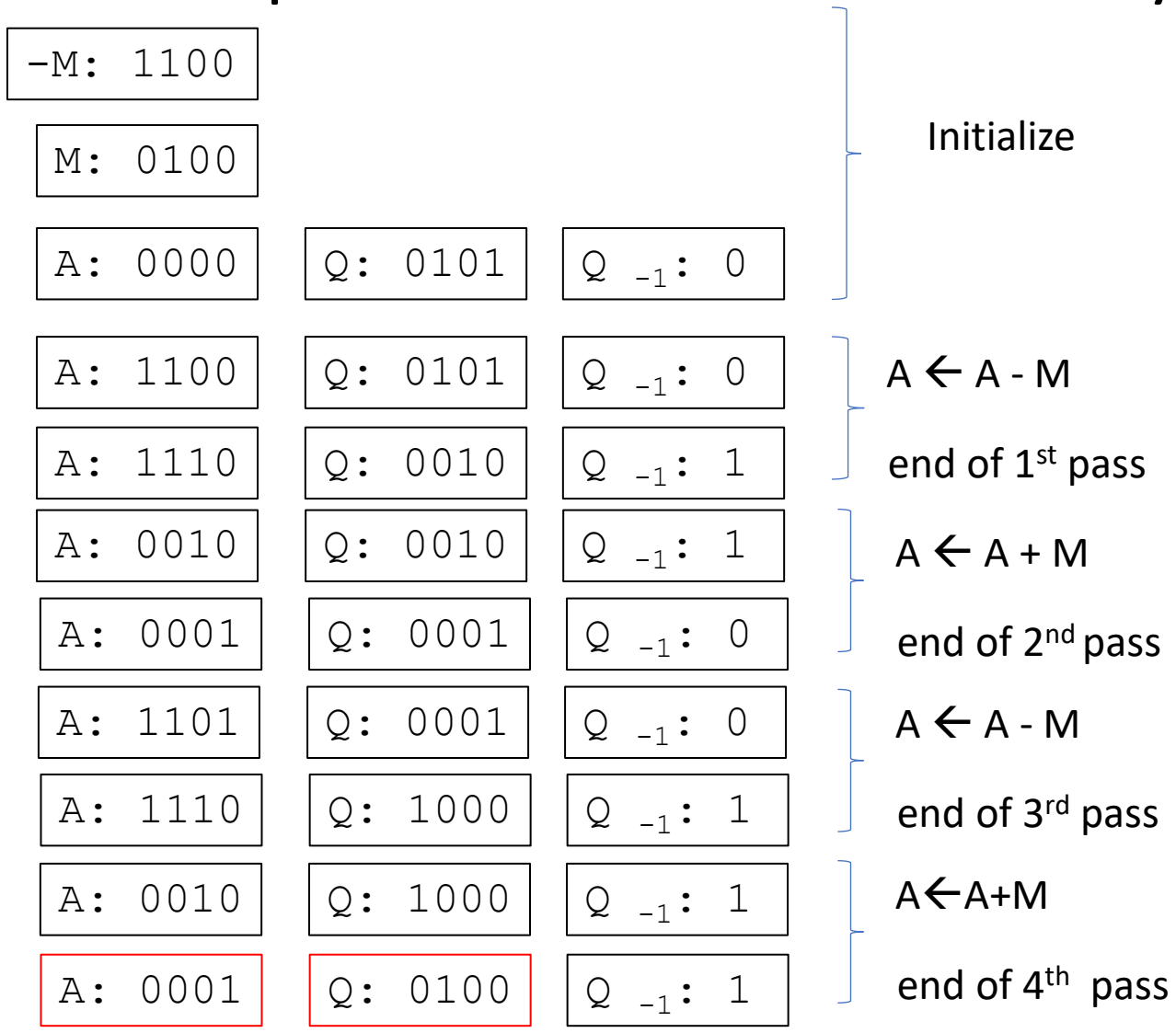
# Sequential Circuit Binary Multiplier

- Initialization
  - A ← 0, $Q_{-1}$ ← 0
  - *M* gets multiplicand.
  - *Q* gets multiplier.
- Loop for each bit of multiplier
  - If $Q_0$ $Q_{-1}$ = 01 then A ← A+M
  - else if $Q_0$ $Q_{-1}$ = 10 then A ← A - M
  - Arithmetic Shift right A $Q_0$ $Q_{-1}$.
- Result contained in register combination *AQ*.

# Sequential Circuit Binary Multiplier




0100 (M) * 0101 (Q)

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# Try

Try: 11101 * 11010 (using sequential circuit binary multiplier)
Show the value of A and Q after the end of each pass

| After this pass | A | Q |
|---|---|---|
| 1st | 00000 | 01101 |
| 2nd | 11001 | 10110 |
| 3rd | 00011 | 01011 |
| 4th | 11011 | 00101 |
| 5th | 11101 | 10011 |