

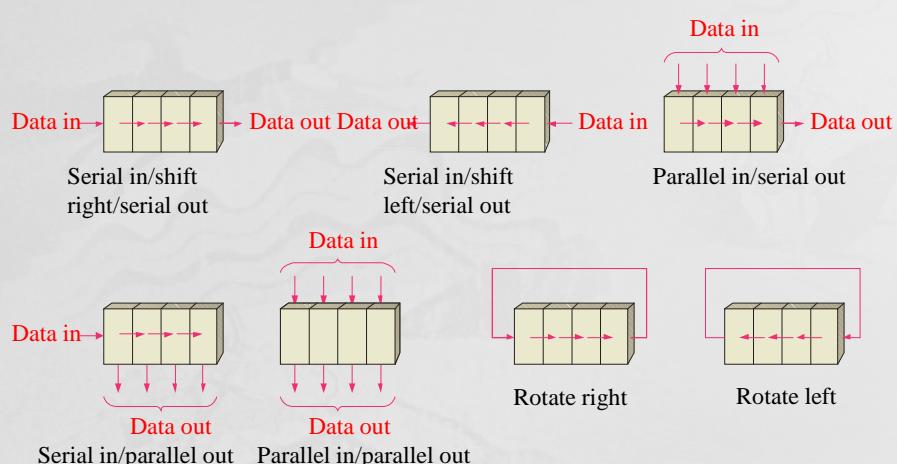
논리회로 및 설계

Chapter 9

일부 이미지 저작권:
Wikipedia, Creative Commons
Pearson Educations

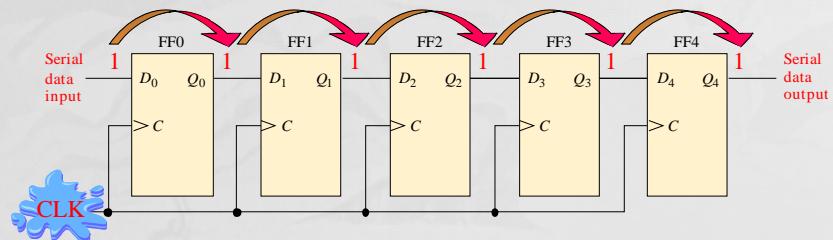
Floyd, Digital Fundamentals, 10th ed.

Shift Registers



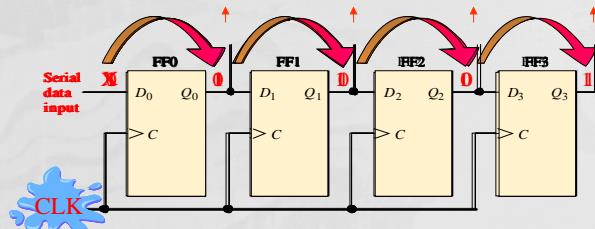
Floyd, Digital Fundamentals, 10th ed.

Serial in/Serial out Shift Register



Floyd, Digital Fundamentals, 10th ed

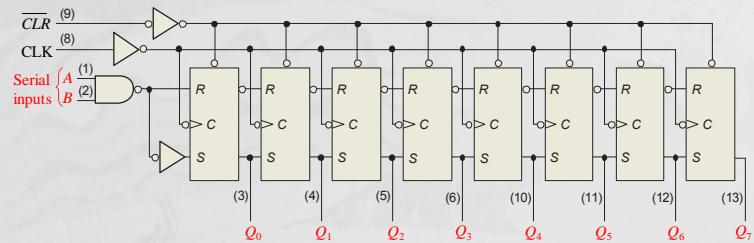
Serial – Parallel Converter



Floyd, Digital Fundamentals, 10th ed

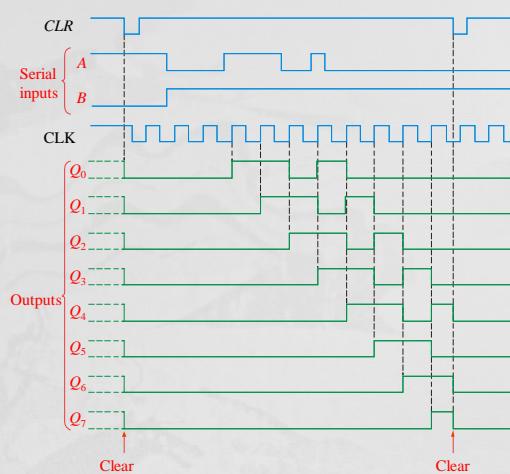
74HC164A Shift Register

The 74HC164A : 8-bit serial in/parallel out shift register



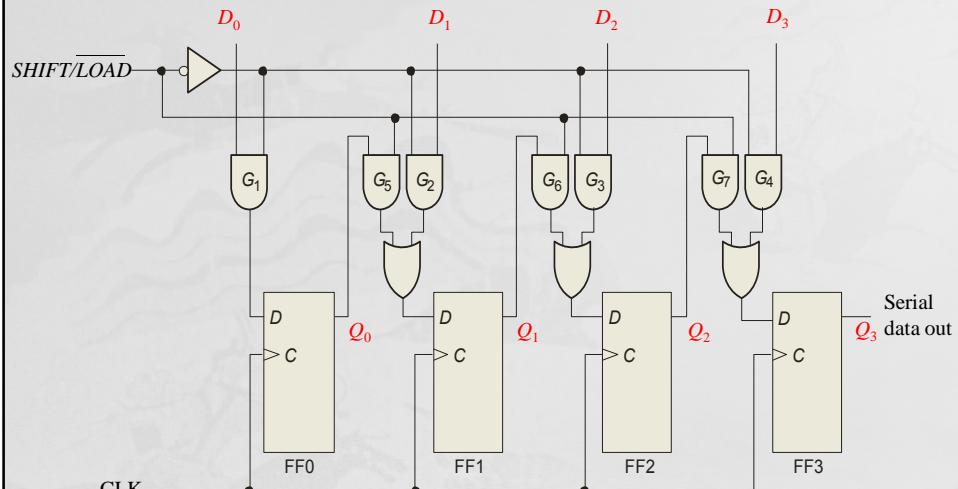
Floyd, Digital Fundamentals, 10th ed

Waveform of 74HC164A



Floyd, Digital Fundamentals, 10th ed

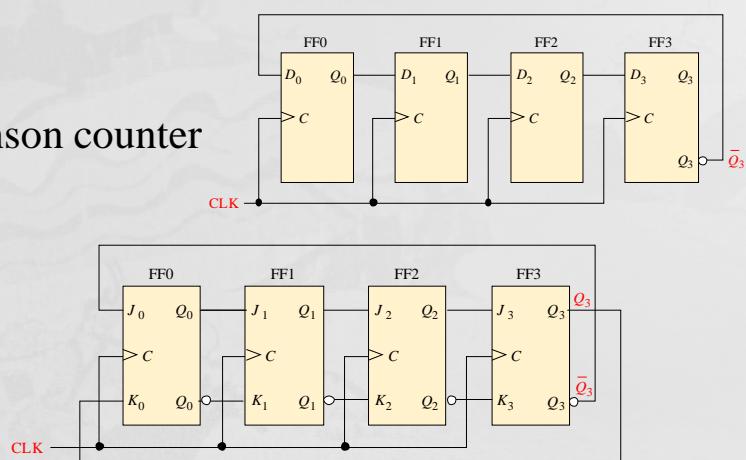
Parallel in/Serial out Shift Register



Floyd, Digital Fundamentals, 10th ed

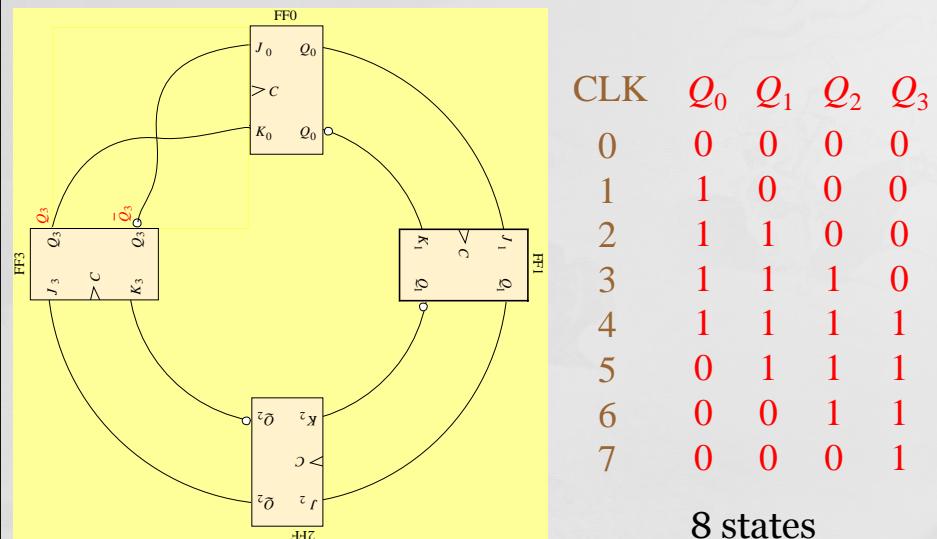
Shift Register Counters

Johnson counter



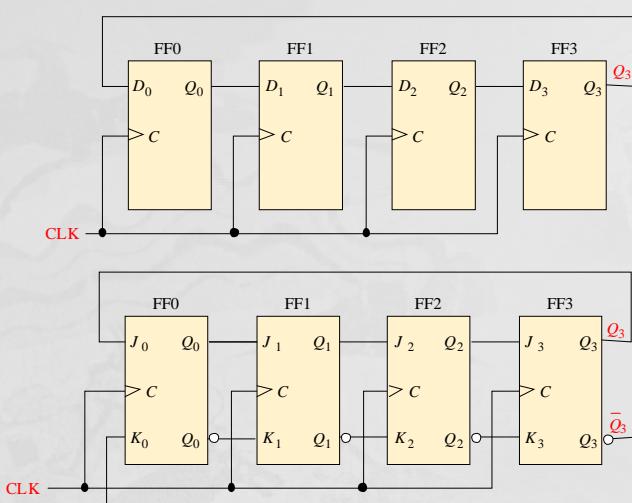
Floyd, Digital Fundamentals, 10th ed

Johnson Counter



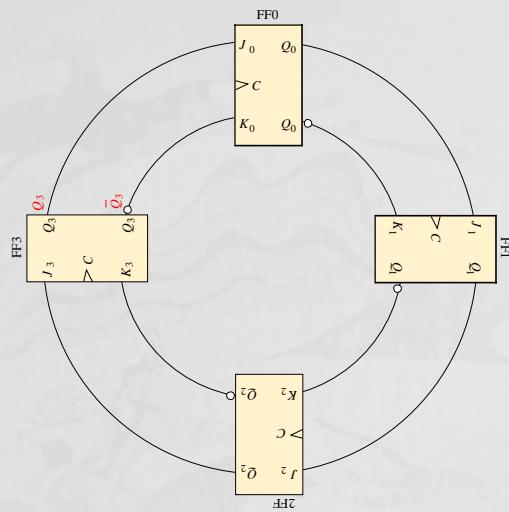
Floyd, Digital Fundamentals, 10th ed

Ring Counter



Floyd, Digital Fundamentals, 10th ed

Ring Counter



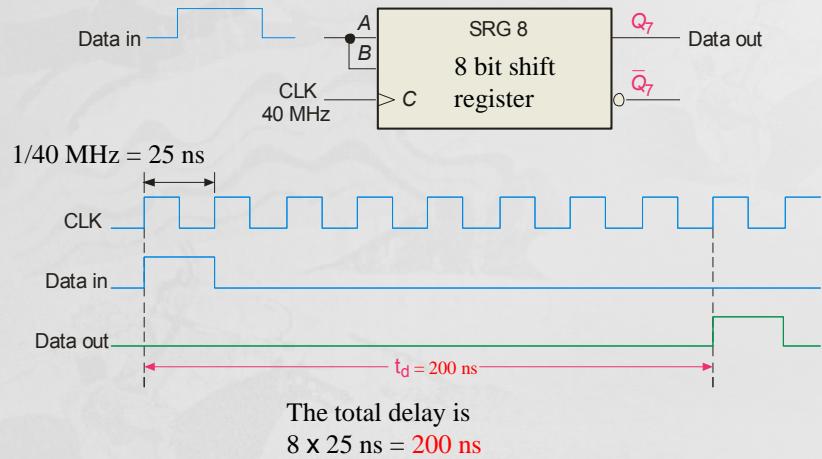
4 states
Initial value issue
Simpler circuit for
State Machine

Floyd, Digital Fundamentals, 10th ed

CLK
 Q_0
 Q_1
 Q_2
 Q_3
 Q_4
 Q_5
 Q_6
 Q_7

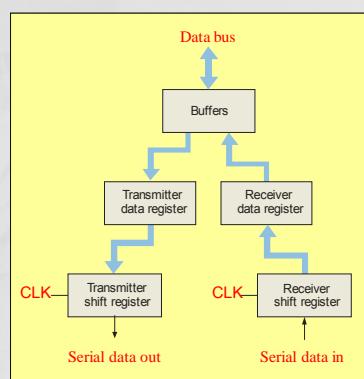
Floyd, Digital Fundamentals, 10th ed

Delay Generation



Floyd, Digital Fundamentals, 10th ed

UART : Shift register application



Floyd, Digital Fundamentals, 10th ed

Check point

- Register : Combined FF
- Shift Register
- Johnson Counter
- Ring Counter
- UART