Introduction to Digital Computing

Homework 7 – SR, D, and JK flip flops

Student's Name: _____

Instruction:

- Show all work to receive full credit. Box or circle the answer
- The following exercises are for theory practices, some of them have no real application.

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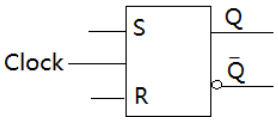
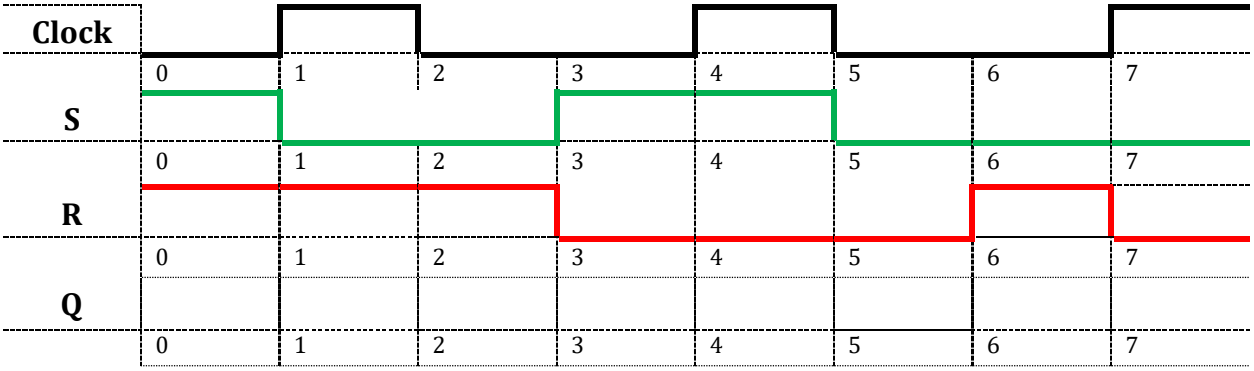
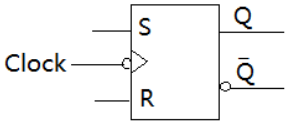
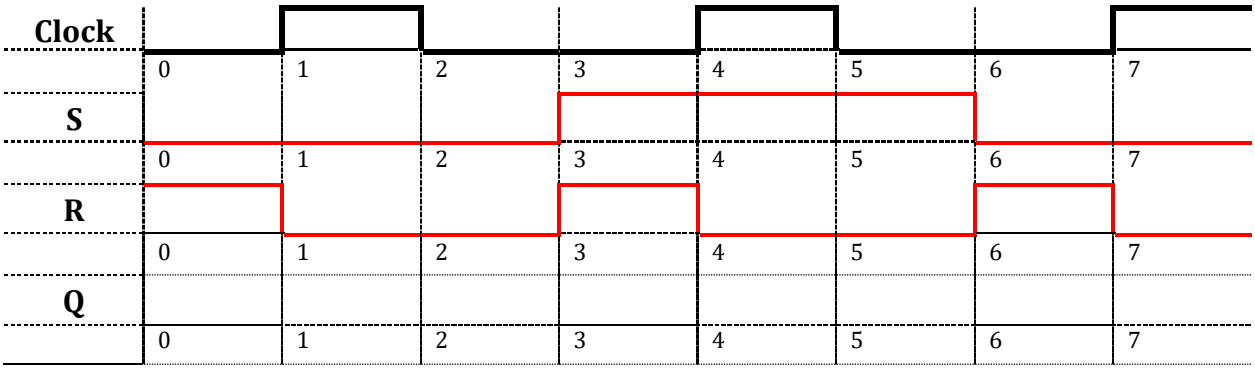
1. For a given (NAND) S-R FF, find the output Q assuming that $Q_{initial} = 1$



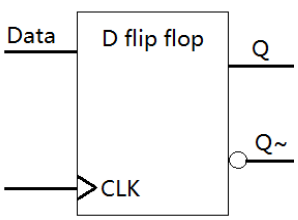


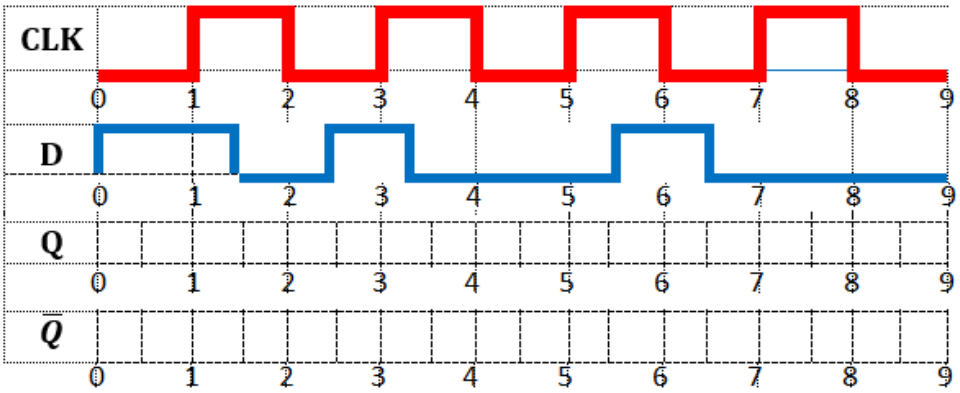
2. For a given (NOR) S-R FF, find the output Q and $\bar{Q}$ assuming that $Q_{initial} = 0$



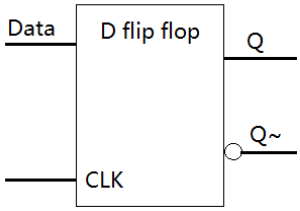


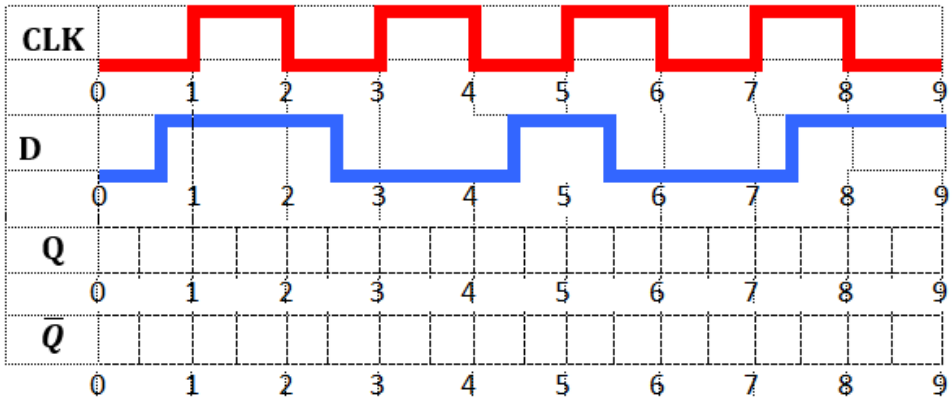
3. For the following D-flip flop circuit, sketch output Q and $\bar{Q}$ if $Q_{initial}$ is 0



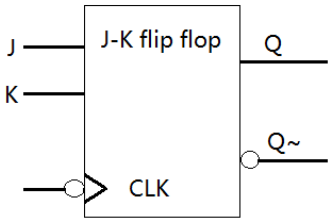


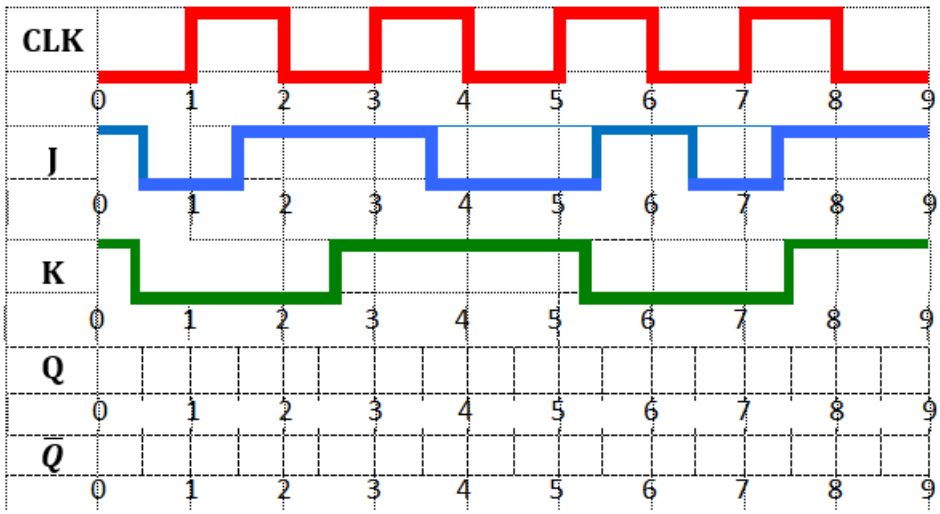
4. For the following D-flip flop circuit, sketch output Q and $\overline{Q}$ if $Q_{initial}$ is 1





5. For the following J-K flip flop circuit, sketch output Q and Q~ if $Q_{initial}$ is 1





6. For the following J-K flip flop circuit, sketch output Q and Q~ if $Q_{initial}$ is 0