

3. a) $T_c = \frac{1}{f_c} = \frac{1}{8 \cdot 10^6} = 0,0000125 \text{ ns}$

b) i)

4. The sw instruction uses register \$t0, which is not written to by addi until W. sw needs \$t0 already during D, so we use forwarding to resolve this data hazard. Furthermore, the result of lw is not in \$t1 until the end of M, but the result is needed in the beginning of the E-stage for the and instruction. We use stalling and forwarding to resolve this data hazard.

