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COMP9315 Sample Exam, Q8 Sample Solution

(a)

Critical point: no U precedes an L

T1:  Lw(X) R(X) Lw(Y) R(Y) W(X) W(Y) U(Y) U(X)
T2:  Lw(X) W(X) Lr(Y) R(Y) U(Y) U(X)
T3:  Lw(Y) R(Y) Lr(X) R(X) W(Y) U(X) U(Y)


(b)

Many different orders are possible.
Critical point: consistent with locks from (a)

T1:  Lw(X)      R(X) Lw(Y)      R(Y) W(X) W(Y) (cont)
T2:       Lw(X) ........................... (cont)
T3:                      Lw(Y) ............ (cont)

T1:  U(Y)    U(X) <end>
T2:  .............................W(X) (cont)
T3:  ....R(Y)    Lr(X) R(X) W(Y) U(X)      (cont)

T1:  <finished>
T2:  Lr(Y)....R(Y) U(Y) U(X) <end>
T3:       U(Y) <end>


(c)

Critical point: some U precedes an L

T1:  Lw(X) R(X) Lw(Y) R(Y) W(X) W(Y) U(Y) U(X)
T2:  Lw(X) W(X) U(X) Lr(Y) R(Y) U(Y)
T3:  Lw(Y) R(Y) Lr(X) R(X) U(X) W(Y) U(Y)


(d)

Many different orders are possible.
Critical point: consistent with locks from (c)

T1:  Lw(X)      R(X) Lw(Y)      R(Y) W(X) W(Y) (cont)
T2:       Lw(X) ........................... (cont)
T3:                      Lw(Y) ............ (cont)

T1:  U(Y)    U(X) <end>
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 T2:  ........................W(X)      (cont)
 T3:  ....R(Y)     Lr(X) R(X) U(X)     W(Y) (cont)


 T1:  <finished>
 T2:  U(X) Lr(Y)....R(Y) U(Y) <end>
 T3:             U(Y) <end>
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