CSE321: Operating Systems

Practice problems on Peterson's Algorithm

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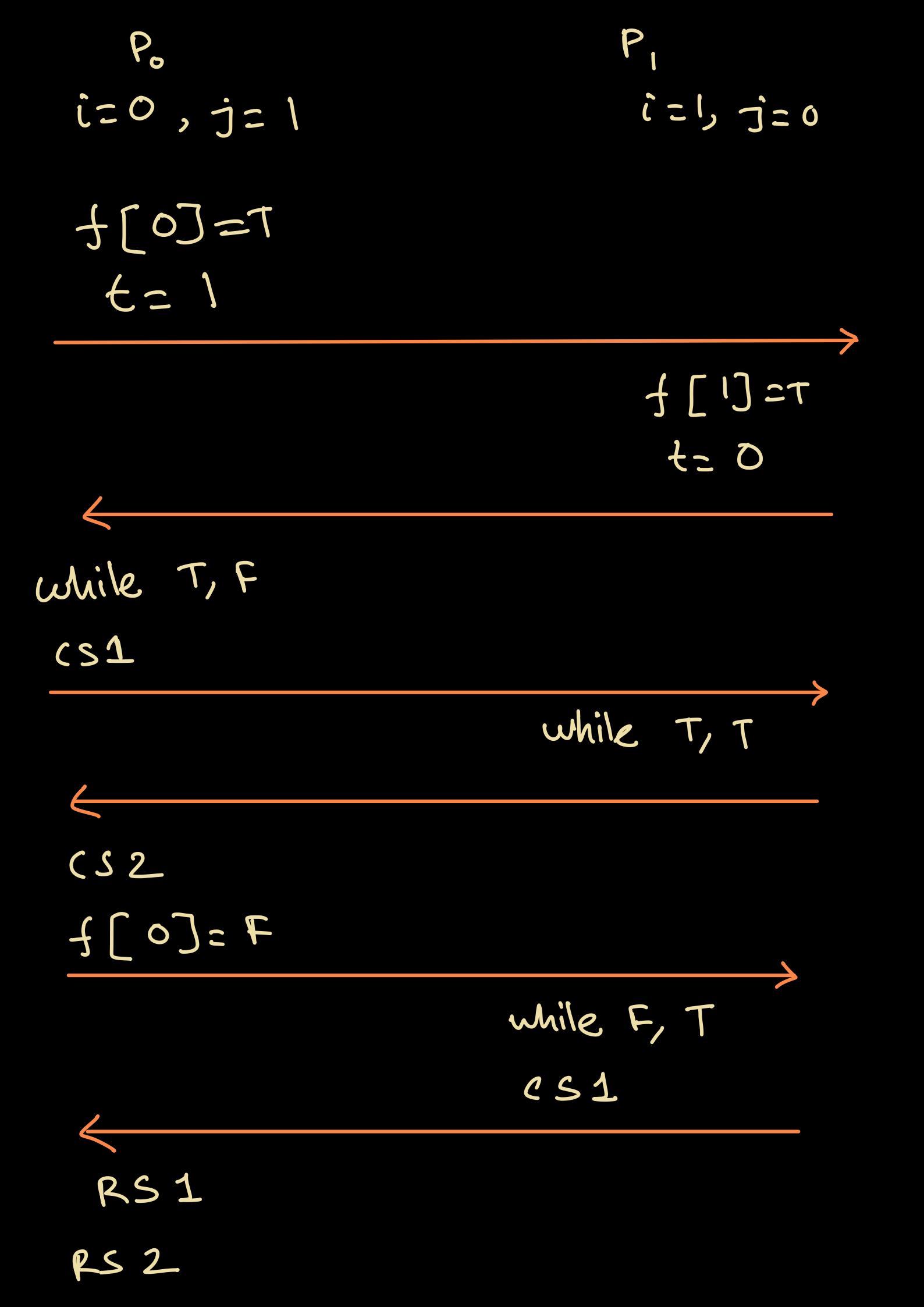
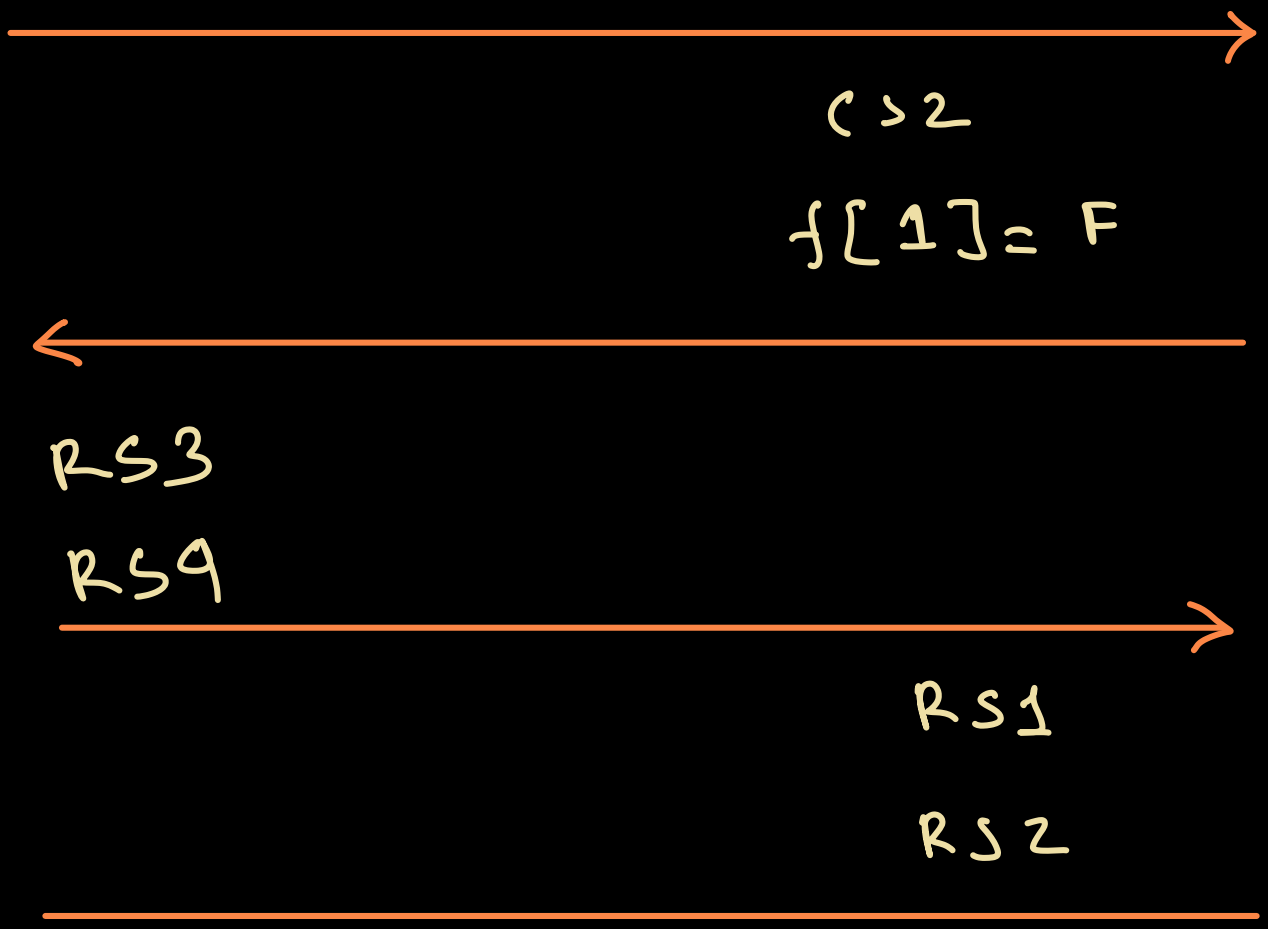
1. Show Peterson's solution for the given scenario.
   - There are two processes: P_0 and P_1.
   - Each Statement takes 4 ms to execute.
   - Context Switch will occur after 8 ms.
   - Critical section contains 2 statements.
   - Remainder section contains 4 statements.
   - For P_0: i=0 and j=1
   - For P_1: i=1 and j=0
   - turn=0
   - flag[0] = TRUE, flag[1] = FALSE

```
do{
    flag[i] = True
    turn = j
    while (flag[j] && turn==j);
    //CS
    flag[i]= false
    //RS
} while (true);
```

turn = Ø X 0

flag = [F, F]


P0
i=0 , j=1
P1
i=1, j=0
f[0]=T
t=1
f[1]=T
t=0
while T, F
cs1
while T, T
cs 2
f[0]= F
while F, T
cs 1
RS 1
RS 2


C > 2
f[1] = F
RS3
RS9
RS1
RS2
RS3
RS9

2. Show Peterson's solution for the given scenario.
   - There are two processes: P_1 and P_2.
   - Each Statement takes 3 ms to execute.
   - Context Switch will occur after 15 ms.
   - Critical section contains 6 statements.
   - Remainder section contains 10 statements.
   - For P_1: i=1 and j=0
   - For P_2: i=0 and j=1
   - turn=0
   - flag[0] = FALSE, flag[1] = TRUE

turn = ~~0~~ ~~1~~ 0

flag = [~~F~~ ~~T~~ F, ~~T~~ ~~F~~ F]

P_1

i=1, j=0

P_2

i=0, j=1

f[0] = T

t = j = 1

while T, T

stuck in loop

f[1] = T

t = j = 0

while T, T

stuck in loop

while T, F

CS1

CS2

CS3

CS4

while T, T

still stuck in loop

CS5

CS6

f[0] = F

RS1

RS2

while F, T

CS1

CS2

CS3

CS9

RS3

RS4

RS5

RS6

RS7

CS5

CS6

f[1] = F

RS1

RS2

RS 8

RS 9

RS 10

RS 3

RS 9

RS 5

RS6

RS 7

RS 8

RS 9

RS 10