**CS149**

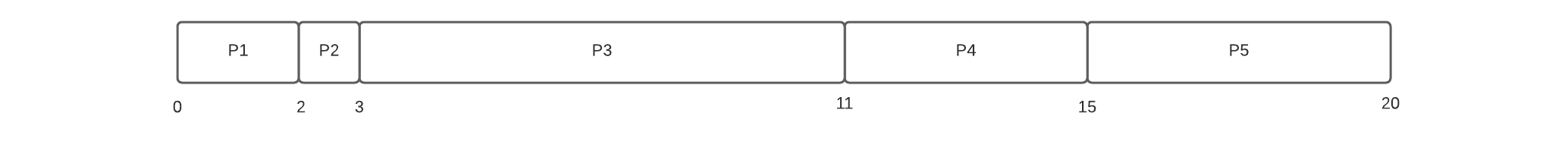
**HW4**

**Jooyul Yoon**

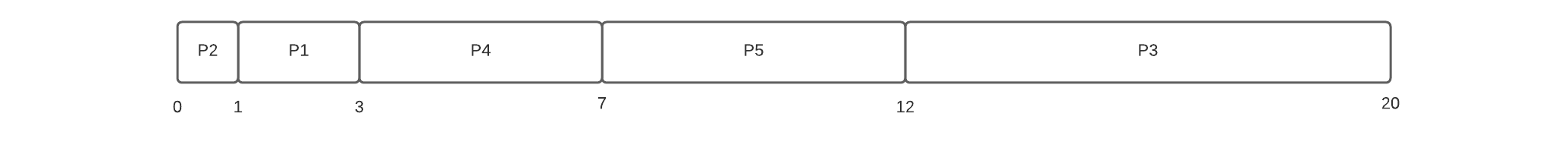
**014597154**

Q1.

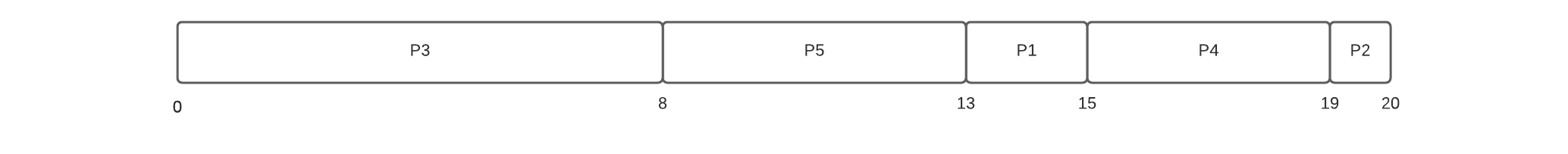
* FCFS
  + Waiting time: P1 = 0; P2 = 2; P3 = 3, P4 = 11, P5 = 15
  + Avg waiting time: (0 + 2 + 3 + 11 + 15)/5 = 31/5 = 6.2
  + Turnaround time: P1 = 2; P2 = 3; P3 = 11, P4 = 15, P5 = 20
  + Avg turnaround time: (2 + 3 + 11 + 15 + 20)/5 = 51/5 = 10.2



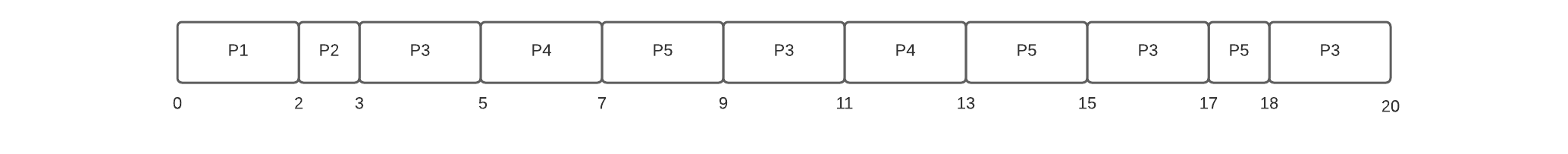
* Nonpreemptive SJF
  + Waiting time: P1 = 0; P2 = 1; P3 = 3, P4 = 7, P5 = 12
  + Avg waiting time: (0 + 1 + 3 + 7 + 12)/5 = 23/5 = 4.6
  + Turnaround time: P1 = 1; P2 = 3; P3 = 7, P4 = 12, P5 = 20
  + Avg turnaround time: (1 + 3 + 7 + 12 + 20)/5 = 43/5 = 8.6



* Nonprremptive priority
  + Waiting time: P1 = 0; P2 = 8; P3 = 13, P4 = 15, P5 = 19
  + Avg waiting time: (0 + 8 + 13 + 15 + 19)/5 = 46/5 = 9.2
  + Turnaround time: P1 = 8; P2 = 13; P3 = 15, P4 = 19, P5 = 20
  + Avg turnaround time: (8 + 13 + 15 + 19 + 20)/5 = 75/5 = 25



* RR
  + Waiting time: P1 = 0; P2 = 2; P3 = 3, P4 = 11, P5 = 15
  + Avg waiting time: (0 + 2 + 3 + 11 + 15)/5 = 31/5 = 6.2
  + Turnaround time: P1 = 2; P2 = 3; P3 = 20, P4 = 13, P5 = 18
  + Avg turnaround time: (2 + 3 + 20 + 13 + 18)/5 = 56/5 = 11.2



Q2.

a.

Text

Description automatically generated

b. a boy thread’s flow

sem\_t room mutex initialized as 1

sem\_t boys\_q initialized to be Capacity of playroom.

while (TRUE)

{

Int no, gender;

If(num\_played == max\_num\_game)

Break;

/\* TASK 1. Eating \*/

sleep(random value)

/\* TASK 2. Arrive at the door \*/

Lock(mutex)

increment boys // critical section

unlock(mutex)

If (first boy) wait(room mutex) // first boy acquires the room, barring girls

wait(boys\_q) // room is full

/\* TASK 3. Play in the playroom \*/

sleep(random value)

increment num\_played

/\* TASK 4. Depart from the playroom \*/

Lock(mutex)

decrement boys // critical section

unlock(mutex)

post(boys\_q) // room is vacant

If (last boy) post(room mutex) // last boy release the room for girls

}