

Assignment: 5

Question 1

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Assumptions-

- If two students come at the same time, then random allocation of machine will be done.
- The program will take the time which is taken by any stimulus to happen i.e., if something happens at 5th second according to the input, then it will happen after 5 secs of running the code.

Implementation-

- We make threads for implementing this problem.
- A thread is made for every student.
- An array of semaphores is maintained to implement FCFS. Once the student comes to the washing area, it starts acquiring semaphores starting from the first one. If there are already people waiting for the machine, they will keep occupying the semaphores and thus this student will wait until they leave it i.e., they start washing their clothes as once a student starts washing the clothes, he leaves the semaphore and acquires the semaphore for the washing machines and thus the rest of the students waiting acquire the respectively next semaphore.
- For maintaining integrity of the constraint that a particular number of students can wash the clothes simultaneously i.e., there are definite number of washing machines, we use semaphore which take the initial value as the number of washing machines and every time a student starts washing clothes, it acquires this semaphore and once washing the clothes is done, he leaves the semaphore.
- `Sem_timedwait` is used to implement the patience of the students.