UWB Bothell

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Course: CSS-503

Assignment #2

Read me file

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***Assignment#2 description:***

Assignment #2 is simulating the very popular thread simulation sleeping barbers where barbers are constantly serving customers as they arrive at the shop else they will go to sleep until a customer wakes them up. If all barbers are busy and there is an empty waiting chair then the customer will sit down else the customer will leave without a service.

The simulation is using a set of pre-defined public functions to access the cond variables of both the customers and the barbers to signal after each activity while the other counter part is waiting. Customer for instance has next\_customer, finished and payment\_accepted for the barber to call these functions to signal and hence stop the wait. Same for barbers, they have awaken, customer\_sits, payment and closing time to be used by customers and shop to signal and stop the wait.

***Results:***

Sample results shown below confirms that as the service time increase the number of turned away customers increases as well as the number of customers who had to wait to be serviced.

Same if we increase the customer arrivals.

NBARBERS:3 NCHAIRS: 3 SERVICE\_TIME: 1200 SERVICE\_DEVIATION: 200 CUSTOMER\_ARRIVALS: 400

customers served immediately: 568

customers waited 210

total customers served 778

customers turned away: 2

total customers: 780

NBARBERS:3 NCHAIRS: 3 SERVICE\_TIME: 4000 SERVICE\_DEVIATION: 200 CUSTOMER\_ARRIVALS: 800

customers served immediately: 194

customers waited 192

total customers served 386

customers turned away: 0

total customers: 386

NBARBERS:3 NCHAIRS: 3 SERVICE\_TIME: 8000 SERVICE\_DEVIATION: 200 CUSTOMER\_ARRIVALS: 600

customers served immediately: 110

customers waited 114

total customers served 224

customers turned away: 291

total customers: 515

NBARBERS:3 NCHAIRS: 3 SERVICE\_TIME: 4000 SERVICE\_DEVIATION: 200 CUSTOMER\_ARRIVALS: 400

customers served immediately: 213

customers waited 213

total customers served 426

customers turned away: 353

total customers: 779

NBARBERS:3 NCHAIRS: 4 SERVICE\_TIME: 4000 SERVICE\_DEVIATION: 200 CUSTOMER\_ARRIVALS: 400

customers served immediately: 213

customers waited 286

total customers served 499

customers turned away: 281

total customers: 780

***Conclusion:***

While it appears that 3 Chairs is sufficient to not turn customers away, it depends on the barber service time and the customer arrivals time.

***Deliverables:***

1. Main.cpp containing my commented code
2. Build.sh
3. Run.sh
4. Read me file