**Shop Class Discussion**

**Extension And Limitation**

* One extension is to trace the customer waiting time in the chair which could be used to provide reference if a barber shop needs to employ more barbers.
* Two extension is to use semaphore to manage resource, such as the barber resource and waiting chair resource.
* One possible limitation is to make no customer dropped off while keeping all the barbers working during working time. It is not impossible to realize. First, customer arrival times have peaks and valleys, in the peaks, we need more barber and they could be keep working to make no customer dropped off, but in the valleys, some barbers have to sleep because of no enough customers.
* **Discussions for Step5 and Step6**

1. **Discussion for Step 5**
2. Chart of output

|  |  |
| --- | --- |
| **Chair Number** | **Drops Off Customer Number** |
| 1 | 91 |
| 10 | 81 |
| 20 | 72 |
| 30 | 58 |
| 40 | 47 |
| 50 | 34 |
| 60 | 26 |
| 70 | 13 |
| 80 | 2 |
| 90 | 0 |
| 100 | 0 |

2) Conclusion based on output and chart

* Approximately 90 waiting chairs would be necessary for all 200 customers to be served by 1 barber in the service time

-----If there are 90 chairs, when the 201st customer arrives, the barber should be serving the 110th customer. This customer will see other 90 customers sitting in the waiting chairs, he will leave.

1. **Discussion for Step6**
   1. Chart of output

|  |  |
| --- | --- |
| **Barber Number** | **Drops Off Customer Number** |
| 1 | 121 |
| 2 | 49 |
| 3 | 12 |
| 4 | 2 |
| 5 | 0 |
| 6 | 0 |

2) Conclusion based on output and chart

* Approximately 5 barbers were required to service all 200 customers without a waiting chair based on output.

----- If there are 5 barbers, even if all the 5 barbers are busy, it is almost 100% that one of them finishes before the next customer arriving.

1. **Thinking based on step5 and step6**

If the budget is not too limit, it is better to employ more barbers instead of placing more chairs avoiding customer drop off. Because even the waiting chairs are enough to make 1 barber to provide haircut for many customers, it will bring lots of customer waiting for long time, and they won’t come the shop again mostly. On the contrast, just increasing the barbers into 5 can serve 200 customer and won’t let them to wait, which must make customer feel much better.