

## Operations Management

### Homework 1

Due January 23, 2020

1. Suppose that loading a tray of cookies into the oven takes Kristen's roommate 3 minutes instead of 1 minute as in the case discussed in class. What is the minimum amount of time it will take Kristen and her roommate to complete a rush order of 2 dozen cookies? Use a Gantt chart to find your answer. Please submit your Gantt chart.
2. Suppose that Jeff, Anna, and Paul are working in a bicycle factory. The bicycle making process consists of four activities: assembling the handlebars, placing the handlebars on the frame, attaching the wheels, and finally placing a kickstand on the bike. Jeff is responsible for the handlebars activity, Anna is responsible for the frames and kickstand activities, and Paul is responsible for the wheels activity. The process flow diagram looks as follows.

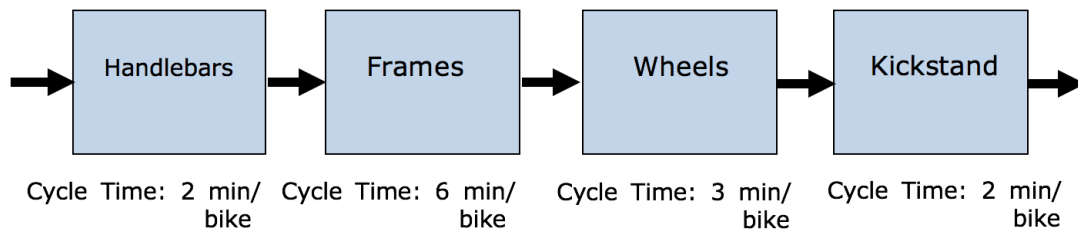


Figure 1: Process Flow Diagram for Question 2.

- a. Calculate the capacity of each resource.
- b. What is the bottleneck of the process, and what is the capacity of the process?
- c. Calculate the utilization of each resource assuming that the process is operating at maximum capacity.
- d. Suppose that Jeff is paid \$20 per hour but only for the amount of time that he actually works, that Anna is paid \$30 per hour but only for the amount of time that she actually works, and that Paul is paid \$16 per hour but also only for the amount of time that he actually works. Suppose also that each bicycle sold generates a revenue of \$200 and has raw materials cost of \$60. Assuming that the bicycle factory is operating at its maximum capacity, what is the profit per hour after paying Jeff, Anna, and Paul their salaries?