# OPS 370
# Homework #2

## Problem A (Module 4):

Monthly demand for a retail product is given in the table below.

| Month | Demand |
|-------|--------|
| 1 | 97 |
| 2 | 103 |
| 3 | 99 |
| 4 | 94 |
| 5 | 100 |

a) Use the Naïve forecasting method to estimate demand in Week 6.

b) Use a four-week moving average to estimate demand in Weeks 5 and 6.

c) Use a two-week weighted moving average to estimate demand in Weeks 3, 4, and 5. Assume the weights are 0.7 and 0.3. The most recent period receives the higher weight.

## Problem B:  Module 9

A beer distributor finds that is sells, on average, 100 cases a week of Xinjiang Black Beer (a tasty beverage from western China). For this problem assume that demand occurs at a constant rate over a 50-week year. Beer is purchased at a price of $8 per case. The inventory-related holding cost rate is 25% (or $2/case). Each order placed with the supplier costs the distributor $10.

1. Assume that the distributor can choose any order quantity it wishes. What order quantity minimizes the distributor's total inventory-related costs?  - Show your calculation

   *Hint: Module 9, Slide 28 and Slide 37 for an example*

For the next part, assume that the distributor selects the order quantity from #1 above.

2. What is the inventory-related annual total cost? What is the inventory-related cost per case of beer?  - Show your calculation

**Problem C: Module 13**

The Weknowitall Market Research Corporation (WMRC) is well-known for its outstanding performance on market analyses for companies of all sizes. WMRC received a project from ABC Products Company to analyze the market for its new product on the following requirements:

- To use more than one research method (phone and mail surveys).
- To complete the project within 270 days.
- $28,500 is the limit of spending for the project.

| Activity | Preceded By | Time(days) | Cost(per day) |
|---|---|---|---|
| 1. Select research method | - | 10 | $100 |
| 2. Develop mail survey method | 1 | 40 | 87 |
| 3. Develop phone survey method | 1 | 35 | 85 |
| 4. Pretest mail survey method | 2 | 28 | 115 |
| 5. Pretest phone survey method | 3 | 28 | 115 |
| 6. Run both surveys | 4.5 | 120 | 50 |
| 7. Summarize data from both | 6 | 15 | 340 |
| 8. Make final report | 7 | 5 | 500 |

3.1 What is the minimum completion time with the processing times given above?
      Show your work

3.2 What is the total cost of the project?
      Show your calculation