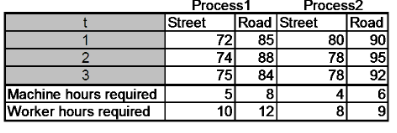
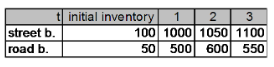
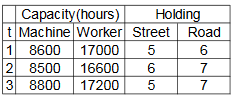
Problem: PH company is a bicycles manufacturer, and it produces two types of products: street and road bicycles. The final products are put together via two assembling processes: 1 and 2. There are 3 time periods. Below is process costs for process 1 and process 2 and resource requirement per unit:



To meet customer demands in time in the US, planning department conducted a demand forecasting and counted current initial inventory.



Besides, the information about available capacity(hours) and holding costs per bike are below:



Help planning department to determine the aggregate production plan that minimizes the cost of meeting customer’s demands.

Model:

Parameters:

: *horizon length, in periods,*

: *Number of products,*

: *Number of resource types,*

: *forecasted number of units demanded for product i in period t*

: *number of different processes available to make product i*

: *amount of resource k available in period t*

: *amount of resources k required by one unit of product i if produced by process j*

: *cost to produce one unit of product i using process j in period t*

: *cost to hold one unit of product i in inventory for period*

Decisions:

: *Number of units of product i produced by process j in period t*

: *Number of units of product i held in inventory at the end of period t*

Objective: *Minimize total cost*

Constraints:

decision var are non-negative and integer

Production must not be exceeding the available resources

Current Inventory should be previous inventory plus current production qty minus current demand qty

Optimal Solution.

The following is the solution obtained from Excel Solver. The total cost is $368,762.

