Problem: PH company is a bicycles manufacturer, and it produces two types of products: street and road bicycles. The final products can be produced by two types of line : 1 and 2. There are 3 time periods. Below is produce costs for line 1 and line 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 line 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 line j*

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

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

Calculation variables:

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

Decisions:

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

Objective: *Minimize total cost*

Constraints:

decision var are non-negative and integer

Production must not be exceeding the available resources

Optimal Solution.

The following is the solution obtained from Excel Solver. The total cost is $379,658.

