Week 3 - Network Flow Models – Assignment 2

1. Lincoln Lock Company The Lincoln Lock Company manufactures a commercial security lock at plants in Atlanta, Louisville, Detroit, and Phoenix. The unit cost of production at each plant is \$35.50, \$37.50, \$37.25, and \$36.25, and the annual capacities are 18,000, 15,000, 18,000, and 20,000, respectively. The locks are sold through wholesale distributors in seven locations around the country. The unit shipping cost for each plant– distributor combination is shown in the following table, along with the forecasted demand from each distributor for the coming year. Set this problem as a network flow model and determine the least costly way of shipping locks from plants to distributors.

		Tacoma	SanDiego	Dallas	Denver	StLouis	Tampa	Baltimore
	Atlanta	2.50	2.75	1.75	2.00	2.10	1.80	1.65
	Louisville	1.85	1.90	1.50	1.60	1.00	1.90	1.85
From: Plants	Detroit	2.30	2.25	1.85	1.25	1.50	2.25	2.00
	Phoenix	1.90	0.90	1.60	1.75	2.00	2.50	2.65
	Demand	5500	11500	10500	9600	15400	12500	6600

2. Assigning Tasks Suppose a data processing department wishes to assign five programmers to five programming tasks (one programmer to each task). Management has estimated the total number of days each programmer would take if assigned to the different jobs, and these estimates are summarized in the following table.

	Task	1	2	3	4	5
	1	50	25	78	64	60
	2	43	30	70	56	72
Programmer	3	60	28	80	66	68
	4	54	29	75	60	70
	5	45	32	70	62	75

1. Determine the assignment that minimizes the total programmer days required to complete all five jobs.