1. An investor has money-making activities A and B available at the beginning of each of the next five years. Each dollar invested in A at the beginning of one year returns $1.50 (a profit of $0.50) two years later (in time for immediate reinvestment). Each dollar invested in B at the beginning of one year returns $1.90 three years later.

In addition, money-making activities C and D will each be available at one time in the future. Each dollar invested in C at the beginning of the second year hence returns $2.00 four years later. Each dollar invested in D at the beginning of the fifth year hence returns $1.30 one year later.

The investor begins with $10,000. He wishes to know how he can invest his money so to maximize the total amount accumulated by the beginning of the sixth year. Formulate the linear programming model for this problem. But do not solve it.

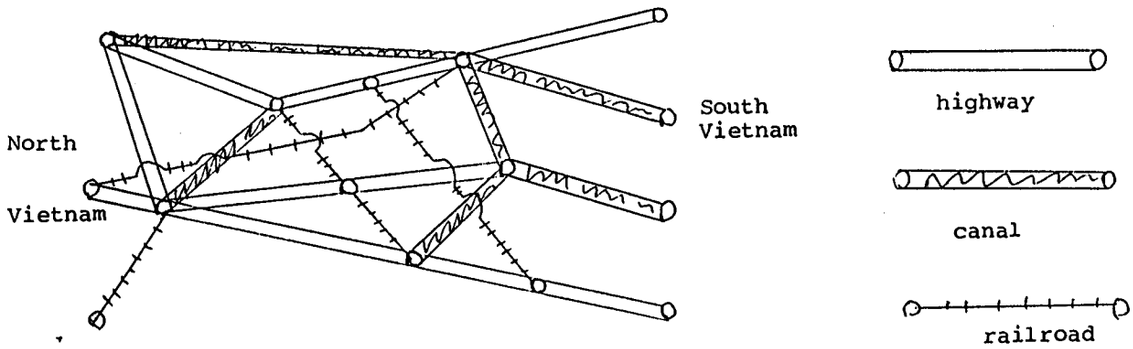
2. A Bus Line has purchased six additional buses that it plans to use on three routes. However, the bus line has not decided how many of the new buses to assign to each of the three routes. They have developed estimates of additional profit per week for various alternatives show n as follows:

	additional profit per week ($)		
number of buses assigned	rout A	route B	route C
0	0	0	0
1	350	100	225
2	450	250	300
3	500	450	475
4	525	650	600
5	450	700	650
6	400	750	600

Use dynamic programming to determine the optimal assignment of buses to each route.

251

3. Once during the Vietnam War, U.S.had the following problem:
Hu Chi Ming wants to send supplies from North Vietnam to South Vietnam across the transportation network below. The U.S. wants to stop the supplies by bombing the network. If 10 tons of bombs interrupt a railway link, 20 tons a highway link and 50 tons a canal link, what links should be bombed to disrupt the system and minimize bomb tonnage dropped.



4. A warehouse in a small state receives orders for a certain item and sends them by truck as soon as possible to the customer. The orders arrive in a Poisson fashion at a mean rate of 0.9 per day. Only one item at a time can be shipped by truck from the warehouse, which is located in the central part of the state. Because the customers are located in various places in the state,the distribution of service time in days has a distribution with probability density 4texp(-2t). What is the expected delay between the arrival of an order and the arrival of the item to the customer? Service time is defined here as the time the truck takes to load, get to the customer, unload, and return to the warehouse. Loading and unloading times are small compared with travel time.