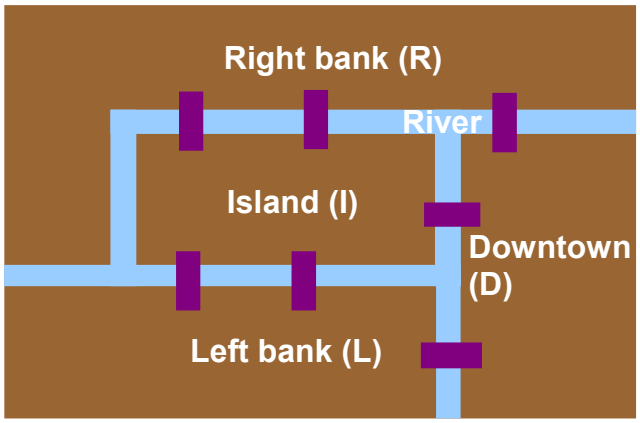
1. Find an optimal eulerization of the Bridges of Koenigsberg problem:



2. Draw each of following graphs described. Which ones have an Euler path? Which ones have an Euler circuit? Which have neither? Will your answer be true for every graph of that description?

a) A graph with six vertices, all of degree 2.

b) A graph with eight vertices: six vertices have degree 2, and two vertices have degree 3

In Exercises 55 through 58, you are scheduling a dinner party for six people (A, B, C, D, E, and F). The guests are to be seated around a circular table, and you want to arrange the seating so that each guest is seated between two friends (i.e., the guests to the left and to the right are friends of the guest in between). You can assume that all friendships are mutual (when X is a friend of Y, Y is also a friend of X).

55. Suppose that you are told that all possible friendships can be deduced from the following information:

A is friends with B and F; B is friends with A, C, and E; C is friends with B, D, E, and F; E is friends with B, C, D, and F.

(a) Draw a "friendship graph" for the dinner guests.

(b) Find a possible seating arrangement for the party.

(c) Is there a possible seating arrangement in which B and E are seated next to each other? If there is, find it. If there isn't, explain why not.

Julie is the marketing manager for a small software company based in Boston. She is planning a sales trip to Michigan to visit customers in each of the nine cities shown on the mileage chart in Fig. 6-56 (see p. 236). She can fly from Boston to any one of the cities and fly out of any one of the cities back to Boston for the same price (call the arrival city A and the departure city D). Her plan is to pick up a rental car at A, drive to each of the other cities, and drop off the rental car at the last city D. Slightly complicating the situation is that Michigan has two separate peninsulas—an upper peninsula and a lower peninsula—and the only way to get from one to the other is through the Mackinaw Bridge connecting Cheboygan to Sault Ste. Marie. (There is a $3 toll to cross the bridge in either direction.)

Mileage Chart

	Detroit	Lansing	Grand Rapids	Flint	Cheboygan	Sault Ste. Marie	Marquette	Escanaba	Menominee
Detroit	*	90	158	68	280				
Lansing	90	*	68	56	221				
Grand Rapids	158	68	*	114	233				
Flint	68	56	114	*	215				
Cheboygan	280	221	233	215	*	78			
Sault Ste. Marie					78	*	164	174	227
Marquette						164	*	67	120
Escanaba						174	67	*	55
Menominee						227	120	55	*

FIGURE 6-56