HW9(Deadline:2015/1/18)

chp 9

2. Make a heap out of the following data read from the keyboard:

```
23 7 92 6 12 14 40 44 20 21
```

*手寫，畫 HEAP

6. Apply the delete operation to the heap in Figure 9-21. Repair the heap after the deletion.

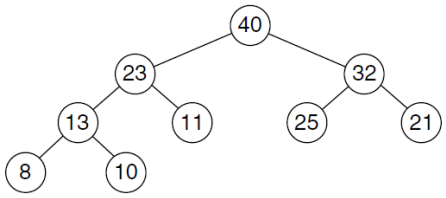

FIGURE 9-21 Heap for Exercises 5, 6, and 7

*請刪除掉 40 這個 node，然後畫出 Repair 後的圖

12. Which of the following sequences are heaps?
    a. 42 35 37 20 14 18 7 10
    b. 42 35 18 20 14 30 10
    c. 20 20 20 20 20 20

33. An airline company uses the formula shown below to determine the priority of passengers on the waiting list for overbooked flights.

$$\text{priority number} = A / 1000 + B - C$$

where

A is the customer's total mileage in the past year
B is the number of years in his or her frequent flier program
C is a sequence number representing the customer's arrival position when he or she booked the flight

Given a file of overbooked customers as shown in Table 9-2, write a program that reads the file and determines each customer's priority number. The program then builds a priority queue using the priority number and prints a list of waiting customers in priority sequence.

Name	Mileage	Years	Sequence
Bryan Devaux	53,000	5	1
Amanda Trapp	89,000	3	2
Baclan Nguyen	93,000	3	3
Sarah Gilley	17,000	1	4
Warren Rexroad	72,000	7	5
Jorge Gonzales	65,000	2	6
Paula Hung	34,000	3	7
Lou Mason	21,000	6	8
Steve Chu	42,000	4	9
Dave Lightfoot	63,000	3	10
Joanne Brown	33,000	2	11

TABLE 9-2 Data for Project 33

Chp 11

4. Give the depth-first traversal of the graph in Figure 11-23, starting from vertex A.

5. Give the breadth-first traversal of the graph in Figure 11-23, starting from vertex A.

6. Draw three spanning trees that can be found in the graph in Figure 11-23.

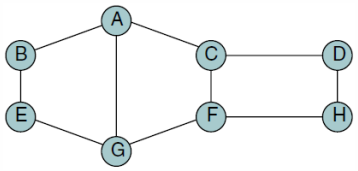

FIGURE 11-23 Graph for Exercises 1 through 8

9. Find the minimum spanning tree of the graph in Figure 11-24.

10. Find the shortest path between node A and all other nodes in the graph in Figure 11-24.

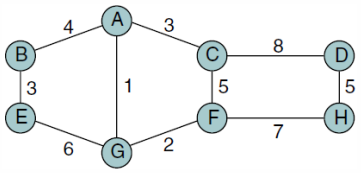

FIGURE 11-24 Graph for Exercises 9 through 12

27. The graph is another structure that can be used to solve the maze problem (see Project 24 in Chapter 3). Every start point, dead end, goal, and decision point can be represented by a node. The arcs between the nodes represent one possible path through the maze. A graph maze is shown in Figure 11-27.

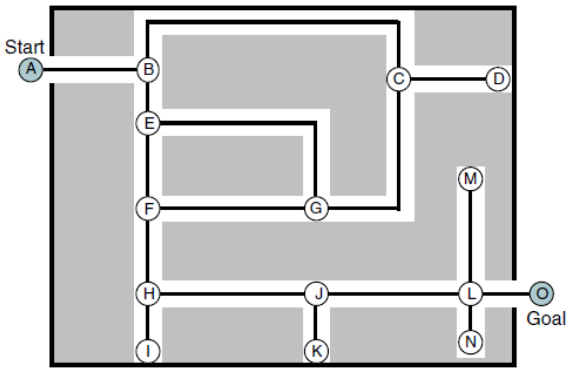

FIGURE 11-27 Graph Maze for Project 27

Write a program that simulates a mouse's movement through the maze, using a graph and a depth-first traversal. When the program is complete, print the path through the maze.