

## *Software Engineering*

(Solutions to Review Questions and Problems)

### **Review Questions**

- Q10-1.** Software, like many other products, goes through a cycle of repeating phases until it becomes obsolete.
- Q10-3.** Four phases in the development process are analysis, design, implementation, and testing.
- Q10-5.** The design phase defines how the system will accomplish what was defined in the analysis phase. In the design phase, all components of the systems are defined. The two trends in this phase are procedure-oriented design, and object-oriented design.
- Q10-7.** Cohesion is a measure of how closely the processes in a program are related. Coupling is a measure of how tightly two modules are bound to each other.
- Q10-9.** The goal of testing phase is to find errors. There are two types of testing: glass-box (or white-box) and black-box.

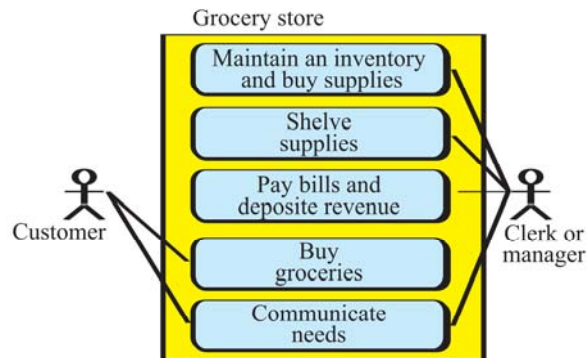
## Problems

**P10-1.** Use of constants instead of literals makes the modification much easier if the values are changed latter.

**P10-3.** Pass-by reference provides more cohesions between the two modules.

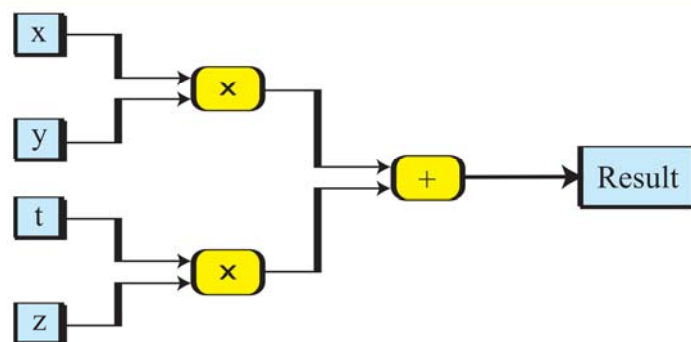
**P10-5.** One possible solution is shown in Figure P10-5.

**Figure P10.5** Use case diagram for a small groceries store



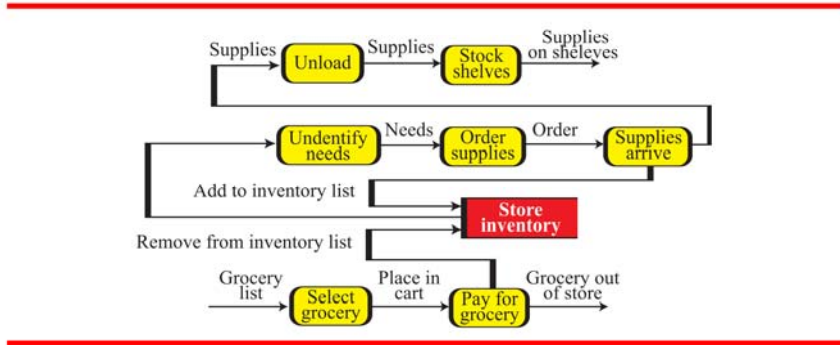
**P10-7.** One possible solution is shown in Figure P10-7.

**Figure P10.7** *Data flow diagram for  $(x \times y + t \times z)$*



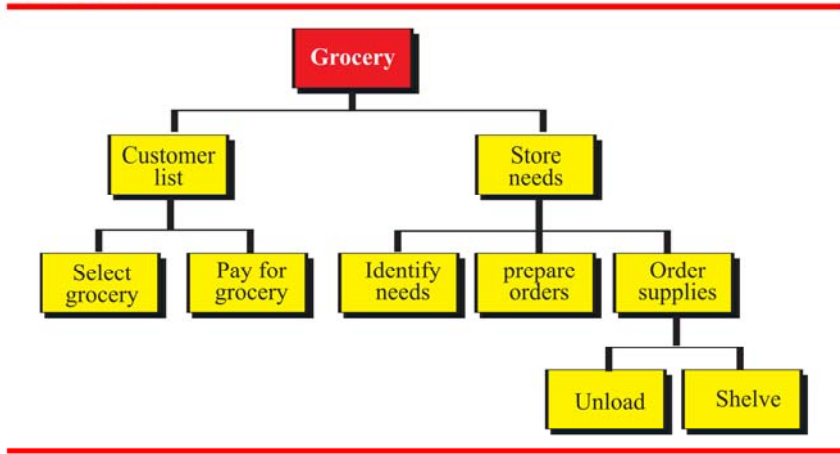
**P10-9.** One possible solution is shown in Figure P10-9.

**Figure P10.9** Data flow diagram for a small groceries store



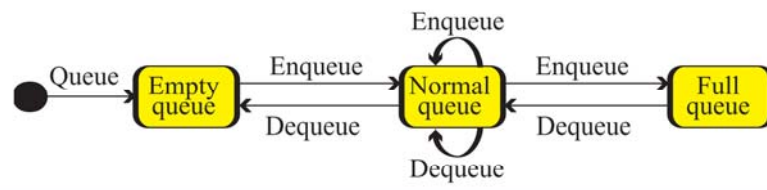
**P10-11.** One possible solution is shown in Figure P10-11.

**Figure P10.11** Structure chart for a small groceries store



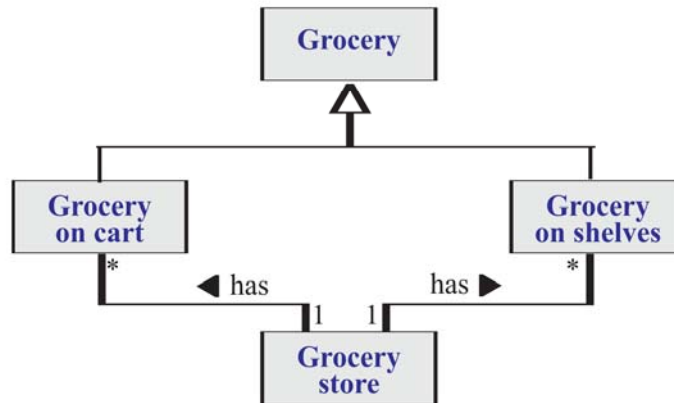
**P10-13.** One possible solution is shown in Figure P10-13.

**Figure P10.13** *State diagram for a queue*



**P10-15.** One possible solution is shown in Figure P10-15.

**Figure P10.15** Class diagram for the glossary store



**P10-17.** One possible solution is shown in Figure P10-17.

**Figure P10.17** Details of groceries store class



**P10-19.** The following shows the recommended boundary values.

First integer	Second integer	Third integer
1000	1000	1000
1000	1000	1999
1000	1999	1000
1000	1999	1999
1999	1000	1000
1999	1000	1999
1999	1999	1000
1999	1999	1999