Aug 2004

A5. (a) A Data Dictionary is important in System Design. Briefly describe what a Data Dictionary is. [2]

   (b) List two items that can be found in a Data Dictionary. [2]

   Answer:

   (a) Any 2 of the following, 1 mark each: [max 2]
   It is a central depository of all the elements that are used in a system. [1]
   It records the definition of each element used in the system so the meaning of each element can be found. [1]
   It records elements like data flows, data stores and processes used in the system. [1]

   (b) Any 2 of the following, 1 mark each: [max 2]
   Data names [1]
   Data description [1]
   Aliases of data [1]
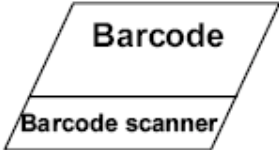   **Data values [1]**
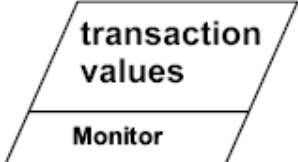   **Data type [1]**
   Data length [1]
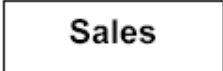   **Processes that use the data [1]**

A6. Give the symbol used in a System Runchart to represent the following concepts, ensuring that the symbols are labelled correctly. Complete System Runcharts are not required, and no marks will be awarded for those who give their answer in a complete System Runchart.

(a) A barcode scanner that captures a barcode as input. [3]
(b) A monitor that shows the transaction values as output. [3]
(c) A process called sales. [2]
(d) A Sales Transaction File that is stored on a disk, to be used to update the master file. [3]

Answer:

(a)

Barcode

Barcode scanner

[1 mark for symbol, 1 mark for 'Barcode', 1 mark for device name]   [max 3]

(b)

transaction values

Monitor

[1 mark for symbol, 1 mark for 'Barcode', 1 mark for device name]   [max 3]

(c)

Sales

[1 mark for symbol, 1 mark for 'Sales']   [max 2]

(d)

Sales Transaction File

Disk

[1 mark for symbol, 1 mark for 'Sales Transaction File', 1 mark for storage name][max 3]

April 2004

B2. (a) Read the following scenario and then draw a System Runchart that represents the scenario described below: [18]
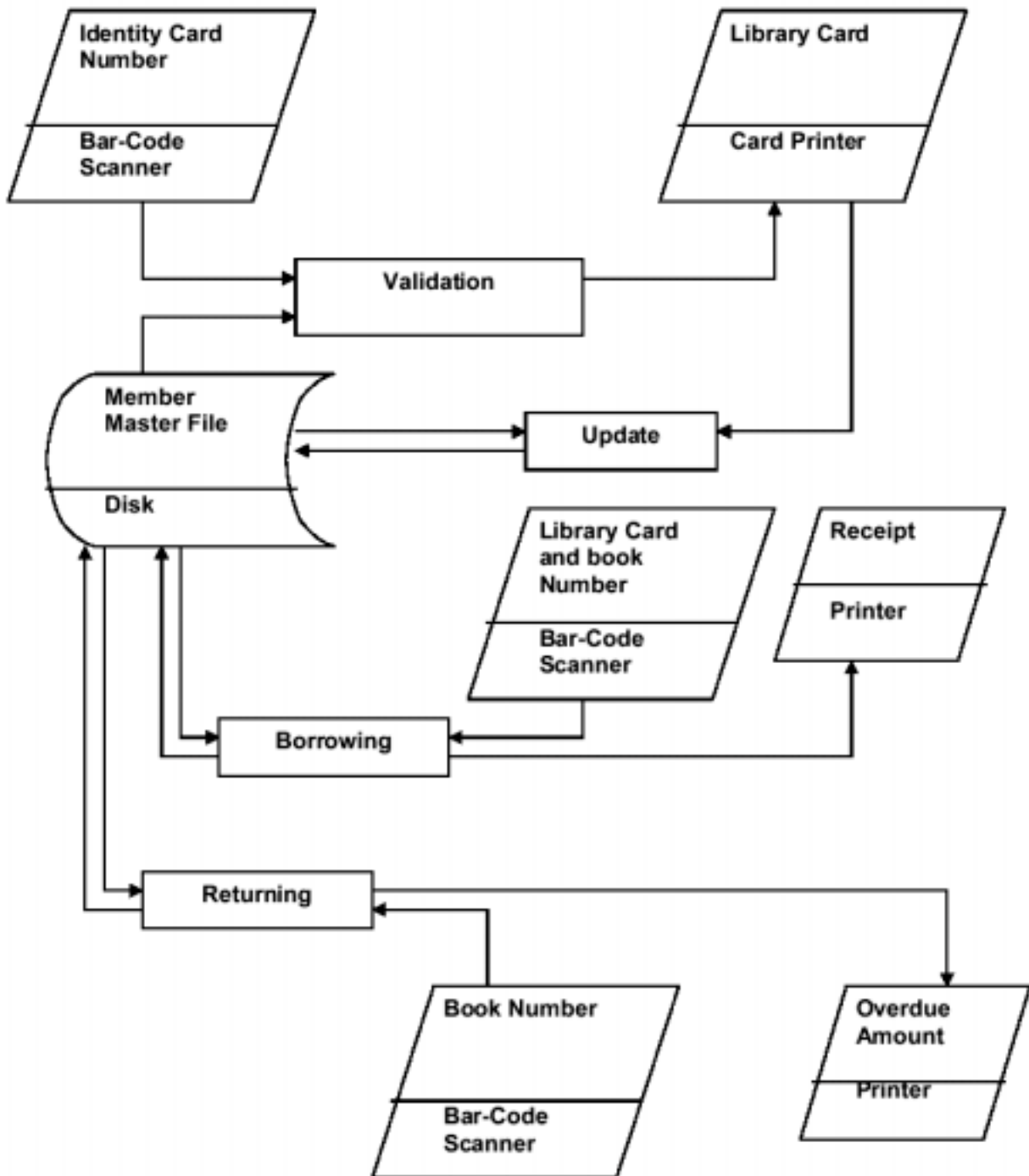
City Library is a library located in a city in country X. Anyone who likes to borrow books from this library needs to register as a member first. The registration is free.

First, you need to produce your identity card, the librarian will scan the bar code on your identity card and check whether you are a registered member. After this validation and if you are not a member, you will be given a library card with your detail printed on the card through a card printer. At the same time, the member master file will be updated by recapturing the new issued membership card detail through the barcode scanner.

During the borrowing process, you just need to produce your library card and the book you wish to borrow, the librarian will scan your library card and the bar-code at the back of the book and give you a receipt showing the books you borrowed and the date you need to return the books. All this information is stored in the member master file.

For the return of books, you need to give the books you wish to return to a librarian, and the bar-code of the book will be scanned into the computer to check for any overdue fines. If the overdue amount is not zero, an overdue amount will be printed out as a receipt and you have to pay immediately for this amount.

Answer:
B2(a)(i)

[1 mark for correct notation used with correct label]   [Max 11 marks]
[1 mark each for i/o and storage symbol with proper device name and
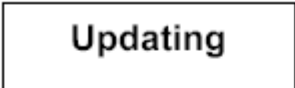media name]   [Max 7 marks]
[Accept appropriate alternative answer]

December 2003

A3. Give the symbol used in a System Runchart to represent the following concepts, ensuring that the symbols are labelled correctly. Complete System Runcharts are not required, and no marks will be awarded for those who give their answer in a complete System Runchart.

    (a) A process that is used for updating [2]
    (b) A summary report that is output using a printer [3]
    (c) A Stock Master File that is stored on a diskette [3]

Answer:

(a)

Updating

[1 mark for name, 1 mark for symbol. Max 2 marks]

(b)

Summary report
Printer

1 mark for name,
1 mark for device,
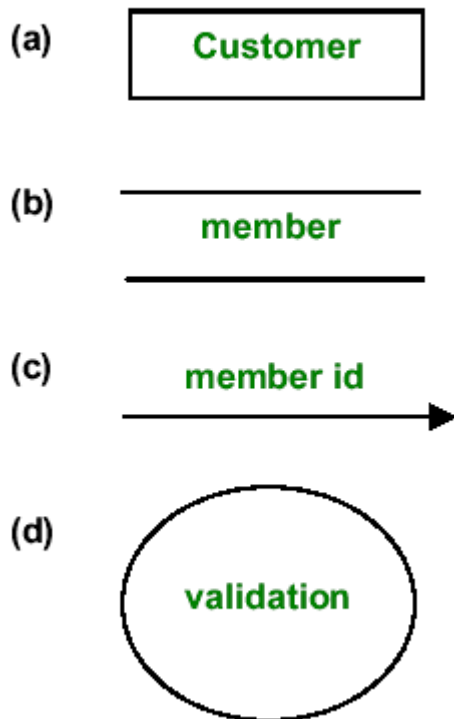1 mark for symbol.
Max 3 marks

(c)

Stock Master File
Diskette

1 mark for name,
1 mark for storage,
1 mark for symbol.
Max 3 marks

August 2003

A3. Give the symbol used in the Data Flow Diagram (DFD) notation (Yourdon version) to represent the following concepts, ensuring that the symbols are labelled correctly. Complete DFDs are not required, and no marks will be awarded for those who give their answer in a complete DFD. [8]

(a) Source/Destination (representing a customer)
(b) Storage (representing a member database)
(c) Flow (representing a member id)
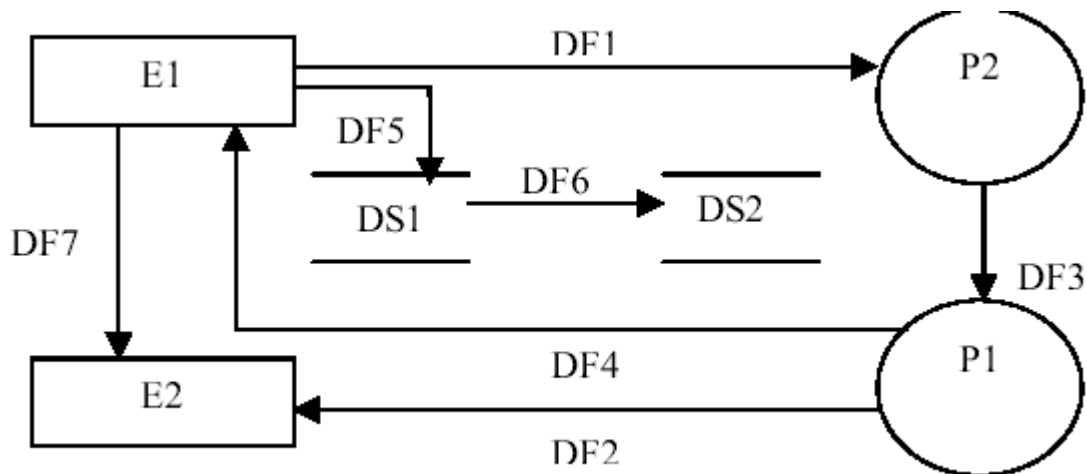(d) Process (representing a validation process)

Answer:

(a)
```
┌─────────────────┐
│    Customer     │
└─────────────────┘
```

(b)
```
───────────────────
    member
───────────────────
```

(c) member id
→

(d)
```
    ╭─────────╮
   │           │
  │  validation │
   │           │
    ╰─────────╯
```

[1 mark for correct notation and 1 mark for each correct label. Maximum 8 marks.]

April 2003

A3. Consider the DFD below. This diagram shows various entities, processes and data stores, and seven data flows between them (DF1 to DF7). For each data flow, state whether or not it is allowed by the notation. For instance, you might decide that a data flow between an entity and a process is not allowed, in which case your answer for DF1 should be 'not allowed'. [7]

DF1 allowed [1]
DF2 allowed [1]
DF3 allowed [1]
DF4 allowed [1]
DF5 not allowed [1]
DF6 not allowed [1]
DF7 not allowed [1]