5.1 *Examine the subscription form shown in Figure 5-53. Using the structure of this form, do the following:*

Figure 5-53 – Subscription Form

A *Create a model with one entity. Specify the identifier and attributes.*

B *Create a model with two entities, one for customer and a second for subscription. Specify identifiers, attributes, relationship name, type, and cardinalities.*

C *Under what conditions do you prefer the model in A to that in B?*

D *Under what conditions do you prefer the model in B to that in A?*

5.2 Examine the list of e-mail messages in Figure 5-55. Using the structure and example data items in this list, do the following:

🗐	From	Subject	Date ↓	Size
☐	WDA2259@sailmail.com	Big Wind	5/13/2011	3 KB
☐	WDA2259@sailmail.com	Update	5/12/2011	4 KB
☐	WDA2259@sailmail.com	Re: Saturday Am	5/11/2011	4 KB
☐	WDA2259@sailmail.com	Re: Weather window!	5/10/2011	4 KB
☐	WDA2259@sailmail.com	Re: Howdy!	5/10/2011	3 KB
☐	WDA2259@sailmail.com	Still here	5/9/2011	3 KB
☐	WDA2259@sailmail.com	Re: Turle Bay	5/8/2011	4 KB
☐	WDA2259@sailmail.com	Turle Bay	5/8/2011	4 KB
☐	WDA2259@sailmail.com	Re: Hi	5/6/2011	3 KB
☐	WDA2259@sailmail.com	Sunday, Santa Maria	5/5/2011	3 KB
☐	Ki6yu@aol.com	Cabo, Thurs. Noon	5/2/2011	2 KB
☐	WDA2259@sailmail.com	turbo	5/1/2011	3 KB
☐	WDA2259@sailmail.com	on our way	4/28/2011	3 KB
☐	Tom Cooper	RE: Hola!	4/26/2011	3 KB
☐	Tom Cooper	RE: Hola!	4/24/2011	2 KB
☐	Tom Cooper	RE: Hola!	4/23/2011	3 KB

Figure 5-55 – E-mail List

A   Create a single-entity data model for this list. Specify the identifier and all entities.

B   Modify your answer to A to include entities SENDER and SUBJECT. Specify the identifiers and attributes of entities and the type and cardinalities of the relationships. Explain which cardinalities can be inferred from Figure 5-55 and which need to be checked out with users.

C   The e-mail address in the From column in Figure 5-55 is in two different styles. One style has the true e-mail address; the second style (e.g., Tom Cooper) is the name of an entry in the user's e-mail directory. Create two categories of SENDER based on these two styles. Specify identifiers and attributes.

5.3   Examine the list of stock quotes in Figure 5-56. Using the structure and example data items in this list, do the following:

Symbol	Name	Last	Change	% Chg
$COMPX	Nasdaq Combined Composite Index	1,400.74 ▼	-4.87	-0.35%
$INDU	Dow Jones Industrial Average Index	9,255.10 ▼	-19.80	-0.21%
$INX	S&P 500 INDEX	971.14 ▼	-5.84	-0.60%
ALTR	Altera Corporation	13.45 ▼	-0.450	-3.24%
AMZN	Amazon.com, Inc.	15.62 ▲	+0.680	+4.55%
CSCO	Cisco Systems, Inc.	13.39 ▼	-0.280	-2.05%
DELL	Dell Computer Corporation	24.58 ▼	-0.170	-0.69%
ENGCX	Enterprise Growth C	14.60 ▼	-0.210	-1.42%
INTC	Intel Corporation	18.12 ▼	-0.380	-2.05%
JNJ	Johnson & Johnson	53.29 ▼	-0.290	-0.54%
KO	Coca-Cola Company	56.70 ▼	-0.580	-1.01%
MSFT	Microsoft Corporation	53.96 ▲	+1.040	+1.97%
NKE	NIKE, Inc.	57.34 ▲	+0.580	+1.02%

Figure 5-56 – Stock Quotations

A   Create a single-entity data model for this list. Specify the identifier and attributes.

B   Modify your answer to A to include the entities COMPANY and INDEX. Specify the identifier and attributes of the entities and the type and cardinalities of the relationships. Explain which cardinalities can be inferred from Figure 5-56 and which need to be checked out with users.

C   The list in Figure 5-56 is for a quote on a particular day at a particular time of day. Suppose that the list were changed to show closing daily prices for each of these stocks and that it includes a new column: QuoteDate. Modify your model in B to reflect this change.

D   Change your model in C to include the tracking of a portfolio. Assume the portfolio has an owner name, a phone number, an e-mail address, and a list of stocks held. The list includes the identity of the stock and the number of shares held. Specify all additional entities, their identifiers and attributes, and the type and cardinality of all relationships.

E   Change your answer to question D to keep track of portfolio stock purchases and sales in a portfolio. Specify entities, their identifiers and attributes, and the type and cardinality of all relationships.