**Learning Tips for Chapter 3**

The data/information subdomain is an important part of EA and this chapter opens with reasons why data is important.

Devote time and attention to section 3.1, especially the discussion of PCM in section 3.1.2. It introduces several digitization concepts that when understood, make it easier to understand digitization concepts for other types of data.

Video digitization is an extension of image digitization, so make sure you understand image digitization.

Lossless and lossy compression applies to all types of digitized data.

When barcodes and QR codes are scanned, their scanned data is converted to binary code.

Sensors that measure analog data use PCM-like processes to digitize their samples.

One of the main takeaways from section 3.2 is that businesses are amassing vast amounts of structured and unstructured data. Cloud storge is inexpensive and scalable and it facilitates capturing and storing Big Data. Traditionally, it has been easier to analyze structured data but technologies such as Hadoop clusters and SAP HANA have made it easier to handle massive amounts of structured and unstructured data.

When considering the discussion in section 3.3, it is important to keep in mind that that databases are logical data collections. So are data warehouses and data lakes.

From a networking perspective section 3.3.2 is the most important part of section 3.3.

In section 3.4, gaining a general understanding of storage area networks (SANs) and data centers is important. Considering the storage implications of private, public, hybrid, and virtual private clouds is also important.

In section 3.5, getting a general sense of what data governance encompasses is valuable.

In section 3.6, Table 3-10 identifies some of the most common types of data that are attack targets. This can be handy to refer to in other chapters in the book, especially Chapter 12. Table 3-11 provides a valuable summary overview of several data security controls.

Do not ignore the Key Concepts in Chapter 3 Presentation.

You are also encouraged to leverage the supplement videos and readings for this chapter.

Use the Chapter 3 Problems and Exercises tips to assist with any problems and exercises that you may be assigned.

The appendices for Chapter 3 provide additional information on numerous topics.

**Especially Important Sections**

All the subsections of Section 3.1.2.

Section 3.2.4

Section 3.3, especially section 3.3.3

Sections 3.4.2, 3.4.3, and 3.4.4

Section 3.6 and both of its subsections

**Especially Important Figures and Tables**

*Note:* It is important to read/study the discussion related to each figure and table that is identified.

Figure 3-1

Figures 3-3 and 3-4

Table 3-2

Figure 3-5

Table 3-3

Figure 3-7

Table 3-4

Table 3-5

Table 3-6

Table 3-7

Table 3-8

Figure 3-12

Figure 3-13

Figure 3-14

Figures 3-16 and 3-17

Figure 3-19

Table 3-9

Table 3-10

Table 3-11

**Especially Important Key Terms**

Alphanumeric

Blockchain

Centralized database

Data center

Data compression

Data governance

Data lake

Data warehouse

Digitization

Distributed database

Horizontal scaling

In-memory database

Partitioned database

Quantization

Replicated database

Storage area network (SAN)

Vertical scaling

**Especially Important Review Questions**

Questions 3-16, 18-30

**Especially Important Problems and Exercises**

Exercise 3-8 is the least important. All the others illustrate important digitization concepts.