Complete the following and submit the code & PDF files for the below exercises:

a. Discovering Statistics Using R– page 30 – Complete Tasks 4 & 5

b. Task 4 – Say I own 857 CDs…

c. Task 5 – Sketch the shape of a normal distribution, a positively skewed distribution, and a negatively skewed distribution

**Task 4:** Say I own 857 CDs. My friend has written a computer program that uses a webcam to scan the shelves in my house where I keep my CDs and measure how many I have. His program says that I have 863 CDs. Define measurement error. What is the measurement error in my friend’s CD-counting device?

**Answer:**

It looks like the computer program has systematic error, also known as biased error. It counts incorrectly the quantity of CDs on the shelves. How do we know it? In a correct situation both actual and output quantity should be equal. In this case, the actual and program output quantities differ. The actual number is 857 and the output is 863 CDs. The measurement error in the program is 6 CDs. We can calculate it as follows;

Measurement error = expected output – actual quantity

Or

Measurement error = 863 – 857 = 6 CDs.

Thus, we can state that this program outputs inflated result by 6 CDs.

**Task 5:** Sketch the shape of a normal distribution, a positively skewed distribution, and a negatively skewed distribution.

Y

X

Figure 1.1: **Normal distribution**

Y

X

Figure 1.2: **Positively skewed distribution**

Y

X

Figure 1.3: **Negatively skewed distribution**