Chapter 5 CRT

1. A loop structure continuously repeats a set of statements again and again until a specific condition is reached.
2. A do-while loop is an exit-controlled loop meaning it doesn't evaluate the condition until after the first iteration. On the other hand a while loop is an entry-controlled loop so it evaluates the condition before the first iteration.
3. Prompter is a review program, which is an example of a input validation loop
4.
    a. An infinite loop is one that continues on indefinitely and does not stop.
    b. Syntax and logic errors can commonly lead to an infinite loop.
    c. Overflow happens when there arent enough bits to store a number. This can generate a run-time error or cause the condition to become false. An overflow changes the sign of the number stored.
5. The program will run 61 times
6. An initial value of x = 100 causes in finite loop to occur.
7. Counters are used to keep track of loop iterations and are used within applications to keep track of the number of guesses or the number of values entered. Accumulators are used to sum values and to collect values over a period of time.
8. Int sum =0
   for(int i=3;i<=10;i++)
   {
   sum +=i
   }
9. 1. We need to decide how many times we are iterating the loop. Therefore we need to have a discrete range of values we are iterating over. This ensures that we prevent ourselves from creating an infinite loop when we don't have well defined boundary conditions.
   2. We also need to determine what type of loop is appropriate for our program. For loops are useful when needing to do iterated (repeated) calculations a defined number of times. On the other hand, while loops are repeated until a condition is met. Determining the aim of the program and what the loop is intended is essential to creating efficient and well-written code.