CRT chapter 5

1. What is the purpose of a loop structure?

The purpose of a loop structure is to execute the same command multiple times, this is usually done with a conditional statement. Using a loop structure saves time and makes work more efficient. Instead of inputting a code multiple times you can use a loop structure. There are loops that contain while, for, and do while loops.

2. Explain the difference between a while statement and a do-while statement.

The main difference between a while statement and do-while statement and is that the while statement will evaluate the condition before iterations are performed. As an entry-controlled loop meanwhile the do-while loop does not evaluate the condition until after the first iteration is performed. This is a exit controlled loop.

3. An input validation loop is a loop that checks user input for valid data. If valid data is not entered, the loop iterates until valid data is entered. In which review of this chapter did you write code for an input validation loop?

The 'Prompter' review is an example of a input validation loop.

4. a) What is an infinite loop?

A infinite loop is a loop that will proceed forever and forever and will not stop.

b) List two types of errors that can lead to an infinite loop.

Two types of errors that may lead to a infinite loop is a syntax error and a logical error.

c) What is meant by overflow?

A overflow found in java is when there isn't enough bits to store a number which will generate a runtime error this only occurs when the users inputted number exceeds the maximum capacity that the data can store.

5. How many times will the d o - w h i le loop execute? int x = 0; do { x = x + 2; while (x < 120);
This do- while loop will execute 61 times

6. What initial value of x would make the loop infinite? do { x = x + 3; while (x < 120);

The initial value of x must be 0 to have an infinite loop

7. Compare and contrast counters and accumulators. List two uses for each.

Counters are used for keeping track of specific loop iterations, which are used in applications that keep track of the number of values a user inputs. Whereas accumulators are used often for summing up values and collecting values over a duration of time.

8. Write a for statement that sums the integers from 3 to 10, inclusive.

```
Int sum = 0
for(int i =3; i <=10,i++);
{
sum+=i
}
```

9. List two factors that should be considered when determining which loop structure to choose.

1. One factor that should be considered when choosing a loop structure is the number of times the loop is going to iterate, this is very important. If we have a specific number of iterations or accept a variable to determine how many iterations we can use a for loop. If the number of iterations depends on the specific condition that is evaluated in the loop body, until that condition is met then I will use a do-while loop or a while loop.
2.