1. What is the purpose of a loop structure?

The purpose of a loop structure is to constantly execute a code consistently until told by the programer to stop

1. the difference between **while** statement and a **do-while** statement

While loop checks the condition of the code before execution while as Do-While statement make sure that the code is executed

1. For the input validation loop was on the prime number assignment
2. a) Infinite Loop; is a loop that repeats a certain task many times, eighth the case is always true or something is wrong with the loop counter.

b) Errors Leading to Infinite Loops:

Late/wrong updates to the loop counter. The boolean must be true giving the loop the condition to keep repeating

c) Overflow: Happens when a variable passes the limit capacity , then the value that was in that variable goes to a smaller value. Leads to behavior like infinite loops.

1. This do-while loop will execute 60 times
2. If the X variable is changed to a value equal to 120 or greater
3. Counters: Variables keeps track of the number of loops

Uses: Repeated over an arrayTracks the errors of successes

Accumulators: Variable uses to gather or add the values up Uses: gathering the array and sum it up Total cost/ score tracked

8.

package Skillbuilders;

import java.util.Scanner;

public class NumberSum {

public static void main(String[] args) {

// **TODO** Auto-generated method stub

Scanner scanner = new Scanner(System.***in***);

System.***out***.print("Enter a number : ");

int Variable = scanner.nextInt();

System.***out***.println("Numbers from 1 to " + Variable + ":");

for (int Y = 1; Y <= Variable; Y++)

{

System.***out***.println(Y);

}

}

}

9. Readability:Choosing the loop structure that benefits your code with code easy to understand and maintain.

Efficiency: The number of loops and the quality of the loop when the loop structure is selected.