Theory Assignment Loops In JS

Question 1: Types of Loops in JavaScript

1. **For Loop**
   A for loop is used when you know beforehand how many times you want to execute a statement or block of statements.

   ➢ **Syntax:**

   ```
   for (initialization; condition; increment/decrement) {

       // code to be executed

   }
   ```

Example:

```
for (let i = 0; i < 5; i++) {

    console.log(i);

 }
```

 // Output: 0, 1, 2, 3, 4

2. **While Loop**
   A while loop runs as long as a specified condition evaluates to true.
   ➢ **Syntax:**

   ```
   while (condition) {

       // code to be executed

   }
   ```

Example:

```
let i = 0;

while (i < 5) {

 console.log(i);

 i++;

}
```

// Output: 0, 1, 2, 3, 4

1. **Do-While Loop**
   A do-while loop is similar to the while loop, but it guarantees that the code inside the loop will run at least once, even if the condition is initially false.

   ➢ **Syntax:**

   ```
   do {
   ```

```
        // code to be executed

    } while (condition);
```

Example:

```
    let i = 0;

    do {

        console.log(i);

     i++;

    } while (i < 5);
```

// Output: 0, 1, 2, 3, 4

Question 2: Difference Between a While Loop and a Do-While Loop

- **While Loop**:
    - o The condition is checked **before** entering the loop.
    - o If the condition is false at the start, the code inside the loop will not execute at all.

Example:

```
    let i = 5;

    while (i < 5) {

        console.log(i); // This will not execute

        i++;

    }
```

- **Do-While Loop**:
    - o The code inside the loop is executed **at least once**, even if the condition is false, because the condition is checked **after** the loop runs.

Example:

```
     let i = 5;

    do {

      console.log(i); // This will execute once

       i++;

    } while (i < 5);
```

- ➢ In short, the do-while loop guarantees at least one execution, whereas the while loop might not execute at all if the condition is initially false.