The purpose of a loop is to execute a block of code as long as a specified condition is true. This is handy when one wishes to run the same code over and over again, each time with a different variable value. This is usually the case when working with arrays. There are three different types of loops to consider: while loop, do/while loop, and for loop. An important aspect of loops is that if the variable value is never increased to the point that the condition is shown to be false, the loop will become infinite and never end, potentially causing the browser to crash. Also, if something is being added into the collection object through loop, it is possible to run out of memory, causing out of memory exception to be thrown.

The while loop loops through a block of code as long as a specified condition is true. It can run over and over again while that condition remains true and the variable remains within certain parameters. The while loop is also based on a given Boolean condition. It is best to consider it as a repeating if statement. It begins with the checking of the condition and then if it is proven to be true, it continues to loop until it is proven false for each updated variable value. Once it is deemed false, the loop will terminate, marking the end of its life cycle.

The do/while loops is a variation of the while loop where it will execute the code block once before checking if the condition is true, then repeating the loop so long as the condition is still true. Even if the condition is false, the loop will always be executed at least once because the code block is executed before the condition is even tested. This is an example of an exit control loop. It begins with the execution of the statement(s) without checking the condition this first time. Then, the variable value is updated and the condition is checked to be true or false. If it is true, the next iteration of the loop begins. Once the condition is proven false, the loop will terminate, also marking the end of its life cycle.

The for loop goes through a block of code a specific number of times. It is a concise way of writing the loop structure. The statements used in the for loop consumes the initialization, condition, and increment/decrement in one line which provides a shorter, easy to debug structure of looping. Once more, the testing condition must return a Boolean value and is checked prior to the execution of the loop statements. Once the condition is evaluated to be true, the statements in the loop body are executed with the variable being updated for the next iteration. When the condition becomes false, this loop also terminates, marking the end of its life cycle. An enhanced for loop provides a simpler way to iterate through the elements of a collection or array. It’s inflexible and should only be used when there is a need to iterate through the elements in a sequential manner without knowing the index of currently processed element.

<https://www.w3schools.com/js/js_loop_while.asp>

<https://www.geeksforgeeks.org/loops-in-java/>