Linear Search

Linear search algorithm starts at index 0 in an array and searches for an item in the array. It is an extremely popular algorithm in the programming world and it has some adaptations.

Task 1

Click the **code file 1** button and copy/paste the code into your ide.

Run the code.

Can you see how it works? Test it by using the following test table:

Input data	**Expected Output**	**Actual Output**
Choose a value listed		
-100		

Task 2

Click the **code file 2** button and copy/paste the code into your ide.

Run the code.

Complete the test table:

Input data	**Expected Output**	**Actual Output**
Choose a value listed		
-100		

This time there will be **an error** if the search item is not in the array.

Write down (or copy paste) the name of the error here:

The loop control variable, **i**, is incrementing while it hasn't found the search item.
If the search item is not in the array, **i** keeps incrementing anyway! So, eventually i will no longer be an index in the array, numArray and numArray[i] will not be valid anymore.

Solution
To stop this from happening, add some addition logic to the while loop:

```
while(i<numArray.length && numArray[i] != searchItem)
```

Does this fix the problem? Complete the test table:

Input data	Expected Output	Actual Output
Choose a value listed		
-100		

Task 3

Discuss what you have found out in these activities with your partner(s). What questions do you have about the code you have been working with?

Task 4

Explain why the **Big O notation** for Linear Search is **O(n)**