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Skill 33.1 Exercise 1

If an array of integers contain the following elements,

<div align="center">

89   42   -3   13   109   70   2

</div>

Write the function search, that can be implemented as illustrated below,

```
    var arr[] = {2, 3, 4, 10, 40};
    var x = 10;
    var result = search(arr, x);
    if(result == -1)
        console.log("Element is not present in array");
    else
        console("Element is present at index " + result);
}


//complete the search function below.
```

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Skill 33.2 Exercise 1
For which of the following arrays could a binary search be applied? Explain.
{1, 10, 22, 32, 100, 200, 302} {x, y, z, a, b, c, d, f} {and, ant, bat, cat, dog, rat} {300.12, 200, 100, 50, 2, 0, -80}

Skill 33.2 Exercise 2
Consider the following binarySearch function. The function correctly performs a binary search.

```
/** Precondition: data is sorted in increasing order. */

function binarySearch(data, target) {

var start = 0;
var end = data.length - 1;

while (start <= end)    {
    var mid = Math.floor((start + end) / 2);      /* Calculate midpoint */

    if (target < data[mid])      {
        end = mid - 1;
    }     else if (target > data[mid])      {
        start = mid + 1;
    }      else      {
        return mid;
    }
}
return -1;
}
```

Consider the following code segment.
 	
var values = [1, 2, 3, 4, 5, 8, 8, 8];
var target = 8;
 	
 What value is returned by the call binarySearch(values, target) ?
	Suppose the binarySearch method is called with an array containing 2,000 elements sorted in increasing order.
	
	What is the maximum number of times that the statement indicated by /* Calculate midpoint */ could execute?

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