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package com.simply;

import java.util.Arrays;
import java.util.Scanner;

public class Exponential {

    public static int exponentialSearch(int[] arr, int target) {

        if (arr[0] == target) {

            return 0;

        }

        int n = arr.length;

        int bound = 1;

        while (bound < n && arr[bound] <= target) {

            bound *= 2;

        }

        int left = bound / 2;

        int right = Math.min(bound, n - 1);

        return binarySearch(arr, target, left, right);

    }

    public static int binarySearch(int[] arr, int target, int left, int right) {

        while (left <= right) {

            int mid = left + (right - left) / 2;

            if (arr[mid] == target) {

                return mid;

            } else if (arr[mid] < target) {

                left = mid + 1;

            }

        }

    }

}
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        } else {
            right = mid - 1;
        }
    }

    return -1;
}

public static void main(String[] args) {
    int[] array = {5, 65, 89, 1, 3, 10, 22, 34, 43 };

    System.out.println("Enter the number to search:");
    Scanner scanner = new Scanner(System.in);
    int target = scanner.nextInt();
    scanner.close();

    int index = exponentialSearch(array, target);

    if (index != -1) {
        System.out.println("Element found at index " + index);
    } else {
        System.out.println("Element not found");
    }
}

```

