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HATFD1025

Find the Second Largest Element in an Array

Write a program to find the second-largest element in an array of integers without using any sorting algorithms or built-in array functions.

Instructions: Traverse the array manually to find both the largest and second-largest elements.

PROGRAM:

```
#!/bin/bash
function find_second_largest() {
   local array=("$@")
   local largest=${array[0]}
   local second_largest=${array[1]}
   local temp

   if [[ ${array[1]} -gt ${array[0]} ]]; then
      temp=$largest
      largest=$second_largest
      second_largest=$temp
   fi

   for i in "${array[@]}"; do
      if [[ $i -gt $largest ]]; then
         second_largest=$largest
         largest=$i
      elif [[ $i -gt $second_largest && $i -ne $largest ]]; then
         second_largest=$i
      fi
   done

   echo "$second_largest"
}
read -p "Enter numbers separated by spaces: " numbers
array=($numbers)
second_largest=$(find_second_largest "${array[@]}")

echo "The second largest element is: $second_largest"
```

OUTPUT:

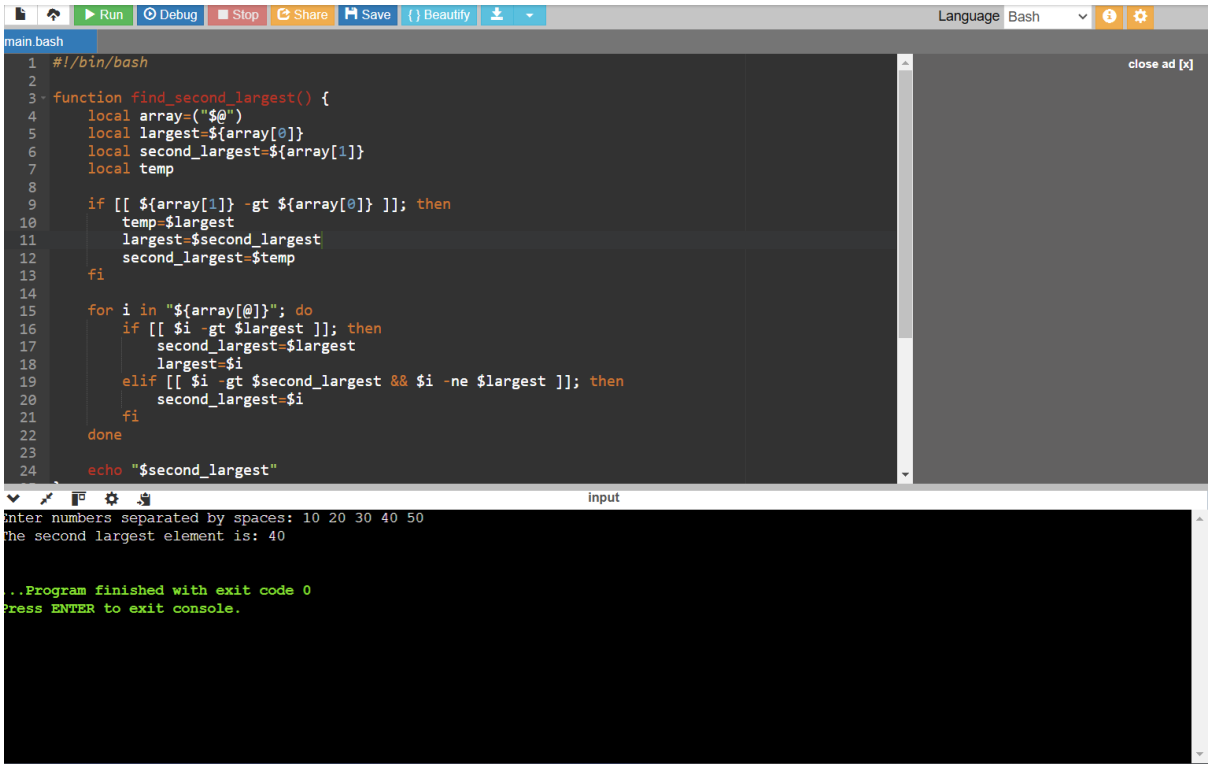
Input 1:

Bash

array=(10 20 30 40 50)

Output 1:

The second largest element is: 40



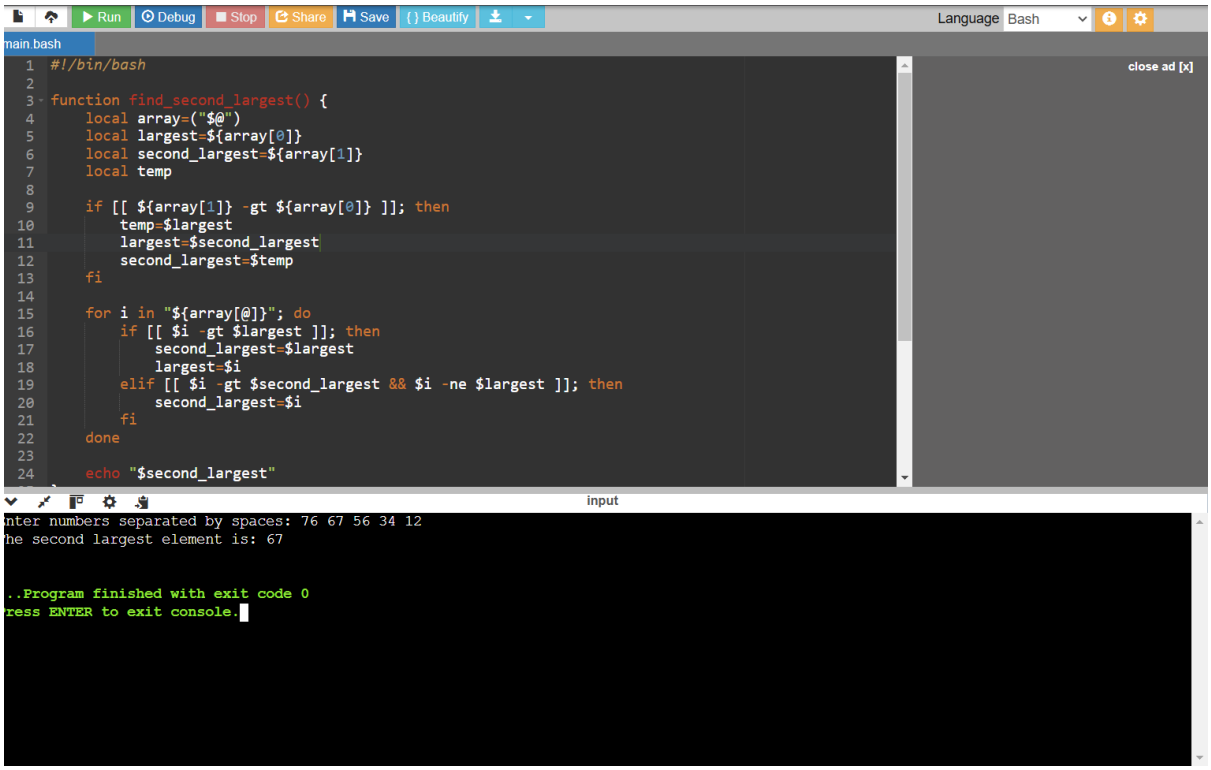
Input 2:

Bash

array=(76 67 56 34 12)

Output 2:

The second largest element is: 76



Input 3:

Bash

array=(5 5 5 5 5)

Output 3:

The second largest element is: 5