

CSE356-Formal Methods

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Section: A

Assignment: 01

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Problem Statement:

Write the pre- and post-conditions for the following design specifications.

a) The procedure product has three parameters arr1, arr2, and arr3. All the parameters are

integer arrays with a range 1 ... 50. The function of product is to multiply the corresponding elements of arr1 and arr2, and place their product in the corresponding

element of arr3. On entry to the product all the elements of arr3 will be zero.

b) A procedure search has three parameters: vals, searchfor, and found. vals is an integer

array with a range of 1....200. While searchfor is an integer parameter. If searchfor occurs

in vals then found is set to one; otherwise, it is set to two.

Solution:

a) Product(arr1, arr2, arr3):

Preconditions:

- The input parameters arr1, arr2 and arr3 are all valid integer arrays with a range of 1-50.
- All the elements of arr3 are initially set to zero.

Post-conditions:

- The corresponding elements of arr1 and arr2 are multiplied and product is stored in the corresponding element of arr3.
- The contents of arr1, arr2, arr3 are multiplied and the product is stored in the corresponding element of arr3.
- The output arr3 contains the product of the corresponding elements of arr1 and arr2.

b) Search(vals, searchfor, found)**Pre-conditions:**

- The input parameter vals is a valid array of integers with a range of 1-200.
- The input parameter searchfor is a valid integer.
- The input parameter 'found' is a valid Boolean variable which contains false or zero as default value.

Post-conditions:

- If searchfor occurs in vals, the output parameter found is set to true or one.
- If searchfor does not occur in vals, the output parameter found is still set to false.
- The content of input array vals are not modified outside the intended scope of the procedure.

The End