Lab 8 Report ARM

Bubble sort is a simple sorting algorithm that repeatedly steps through the list of elements to be sorted, compares each adjacent pair of elements, and swaps them if they are in the wrong order. The algorithm gets its name from the way smaller elements "bubble" to the top of the list as it is being sorted. This is implemented using the following steps:

1. Start at the beginning of the list of elements to be sorted
2. Compare the first two elements. If the first element is greater than the second element, swap them
3. Move to the next pair of elements, and compare them in the same way. Continue this process until the end of the list is reached
4. At this point, the largest element will be at the end of the list
5. Repeat steps 1-4 for the remaining unsorted portion of the list (i.e., everything except the last element)
6. Continue this process until the entire list is sorted

Bubble sort has a time complexity of

$$O(n^2)$$

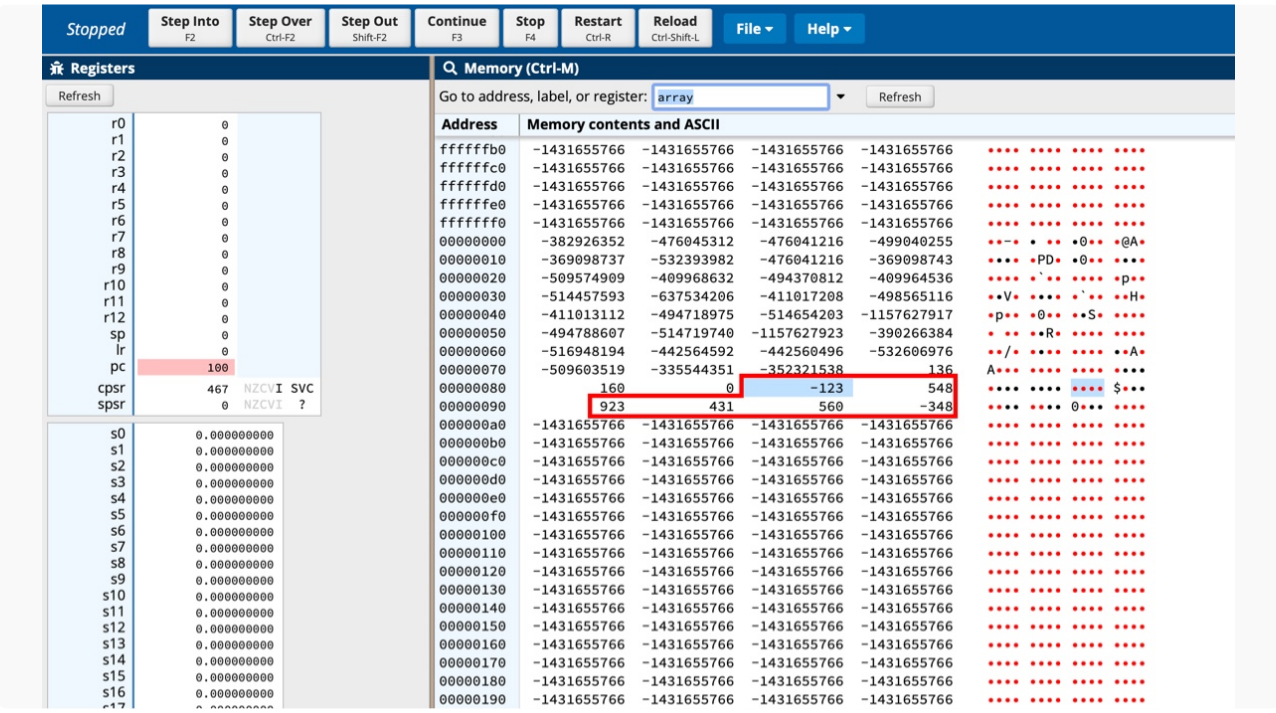
ARM implementation

The assembly program used the following data section:

```
.data
    array:          .word -123, 548, 923, 431, 560, -348
    endarr:
```

Before

We observe the `array` values in their initial order



After

We observe the `array` values in their sorted order