Bug Report – Q2 Selection Sort

# Bug observation 1:

Program doesn’t sort the elements properly.

* Input: **int size = 6,** **char \*\*words = {"milan","hello"," programming ","apple"," zebra","banana"}**
* Expected (after 1 swapping iteration): **words = {"apple","hello"," programming ","milan"," zebra","banana"}**
* Actual: **words = {"banana","hello"," programming ","apple"," zebra","milan"}**

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## GDB Analysis:

* Breakpoint placed at line 136 in Question2.c, right as the nested for loop starts its iterations
* Stepping through each loop and printing out the values to see what strings are getting compared each time
* Analysis shows that “milan” (index 1) got swapped with “banana” (index 6) instead of “apple” (index 4)

## Possible root cause:

Line 137 incorrectly compared the string with index i instead of index minIndex with j, which aren’t equal to one another in each iteration of the nested for loop.

# Bug Fix Validation 1:

Line 137 corrected to **if(my\_strcmpOrder(words[minIndex], words[j] == 1).** Actual outcome matched.

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# Bug Observation 2:

Program gives a segmentation error due to it trying to access elements in the array that are out of bounds.

* Input: **int size = 6,** **char \*\*words = {"milan","hello"," programming ","milan"," zebra","banana"}**
* Expected: **int j = 5, words = {"apple","banana","hello","milan","programming","zebra"}**
* Actual: **j = 6**

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## GDB Analysis:

* Breakpoint placed at line 140 in Question2.c, right after each iteration of the nested for loop
* GDB indicates that j increased up to and accessed index 6 in the word list when such an element does not exist

## Possible root cause:

The looping conditions are not set correctly, j is going to size + 1

# Bug Fix Validation 2:

Corrected lines 131 to **for(i = 0; i < size - 1; i++)**

Actual output matched.

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