

A1 PART2 2020CS10336

Chinmay Mittal

January 2022

How to run the program

Load the four files main.s, mergeFunc.s, io.s, main.s. (main.s should be at the top, since execution starts from here).



```
main.o  math.o  io.o  mergeFunc.o
```

main.s reads the size of list1, strings for list 1, size of list 2 strings for list 2, the mode of comparison and whether or not to remove duplicates.

After entering a number or a string kindly press RETURN. Do not press characters like backspace during giving input. My program does not handle unexpected inputs. Also ensure that the lists provided are sorted as per the mode of comparison provided.

To remove duplicates enter 1 otherwise 0.

Similarly for case sensitive comparison enter one, otherwise enter 0.

The program prints the size of the merged list and the merged list. These are calculated by the merge_main function in mergeFunc.s.

Also there is a limit to how many strings the program can input if required it can be increased from the data section in main.s

Explaining my code

the mergeFunc.s function expects an address to store the pointers of strings in the merged list in r0. The pointer to the first list in r1 , the pointer to the second list in r2 , the size of the first list in r3 , the size of the second list in r4 , the mode of comparison in r5 and the whether or not to remove duplicates in r6.

It returns the size of the merged list in r7 , the address of the merged list is known to the caller already since it is the caller which is expected to pass this address.

At various parts of the program, local variables are stored on the stack (towards decreasing address), and are later restored. (blocks are marked out to indicate this).

To handle duplicate we check if the current string to be appended at the end of the merged list, is equal to the string at the end if it is then we do not insert it

to the merged list.

Examples

```
Please enter the length of the first list, followed by the strings (sorted), one in each line
5
a
a
a
a
a
Please enter the length of the second list followed by the strings(sorted), one in each line
0
Enter the mode of comparison (0 (case insensitive) / 1 (case sensitive)): 0
Enter the 1(remove duplicates) / 0( don't remove duplicates): 0
The length of the merged list: 5
The merged list: a a a a a
```

```
Please enter the length of the first list, followed by the strings (sorted), one in each line
5
a
A
a
A
a
Please enter the length of the second list followed by the strings(sorted), one in each line
0
Enter the mode of comparison (0 (case insensitive) / 1 (case sensitive)): 0
Enter the 1(remove duplicates) / 0( don't remove duplicates): 1
The length of the merged list: 1
The merged list: a
```

```
OutputView WatchView
Console stdin/stdout/stderr
Please enter the length of the first list, followed by the strings (sorted), one in each line
6
HHHH
Zdfkjkf
Zdfkjkf
abcdfa
zafda
zafda
Please enter the length of the second list followed by the strings(sorted), one in each line
5
HHHh
Zdfkjkf
avc
zafda
zafdaa
Enter the mode of comparison (0 (case insensitive) / 1 (case sensitive)): 1
Enter the 1(remove duplicates) / 0( don't remove duplicates): 1
The length of the merged list: 7
The merged list: HHHH HHHh Zdfkjkf abcdfa avc zafda zafdaa
```

Acknowledgments

I have used integer input / output functionality code from Ramanuj Goel. The code in math.s and io.s is not mine. These files have to be loaded for the program to run correctly

The functionality to input lists and strings and to print these is my own and is appended at the end of main.s