

C Programming: Two-dimensional Arrays

1. Specification

Write a C program to input a set of strings and output the length of each input string.

2. Implementation

- The user will enter the number of strings to input.
- Your first task is to allocate a 2D array to store the strings to be input. Return the pointer to the 2D array to the caller (`main()` function).
- Your second task is to compute the string lengths by counting the characters one by one. Then display on the standard output each string, followed by a tab, then the length of the string.
- Assume that all user inputs are valid. No error checking is required on inputs.
- Do not modify the function definitions.
- You may define local variables inside the functions.
- You may define and implement your own functions if needed.
- Do not use any C library functions except `printf()`, `exit()`, `malloc()`, `calloc()` and `free()`.
- You may use either array indexing or pointers to manipulate array elements. **However, you will get a 50% point reduction if you use array indexing.**
- If you use pointers only, make sure that your submitted file does not contain any square brackets, even in the comments. The file submitted must be named **`slenPtr.c`**.
- If you use array indexing, the file submitted must be named **`slenArray.c`**.
- **Submit only one version.** If you submit both, only `slenPtr.c` will be graded and `slenArray.c` will be ignored.
- You are also given a file named `slenMain.c` to test your code. Do not submit file `slenMain.c`.
- To compile your program, use one of the following commands:

```
cc slenArray.c slenMain.c
```

```
cc slenPtr.c slenMain.c
```

3. Sample Inputs/Outputs

```
indigo 381 % a.out
6
january
february
mars
april
may
june
january 7
february      8
mars         4
april        5
may          3
june         4
indigo 382 % a.out
1
december
december      8
```

Hint: Write the code using array indexing first because that would be easier. Then convert all the array indices to pointers.

Note: Ignore the warning message “assignment makes pointer from integer without a cast”.