Assignment-0
CS342: Operating System Lab

General Instruction

- Do not use global variable or inbuilt functions like pow(), abs() etc., unless explicitly instructed.

For this assignment, we will write a C program to sort an array of strings. Assume the length of any string involved in this assignment is, at most, 20.

Part-1: Write a function to compare two strings
In the first part, write a function which takes two strings, x and y, as input. It outputs 1 if x appears lexicographically before y and -1 if y appears lexicographically before x. If $x = y$, then it outputs 0. The prototype of the function should be as follows.

int strcomp(char* x, char* y, int lenx, int leny);

lenx and leny denote the length of string x and y, respectively.

Part-2: Sort an array of strings
First, take the number n of strings as input from the user. You can assume that n is at most 50. So you define a two-dimensional char array a of size 50 × 20 to store the strings. Now you take n strings as input from the user and store them in $a[0], a[1], ..., a[n-1]$ respectively. The entries $a[n], ..., a[49]$ should be NULL. Next, you sort these n strings in lexicographic order. *However, since copying/swapping strings can be inefficient, we will not copy/swap strings directly.* Instead, we will work with pointers. For that purpose, you define a one-dimensional array b of pointers to char of size 50. You now write a sorting function which takes the two-dimensional array a and the one-dimensional array b as input and stores in b the sorted order of the strings in a. For example, if $a[10]$ is the string which should come first among the n strings according to the lexicographic order, then $b[0]$ should store the string at $a[10]$. Similarly $b[1], ..., b[n-1]$ are defined. The entries $b[n], ..., b[49]$ will be NULL. The prototype of your sorting function should be the following. You should use the insertion sorting algorithm to sort these strings.

void strsort(char a[][20], char **b, int n);

Sample Output

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Write n : 5
Write a[0] : rahul
Write a[1] : krish
Write a[2] : abdullah
Write a[3] : john
Write a[4] : tina
Sorted strings are:
abdullah
john
krish
rahul
tina
```