

Homework 3

Due: 3 Apr 2009

Problem 3.1

The Perfect Pizza Association of America (PPAA) is planning to hold their annual vote for the most perfect pizza topping, but are not sure how much space to allow on the ballot for the different choices. Therefore, they are holding a preliminary nomination round during which nominations will be collected and the possible toppings identified. Their initial list of nominations may include duplicates, which they must remove in order to create the ballot.

Write a C program to assist the PPAA with this task. Your program should take an integer followed by that number of topping names. Each topping name will be a single word containing at most 20 letters. After reading the topping names, your program will print the number of distinct toppings mentioned along with the topping names themselves, in sorted order, formatted as shown below. (Use the function `strcmp` from `string.h` to compare names.) You may (and are encouraged to) use an $O(n^2)$ sort.

Sample input:

```
8
Mushrooms
Pepperoni
BlackOlives
Pepperoni
SuperSpicyPepperJack
Onions
Mushrooms
BlackOlives
```

Sample output:

```
5 unique toppings:
  BlackOlives
  Mushrooms
  Onions
  Pepperoni
  SuperSpicyPepperJack
```

Problem 3.2

Write a function `strcmp_ci` that compares two strings in a case-insensitive manner. Other than the function name, it should follow the specification for `strcasecmp`. (It may not *use* `strcasecmp`, or `strncasecmp`; you should be performing the looping and character comparisons yourself.)

Once you have this function working on its own, you should drop it into your solution for the previous problem, so that the lists will be uniqued and sorted case-insensitively. Thus:

Sample input:

```
4
Mushrooms
Onions
mushrooms
blackOlives
```

Sample output:

```
3 unique toppings:
  blackOlives
  Mushrooms
  Onions
```

If the same item appears with multiple cases (as with `mushrooms` above), either version can appear in the output list (but this will not affect the sorting, of course).