Practice Arena

Practice problems aimed to improve your coding skills.

- PRACTICE-02_SCAN-PRINT
- PRACTICE-03_TYPES
- LAB-PRAC-02_SCAN-PRINT
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- LABEXAM-PRAC-01_MIDSEM
- PRACTICE-09_PTR-MAT
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- PRACTICE-10_MAT-FUN
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- LAB-PRAC-11_FUN-PTR
  - Name the Clones
  - The Race of the Clones
  - Partial Palindrome
  - Growth Curve
  - The Family Tree of Mr C
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  - Plenty of Palindromes
  - Count and Say Sequence
  - Orbiting Indices
  - Zig-zag Numbers
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- LAB-PRAC-12_FUN-STRUC
- LABEXAM-PRAC-02_ENDSEM
- LAB-PRAC-13_STRUC-NUM
- LAB-PRAC-14_SORT-MISC

Parent Palindrome

LAB-PRAC-11_FUN-PTR

Parent Palindrome [20 marks]

Problem Statement
In the first line of the input, we will give you a string, lets call it str, with at most 99 characters. str will only contain lower-case English alphabet letters. You have to find the shortest palindrome string, lets call it ptr, such that str is a substring of ptr. In the first line of the output, you have to print the length of ptr and in the second line of the output, you have to print the string ptr itself.

If str is itself a palindrome, print the length of str in the first line and str itself in the second line. If there are multiple strings of the same (shortest) length that are palindromes which contain str as a substring, print the string that is *lexicographically smallest*. We explain lexicographic ordering below.

Lexicographic ordering
Just as given two digit sequences, say 1923 and 3122, we can say which digit sequence is "smaller" and which is "larger" (by interpreting the digit sequences as numbers), two sequences of alphabets, i.e. strings, can also be compared and given two sequences of alphabets, we can say which one is smaller and which one is larger.

The rules of doing so are pretty simple if the two strings are of the same length, which will be the case in this question. We first declare that the character 'a' is smaller than the character 'b', which is in turn smaller than the character 'c' and so on. To compare two strings, simply look at their first characters - the string with the larger character wins. If both strings have the same first character, then the second characters of the two strings are compared and so on.

Thus, we have "cat" = "cat" since the two strings are exactly the same but we have "cap" < "cat" since 'p' is smaller than 't'. Also, we have "mat" > "cat" since 'm' is larger than 'c' and also "aazd" < "abbb" since 'a' is smaller than 'b' (The third characters 'z' and 'b' do not get compared at all since "abbb" wins when the second characters get compared).

Caution

1. There is no specific need to use recursion to solve this problem. However, you may want to write a modular code with functions to make your solution easier to read and easier to debug.
2. Be careful about extra/missing lines and extra/missing spaces in your output.

EXAMPLE 1:
INPUT
edens

OUTPUT:
7
snedens

Explanation: the string is itself not a palindrome. However, adding two appropriate letters to the left of the string makes it a palindrome.

EXAMPLE 2:
INPUT
malayalam

OUTPUT:
9
malayalam

Explanation: the string is itself a palindrome.

Grading Scheme:
Total marks: **[20 Points]**

There will be partial grading in this question. There are two lines in your output. Printing each line correctly, in the correct order, carries 50% weightage. Each visible test case is worth 2 points and each hidden test case is worth 4 points. There are 2 visible and 4 hidden test cases.

Please remember, however, that when you press Submit/Evaluate, you will get a green bar only if all parts of your answer are correct. Thus, if your answer is only partly correct, Prutor will say that you have not passed that test case completely, but when we do autograding afterwards, you will get partial marks.

Start Solving! (/editor/practice/6225)