

# Indian Institute of Technology (IIT-Kharagpur)

AUTUMN Semester, 2015

COMPUTER SCIENCE AND ENGINEERING

PDS Laboratory

PDS Lab

Full Marks: 20

Time allowed: 3 hours

**INSTRUCTIONS:** Please see the questions and write C programs step by step. Ensure proper indentations to improve the readability of your code. All these features are necessary and absence will lead to deduction of marks.

Please do not forget to upload files before you leave.

## Strings

1. Write a program which replaces a substring with another substring in a given line of text. For example, in the line “There are 30 bananas on a banana-tree”, if substring banana is to be replaced with substring apple, then the line should become “There are 30 apples on a apple-tree”.

(3 marks)

2. Write a program which counts number of vowels in an alpha-numeric line of text (ie. the text contains only numbers and alphabets).

(3 marks)

3. Write a function to reverse a string without using strrev function. No extra string should be used and the source string should be modified to store the reverse string. Number of exchanges should be minimum.

(6 marks)

4. Write an interactive menu driven program that will prompt the user to enter the names of countries and the program will print the name of the corresponding capital, and vice-versa. For this the user will be provided with a menu with the functionalities as follows:

- (a) Enter the name of the Country (this will then print the corresponding capital)
- (b) Enter the name of the Capital (this will then print the corresponding country)
- (c) Print the list of Countries and their Capitals (ensuring that the Countries are sorted in lexicographic order)
- (d) Create a new entry by entering a Country and its Capital (this will add new data of countries and capitals)
- (e) Exit (this will terminate the program)

The menu should be displayed at the beginning, and should be repeatedly presented to the user until Exit option is pressed by the user. You can assume that maximum 10 countries and capitals can be entered by the user. You can use string libraries in string.h.

[Hint: Use Switch-Case Statements for the menu. Use 2-dimensional character arrays for the Countries and Capitals]

(10 marks)

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