

DATA STRUCTURES

BATCH – B

[WEDNESDAY JANUARY 25, 2017: 2:00 PM – 5:00 PM]

(Deadline: Friday 27, 2017, 23:59 hrs)

ASSIGNMENTS – 3

CODE: assign03

INSTRUCTIONS:

[Total Marks: 25]

- iv) Read all assignments and each problem has to be answered in the same c file.
- v) Create a .c file following the file name convention: **abc-assign03.c**
Where **abc** is your roll number and **assign03** is the assignment code
- vi) Strictly follow the file name convention and do not use **scanf()**

PROBLEMS: (There are totally 5 problems)

Consider the following list of 10 names:

1. A P J Abdul Kalam
2. Malayalam
3. Tamit Nazaar
4. Chaman L K Sabharwal
5. Davad A Redder
6. Liril Baba
7. Ranita Raju
8. Suman Babu Patel
9. S P Muthuraman
10. Vani Ganapathi

1) **[Marks: 3 marks]**

Identify the list of names that contains more than two letter initials and print these names. Also find the longest name among these names that contain two letter initials.

2) **[Marks: 6 marks]**

Palindrome: a word that reads the same backwards as forwards. For example, "dad", "radar", "madam" are some of the string palindromes.

Using the above list, do the following (Do not use "strcmp")

a) Identify the names (even consider any first OR second name by omitting initials) that is a palindrome and print those names in full

b) Identify the names that contain the repeating two letter combinations.

For example, the word "Malayalam" may contain the repeating two letter combinations: "al" and "la".

Print these names with their repeating two letter combinations.

3) **[Marks: 6]**

Write a program for the following task:

Identify the list of names that contains "an" (anywhere in the name). Using this list, compute all 3-character combinations (3-grams) by ignoring space between the first and second name and print these 3-grams with their count.

4) **[Marks: 6]**

Consider the following string: “the quick brown fox jumps over the lazy dog”

- a) Write a recursive program that could find all permutations of 5 characters (you may ignore space between words).
- b) Print those 5-grams that contain 3 subsequent alphabets.

5) **[Marks: 4]**

Consider the following string:

a b c d r a m n o p q r r s t u v d e f g
h w x y s t y x w z r q p w q f e d c b z

Write a program the find all substrings of size 3 (that is in alphabetical order) whose reverse is also found in the given string.