January 2024 CSE 102

Offline 4: Pointers

Total Marks: 10+ 10= 20

Problem 1: Reverse Words in a String

Problem Description: Take a string, s, as input and reverse the order of the words. A word is defined as a sequence of non-space characters. The words in s will be separated by at least one space. If there are any extra spaces remove this in the output string.

Constraints:

- **Do not use array of some predefined size. Use pointer arithmetic and dynamic memory allocation.** You can only use two dynamically allocated arrays; one for input string and another for output string. **No additional arrays can be used.**
- You must write a function named `void reverseWords(char *a, char *t)` where char *a is the input string and char *t is the output string.
- **Array indexing notation is not allowed.** (i.e., you must use *(p + i) instead of p[i]).

Sample Input(s)	**Corresponding Output(s)**
`"the sky is blue"`	`"blue is sky the"`
`"  hello world  "`	`"world hello"`

Problem 2: Mode

Find the mode of some given numbers. The mode of some numbers is/are the ones which appear the highest number of times. Take an integer *n* as input. Next take *n* integer elements as input, whose mode you need to find. All the inputs will have values in [0, 10000] range. (Hint: Note the upper limit; you can count frequencies for this. Suppose you created an array using dynamic memory allocation and p is a pointer to the first address of this array. Count the frequency of an integer i and store the count in *(p+i).) Print the mode(s) of the given numbers. **Use pointer arithmetic and dynamic memory allocation. Do not use array of some predefined size. Do not use array indexing.**

Sample Input(s)	**Corresponding Output(s)**
3 1 3 1	1
4 2 2 1 4	2
5 1 2 1 4 4	1 4

Submission Guidelines:

1. Go to a drive except C drive.
2. Create a folder according to your roll number. Ex- 2305xxx.
3. Open up the folder and create two files there. Ex- 2305xxx-1.c, 2305xxx-2.c.
4. Place all the code inside the two .c files.
5. Zip the folder and submit it in the moodle.