

National University of Computer and Emerging Sciences, Lahore Campus



Course:
Program:
Due Date:
Sections:
Exam:

Object Oriented Programming
BS (CS, DS)
Feb 23, 2025
CS-2C,2D (DS-2A)
HW#2

Course Code: CS-2009
Semester: Spring 2025
Total Marks: 20

Instruction/Notes:

Instructions: Plagiarism in any form will not be tolerated.

Q#1: You are given a **static 2D character array** of tweets. Each tweet is stored in a row of the array, and each row can have a different length of characters. The number of rows in the array is **N** (the total number of tweets), and the number of columns in each row is **M** (the maximum length of a tweet). Your task is to extract the **distinct hashtags** from the tweets and store them in a new **dynamic 2D character array**. Each hashtag should be stored in a separate row of the array. A **hashtag** is defined as a word that begins with the symbol # and is followed by alphanumeric characters (letters or digits) or underscores (_).

Constraints:

1. **You can not use any built-in function in this homework. Main function should only be used for declaration, initialization and function calling.**
2. There is a possibility that the same hashtag may appear in multiple tweets. However, you must ensure that **only distinct hashtags** are stored.
3. The dynamic 2D char array should have exactly **one row for each distinct hashtag**, and the number of columns in each row should be equal to **the length of the hashtag + 1** to accommodate the null terminator (\0).
4. The input array of tweets (2D static array) is already provided. You can hard code this sample input (or read the data from file) to focus on your actual logic building rather wasting the time input. You are required to:
 - Extract all the hashtags from each tweet.
 - Filter out duplicates, ensuring only distinct hashtags are kept.
 - Store the distinct hashtags in a **dynamic 2D character array**.
 - Ensure that memory is allocated only for the exact number of distinct hashtags, and each row in the array has enough space to store a hashtag including the null terminator.

Hint! You need to resize the hashtags array each time when a distinct hashtag is found. Create a temp 2D char array, copy the previous hashtags, store the new hashtag and relocate hashtags pointer to this new memory. Don't forget to deallocate the memory. **(10 minutes class discussion (10/11 Feb)).**

Sample Output:

Tweets[N][100]; N is a const int (20)

I love programming! #coding #developer #tech
Just read a great book about AI! #reading #AI #books
The weather today is fantastic! #sunny #beautiful
Had an amazing workout session! #fitness #health #motivation
Finally, coffee time! #coffee #morning #energy
Learning C programming! #coding #learning
Can't wait for the weekend! #weekendvibes #excited

