PPWC Daily Practice

Date:30/10/2024

Write C statements to carry out the following steps.

(1) Write a C program that defines a 'Student' structure to store a student's name, roll number, and marks. Prompt the user to enter the name's maximum length, allocate memory dynamically for the name, and input the student's details. Display the details in a formatted output and ensure memory is freed after use.

Code Logic and Explanation

1. **Define the Structure:**
    a. **Create a structure 'Student' with three members:**
        i. **'name': a pointer to store a dynamically allocated string for the student's name.**
        ii. **'rollno': an integer to store the student's roll number.**
        iii. **'marks': a float to store the student's marks.**
2. **Main Function:**
    a. **Declare a 'Student' variable 'student' and a pointer 'ptr' pointing to 'student' for easier access to the structure members.**
3. **Input Name Length:**
    a. **Prompt the user to enter the maximum length of the student's name and store it in 'nameLength'.**
4. **Allocate Memory for Name:**
    a. **Use 'malloc' to allocate memory for the name based on the provided length ('nameLength + 1' to include the null terminator).**
    b. **Check if memory allocation was successful. If not, print an error message and exit.**
5. **Input Student Details:**
    a. **Prompt the user to enter the student's name using 'fgets' and store it in 'ptr->name'. Use 'strcspn' to remove any newline character from the input.**
    b. **Prompt the user to enter the student's roll number and marks, storing these in 'ptr->rollno' and 'ptr->marks', respectively.**
6. **Display Student Details:**
    a. **Print the student's name, roll number, and marks in a formatted output.**
7. **Free Allocated Memory:**
    a. **Use 'free' to deallocate the memory assigned to 'ptr->name' before the program ends.**