Assignment Title: Dynamic Memory Allocation and Pointer Manipulation in C

Objective:

The objective of this assignment is to create a program in C that demonstrates understanding and practical use of pointers, dynamic memory allocation, and pointer manipulation.

Tasks:

1. Dynamic Array Creation:

- Write a function that dynamically allocates memory for an array of integers based on user input for the array size.

2. Populating and Displaying Array Elements:

- Create a function to populate the dynamically allocated array with user-input integers.

3. Array Operations using Pointers:

- Implement functions that perform basic operations on the dynamically allocated array using pointers and pointer arithmetic. Include functions for:

  - Finding the maximum and minimum values in the array.

  - Computing the sum and average of the array elements.

  - Reversing the array in place using pointer manipulation.

4. Memory Deallocation:

- Implement a function that deallocates the memory used by the dynamically allocated array.

5. Main Program:

- In the main program, utilize these functions to demonstrate their functionality.

  - Prompt the user to input the size of the array and then randomly generate the elements of the array.

  - Utilize the functions created to perform the required operations on the array.

  - Display the results and the modified array after each operation.

Notes:

- You should be checking for memory allocation failure.

- You should use pointer arithmetic and manipulation rather than array indexing for operations on the allocated memory.

- You should maintain a "code diary" that you should submit with your completed code. Please include the date and time that you worked on various bits of code, which resources you used to work out how to write the code, etc. You should also document the dates and times you worked on the functions in the comments of the source code itself.

Submission:

Please submit the code as per the assignment submission directions (note: these have been updated, please check them out). Your code diary should also include a short document describing your thought process, approach, challenges faced, sources referenced, and any improvements that you might consider for future implementations.