c program to demonstrate the use of malloc(), calloc(), realloc(), and free() functions

#include <stdio.h>

#include <stdlib.h>

int main() {

int \*arr1, \*arr2, \*arr3;

int n;

printf("Enter the size of the array: ");

scanf("%d", &n);

arr1 = (int \*)malloc(n \* sizeof(int));

if (arr1 == NULL) {

printf("Memory allocation failed.\n");

return 1; // Exit the program with an error code

}

printf("Memory allocated using malloc(): %d bytes\n", n \* sizeof(int));

arr2 = (int \*)calloc(n, sizeof(int));

if (arr2 == NULL) {

printf("Memory allocation failed.\n");

free(arr1);

return 1;

}

printf("Memory allocated using calloc(): %d bytes\n", n \* sizeof(int));

int newSize;

printf("Enter the new size for the first array: ");

scanf("%d", &newSize);

arr3 = (int \*)realloc(arr1, newSize \* sizeof(int));

if (arr3 == NULL) {

printf("Memory reallocation failed.\n");

free(arr1); // Free the original memory

free(arr2); // Free the calloc-allocated memory

return 1; // Exit the program with an error code

}

printf("Memory reallocated using realloc(): %d bytes\n", newSize \* sizeof(int));

free(arr2); // Free memory allocated using calloc()

free(arr3); // Free memory reallocated using realloc()

return 0;

}