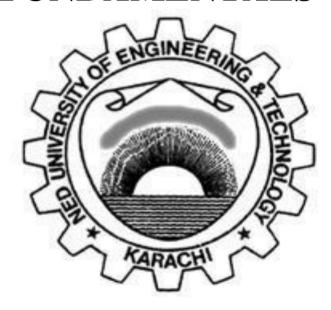
Practical Workbook

CT-175 PROGRAMMING FUNDAMENTALS



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EXERCISE Q# 01

Write a program that does the following:

- a. Ask the user to type the size of the array.
- b. Use malloc or calloc to create an integer array of that size.
- c. Use the function read to read the numbers.
- d. Display the sum and average or these numbers. Then display the array sorted.
- ✓ Show 2 numbers after the floating point in the average.
- e. Free the allocated memory.

```
#include <stdio.h>
#include <stdlib.h>
void read(int *array, int size) {
    printf("Enter %d numbers:\n", size);
    for (int i = 0; i < size; i++) {
        scanf("%d", &array[i]);
}
void sort(int *array, int size) {
    for (int i = 0; i < size - 1; i++) {
        for (int j = 0; j < size - i - 1; j++) {
            if (array[j] > array[j + 1]) {
                int temp = array[j];
                array[j] = array[j + 1];
                array[j + 1] = temp;
            }
        }
    }
}
int main() {
    int size;
    int *array;
    int sum = 0;
    float average;
    printf("Enter the size of the array: ");
    scanf("%d", &size);
    array = (int *)malloc(size * sizeof(int));
    if (array == NULL) {
        printf("Memory allocation failed.\n");
        return 1;
```

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```
read(array, size);

for (int i = 0; i < size; i++) {
    sum += array[i];
}
  average = (float)sum / size;

printf("Sum: %d\n", sum);
printf("Average: %.2f\n", average);

sort(array, size);

printf("Sorted array: ");
for (int i = 0; i < size; i++) {
    printf("%d ", array[i]);
}
printf("\n");

free(array);

return 0;
}</pre>
```

OUTPUT:

```
Enter the size of the array: 4
Enter 4 numbers:
2
1
7
5
Sum: 15
Average: 3.75
Sorted array: 1 2 5 7
```

EXERCISE Q# 02

Write a program that ask the user to enter the total 'N' no of characters in user's name {First Name + Last Name} to create a dynamic array of characters. After create a dynamic array of that 'N' no of characters using malloc or calloc function. Finally copy your full name in it that has already been taken from the user before

```
Dynamic Array = "Muhib Ahmed";
```

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```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
int main() {
   int n;
    char *Array;
    char fullName[100];
    printf("Enter the total number of characters in your full name (First Name +
Last Name): ");
    scanf("%d", &n);
   while (getchar() != '\n');
   Array = (char *)malloc((n + 1) * sizeof(char)); // +1 for the null terminator
   if (Array == NULL) {
        printf("Memory allocation failed.\n");
        return 1;
    }
    printf("Enter your full name: ");
   fgets(fullName, sizeof(fullName), stdin);
    fullName[strcspn(fullName, "\n")] = '\0';
    strncpy(Array, fullName, n);
   Array[n] = '\0';
   printf("Dynamic Array = \"%s\"\n", Array);
   free(Array);
    return 0;
}
```

OUTPUT:

```
Enter the total number of characters in your full name (First Name + Last Name): 14
Enter your full name: hamna ali khan
Dynamic Array = "hamna ali khan"
```