**EXPERIMENT – 10**

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**CLASS AND GROUP –** CSE9A

**SEMESTER -** 01

**TOPIC OF EXPERIMENT –** Programs of Experiment 10 are based on Dynamic Memory Allocation in C.

**AIM OF THE EXPERIMENT –** To understand Dynamic Memory Allocation in C programming language by making 2 programs.

**PRACTICAL 10.1**

WAP to store a character string in block of memory space created by malloc and then modify the same to store a large string.

**PROGRAM CODE 10.1**

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

**int** main()

{

**int** n;

    printf("\nEnter number of characters for your string = \n");

    scanf("%d", &n);

**char** \*p = (**char** \*)malloc(n \* sizeof(**char**));

    if (p == NULL)

    {

        printf("MEMORY NOT ALLOCATED BY MALLOC");

        exit(0);

    }

**int** i;

    puts("Enter the string: ");

    for (i = 0; i < n; i++)

    {

        scanf("%c", p + i);

    }

    \*(p + i) = '\0';

    printf("Entered String = %s", p);

    fflush(stdin);

    printf("\nEnter Size for to be increased in the string = \n");

    scanf("%d", &n);

    p = (**char** \*)realloc(p, n \* sizeof(**char**));

    puts("\nEnter the new string: ");

    scanf("%d", &n);

    for (i = 0; i < n; i++)

    {

        scanf("%c", p + i);

    }

    \*(p + i) = '\0';

    printf("New string is: \n%s", p);

    free(p);

    return 0;

}

**OUTPUT 10.1**

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**PRACTICAL 10.2**

At the start of your class lecture , n students were present .You declare array dynamically to store roll numbers of these students after 5 Mins m more students join the class now you will reallocate memory space to store n + m roll numbers .Write a program by using functions malloc(), realloc() and free() .

**PROGRAM CODE 10.2**

#include <stdio.h>

#include <stdlib.h>

**int** main()

{

**int** \*ptr;

**int** n, m, i;

    printf("\nEnter number of students entered first in the class = ");

    scanf("%d", &n);

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

    printf("\nEnter Roll numbers for %d students: \n", n);

    for (i = 0; i < n; i++)

    {

        scanf("%d", &ptr[i]);

    }

    printf("Enter number of students who came 5 minutes late = ");

    scanf("%d", &m);

    ptr = (**int** \*)realloc(ptr, (n + m) \* sizeof(**int**));

    printf("Enter Roll numbers for the new %d students: \n", m);

    for (i = n; i < n + m; i++)

    {

        scanf("%d", &ptr[i]);

    }

    printf("Roll number of all the students are: ");

    for (i = 0; i < (n + m); i++)

    {

        printf("\n%d", ptr[i]);

    }

    free(ptr);

    return 0;

}

**OUTPUT 10.2**

***![Text

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LEARNING OUTCOMES

|  |
| --- |
| * **Identify situations where computational methods would be useful.** |
| * **Approach the programming tasks using techniques learnt and write pseudo-code.** |
| * **Choose the right data representation formats based on the requirements of the problem.** |
| * **Use the comparisons and limitations of the various programming constructs and choose the right one for the task.** |

EVALUATION COLUMN (To be filled by concerned faculty only)

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Parameters** | **Maximum**  **Marks** | **Marks**  **Obtained** |
| 1. | Worksheet Completion including writing learning objective/ Outcome | 10 |  |
| 2. | Post Lab Quiz Result | 5 |  |
| 3. | Student engagement in Simulation/ Performance/ Pre-Lab Questions | 5 |  |
| 4. | Total Marks | 20 |  |