

LAB TASK

Name: Noor Hasnat
ID: 2252081192

Problem 1:

Write a C program to input a $m \times n$ matrix and calculate the sum of each row and each column.

Solve:

```
#include <stdio.h>

int main() {
    int m, n;
    printf("Enter number of rows (m): ");
    scanf("%d", &m);
    printf("Enter number of columns (n): ");
    scanf("%d", &n);

    int a[m][n];

    printf("Enter the elements of the matrix:\n");
    for(int i = 0; i < m; i++) {
        for(int j = 0; j < n; j++) {
            scanf("%d", &a[i][j]);
        }
    }

    printf("\nSum of each row:\n");
    for(int i = 0; i < m; i++) {
        int rowSum = 0;
        for(int j = 0; j < n; j++) {
            rowSum += a[i][j];
        }
        printf("Row %d = %d\n", i + 1, rowSum);
    }

    printf("\nSum of each column:\n");
```

```

    for(int j = 0; j < n; j++) {
        int colSum = 0;
        for(int i = 0; i < m; i++) {
            colSum += a[i][j];
        }
        printf("Column %d = %d\n", j + 1, colSum);
    }

    return 0;
}

```

Problem 2:

Write a C program that takes a sentence as input and reverses each word individually, while keeping the order of the words intact.

Solve:

```

#include <stdio.h>
#include <string.h>
#include <ctype.h>

void reverseWord(char str[], int l, int r) {
    while (l < r) {
        char temp = str[l];
        str[l] = str[r];
        str[r] = temp;
        l++;
        r--;
    }
}

int main() {
    char sentence[200];

    printf("Enter a sentence: ");
    fgets(sentence, sizeof(sentence), stdin);

    sentence[strcspn(sentence, "\n")] = '\0';

    int len = strlen(sentence);

```

```

int start = 0;

for (int i = 0; i <= len; i++) {
    if (sentence[i] == ' ' || sentence[i] == '\0') {
        reverseWord(sentence, start, i - 1);
        start = i + 1;
    }
}

printf("Reversed words: %s\n", sentence);

return 0;
}

```

Problem 3:

Write a C program that reads n integers into an array and uses a function to find and return the maximum element in the array.

Solve:

```

#include <stdio.h>

int findMax(int arr[], int n) {
    int max = arr[0];
    for(int i = 1; i < n; i++) {
        if(arr[i] > max) {
            max = arr[i];
        }
    }
    return max;
}

int main() {
    int n;
    printf("Enter number of elements: ");
    scanf("%d", &n);

    int arr[n];
    printf("Enter %d integers:\n", n);
    for(int i = 0; i < n; i++) {

```

```
        scanf("%d", &arr[i]);  
    }  
  
    int maximum = findMax(arr, n);  
    printf("The maximum element is: %d\n", maximum);  
  
    return 0;  
}
```