A Micro Project Report

on

Problem Solving using C Language

Submitted by

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NARASARAOPETA ENGINEERING COLLEGE: NARASARAOPET

(AUTONOMOUS)

Accredited by NAAC with A+ Grade and NBA under Tier-1

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NARASARAOPETA ENGINEERING COLLEGE: NARASARAOPET

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that VEERAVALLI HIMASREE, Roll No: 23471A05B6, a Second Year Student of the Department of Computer Science and Engineering, has completed the Micro Project Satisfactorily in "Problem Solving using C Language" for the Academic Year 2024-2025..

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AIM:

Write a C program to find sum of both diagonals in a square matrix

```
#include <stdio.h>
int main() {
int  a[10][10];
   int n, i, j;
   int main Sum1 = 0, Sum2= 0;

   printf("Enter the size of the square matrix: ");
   scanf("%d", &n);
   printf("Enter the elements of the matrix:\n");
   for (i = 0; i < n; i++) {
      for (j = 0; j < n; j++) {
         printf("Element [%d][%d]: ", i, j);
         scanf("%d", &matrix[i][j]);
         if (i == j)
            Sum1=sum1+a[i][j];
         if (i + j == n - 1)
            Sum2= sum2+[i][j];
      }
   }

   printf("Sum of main diagonal: %d\n", Sum1);
   printf("Sum of secondary diagonal: %d\n", Sum2);
   printf("Total sum of both diagonals: %d\n", Sum 1+ Sum2);
   return 0;

}
```

Output:

Enter the size of the square matrix: 3

Enter the elements of the matrix:

Element [0][0]: 1

Element [0][1]: 2

Element [0][2]: 3

Element [1][0]: 4

Element [1][1]: 5

Element [1][2]: 6

Element [2][0]: 7

Element [2][1]: 8

Element [2][2]: 9

Sum of main diagonal: 15

Sum of secondary diagonal: 15

Total sum of both diagonals: 30

Aim: Write a c program to replacing principal diagonal elements by largest in square matrix

```
#include <stdio.h>

int main() {
   int n, i, j, max;

   printf("Enter the size of the square matrix: ");
   scanf("%d", &n);

   int matrix[n][n];

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

   max = matrix[0][0];
   for (i = 0; i < n; i++) {
```

```
        for (j = 0; j < n; j++) {
            if (matrix[i][j] > max)
                max = matrix[i][j];
        }
    }

    for (i = 0; i < n; i++) {
        matrix[i][i] = max;
    }

    printf("Matrix after replacing principal diagonal elements with the largest element:\n");
    for (i = 0; i < n; i++) {
        for (j = 0; j < n; j++) {
            printf("%d ", matrix[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

Output:

Enter the size of the square matrix: 3

Enter the elements of the matrix:

Element [0][0]: 1

Element [0][1]: 2

Element [0][2]: 3

Element [1][0]: 4

Element [1][1]: 5

Element [1][2]: 6

Element [2][0]: 7

Element [2][1]: 8

Element [2][2]: 9

Matrix after replacing principal diagonal elements with the largest element:

9 2 3

4 9 6

7 8 9

Aim: Write a C program to given a string consisting of alphabets and digits, find the frequency of each digit in the given string

```
#include <stdio.h>
int main() {
   char str[100], alphabets[100], digits[100];
   int i, a = 0, d = 0;
   printf("Enter a string consisting of alphabets and digits: ");
   scanf("%s", str);
   for (i = 0; str[i] != '\0'; i++) {
      if (isalpha(str[i])) {
         alphabets[a++] = str[i];
      } else if (isdigit(str[i])) {
         digits[d++] = str[i];
      }
   }
   alphabets[a] = '\0';
   digits[d] = '\0';
   printf("Alphabets in the string: %s\n", alphabets);
   printf("Digits in the string: %s\n", digits);
 return 0;
}
```

Output:

Enter a string consisting of alphabets and digits: h1i2ma

Alphabets in the string: hima

Digits in the string: 12

Aim: Write a c program for given a sentence, print each word of the sentence in a new line

```
#include <stdio.h>
#include <string.h>
int main() {
   char sentence[200];
   int i = 0;

   printf("Enter a sentence: ");
   fgets(sentence, sizeof(sentence), stdin);
   printf("Words in the sentence:\n");
   while (sentence[i] != '\0') {
      if (sentence[i] == ' ' || sentence[i] == '\n') {
         printf("\n");
      } else {
         printf("%c", sentence[i]);
      }
      i++;
   }

   return 0;
}
```

Output:

Enter a sentence: Hi My name is Hima

Words in the sentence:

Hi

My

name

is

Hima