**A Micro Project Report**

**on**

**Problem Solving using C Language**

Submittedby

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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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**2024-20****25**

**NARASARAOPETA ENGINEERING COLLEGE:NARASARAOPET**

**(AUTONOMOUS)**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**



**CERTIFICATE**

**This is to certify that TALLURI SWATHI, Roll No: 23471A0565, 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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**Sum of Both Diagonal Elements of Square Matrix**

**AIM**:

**1. Write a C program to Find Sum of Both Diagonal Elements of Square Matrix**

#include <stdio.h>

int sumOfDiagonals(int matrix[][10], int size)

{

int sum = 0;

for (int i = 0; i < size; i++)

{

sum += matrix[i][i]; // Primary diagonal

sum += matrix[i][size - i - 1]; // Secondary diagonal

}

return sum;

}

int main()

{

int size;

printf("Enter size of square matrix (max 10): ");

scanf("%d", &size);

if (size > 10 || size < 1)

{

printf("Invalid size. Exiting...");

return 1;

}

int matrix[10][10];

printf("Enter elements of the matrix:\n");

for (int i = 0; i < size; i++) {

for (int j = 0; j < size; j++) {

scanf("%d", &matrix[i][j]);

}

}

printf("Matrix:\n");

for (int i = 0; i < size; i++)

{

for (int j = 0; j < size; j++)

{

printf("%d ", matrix[i][j]);

}

printf("\n");

}

int sum = sumOfDiagonals(matrix, size);

printf("Sum of diagonal elements: %d\n", sum);

return 0;

}

**OUTPUT**

Enter size of square matrix (max 10): 3

Enter elements of the matrix:

1 2 3

4 5 6

7 8 9

Matrix:

1 2 3

4 5 6

7 8 9

Sum of diagonal elements: 30

**Replacing Principal Diagonal Elements by Largest in Square Matrix**

**AIM**:

**2**.**write a C Program to Replacing Principal Diagonal Elements by Largest in Square Matrix**

#include <stdio.h>

#define MAX\_SIZE 10

int findMax(int matrix[][MAX\_SIZE], int size)

{

int max = matrix[0][0];

for (int i = 0; i < size; i++)

{

for (int j = 0; j < size; j++)

{

if (matrix[i][j] > max)

{

max = matrix[i][j];

}

}

}

return max;

{

void replaceDiagonal(int matrix[][MAX\_SIZE], int size)

{

int max = findMax(matrix, size);

for (int i = 0; i < size; i++)

{

matrix[i][i] = max;

}

}

void printMatrix(int matrix[][MAX\_SIZE], int size)

{

for (int i = 0; i < size; i++)

{

for (int j = 0; j < size; j++)

{

printf("%d ", matrix[i][j]);

}

printf("\n");

}

}

int main()

{

int size;

printf("Enter size of square matrix (max %d): ", MAX\_SIZE);

scanf("%d", &size);

if (size > MAX\_SIZE || size < 1)

{

printf("Invalid size. Exiting...");

return 1;

}

int matrix[MAX\_SIZE][MAX\_SIZE];

printf("Enter elements of the matrix:\n");

for (int i = 0; i < size; i++)

{

for (int j = 0; j < size; j++)

{

scanf("%d", &matrix[i][j]);

}

}

printf("Original Matrix:\n");

printMatrix(matrix, size);

replaceDiagonal(matrix, size);

printf("Matrix after replacing diagonal elements with the maximum element:\n");

printMatrix(matrix, size);

**return 0;**

**}**

**OUTPUT**

Enter size of square matrix (max 10): 3

Enter elements of the matrix:

1 2 3

4 5 6

7 8 9

Original Matrix:

1 2 3

4 5 6

7 8 9

Matrix after replacing diagonal elements with the maximum element:

9 2 3

4 9 6

7 8 9

**Given a String , consisting of alphabets and**

**digits , find the frequency of each digit in the given string.**

**AIM**:

**3.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>

#include<conio.h>

#include<string.h>

void main()

{

int z=0,one=0,two=0,three=0,four=0,five=0,six=0,seven=0,eight=0,nine=0,i=0;

charstr[100];

printf("enter the string \n");

fgets(str,sizeof(str),stdin);

for(i=0;str[i]!='\0';i++)

{

if(str[i]==48)

z++;

else if(str[i]==49)

one++;

else if(str[i]==50)

two++;

else if(str[i]==51)

three++;

else if(str[i]==52)

four++;

else if(str[i]==53)

five++;

else if(str[i]==54)

six++;

else if(str[i]==55)

seven++;

else if(str[i]==56)

eight++;

else if(str[i]==57)

nine++;

}

printf("%d%d%d%d%d%d%d%d%d%d",z,one,two,three,four,five,six,seven,eight,nine);

getch();

}

**Output**

enter the string

H247h4389888634g012235

1133311141

**Given a sentence , print each Word of the sentence in a new line**

**AIM**:

**4.write a C program given a sentence , print each Word of the sentence in a new line**

 #include <stdio.h>

int main()

{

char [100];

printf("Enter a sentence: ");

fgets(sentence, sizeof(sentence), stdin);

char \*p = sentence;

while (\*p)

{

while (\*p != ' ' && \*p != '\n' && \*p != '\0')

{

printf("%c", \*p);

p++;

}

if (\*p != '\0' && \*p != '\n')

{

printf("\n");

}

if (\*p == ' ')

{

p++;

}

}

return 0;

}

**OUTPUT**

Enter a sentence: Hello World this is a test

Hello

World

this

is

a

test