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

**NARASARAOPETA ENGINEERING COLLEGE: NARASARAOPET**

**(AUTONOMOUS)**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**



**CERTIFICATE**

**This is to certify that THOKALA THARUN KUMAR REDDY , Roll No: 24475A0516 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 convert Numbers to Roman Numerals**

#include <stdio.h>

void convertToRoman(int num)

{

// Define the Roman numeral symbols and their respective values

int values[] = {1000, 900, 500, 400, 100, 90, 50, 40, 10, 9, 5, 4, 1};

char \*symbols[] = {"M", "CM", "D", "CD", "C", "XC", "L", "XL", "X", "IX", "V", "IV", "I"};

// Convert the number to Roman numeral

for (int i = 0; i < 13; i++)

{

while (num >= values[i])

{

printf("%s", symbols[i]);

num -= values[i];

}

}

}

int main()

{

int number;

printf("Enter a number (1 - 3999): ");

scanf("%d", &number);

if (number < 1 || number > 3999)

{

printf("Number out of range. Please enter a number between 1 and 3999.\n");

return 1;

}

printf("Roman numeral: ");

convertToRoman(number);

printf("\n");

return 0;

}

**Input:**

Enter a number (1 - 3999): 1987

**Output:**

Roman numeral: MCMLXXXVII

**AIM:**

**Write a c program to convert Roman Numerals to Decimal Number**

#include <stdio.h>

#include <string.h>

// Function to return the integer value of a single Roman numeral character

int romanToDecimal(char r)

{

switch(r)

{

case 'I': return 1;

case 'V': return 5;

case 'X': return 10;

case 'L': return 50;

case 'C': return 100;

case 'D': return 500;

case 'M': return 1000;

default: return 0;

}

}

// Function to convert a Roman numeral string to a decimal integer

int convertRomanToDecimal(char roman[])

{

int decimal = 0;

int length = strlen(roman);

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

{

// Get value of the current symbol

int current = romanToDecimal(roman[i]);

// Get value of the next symbol if present

int next = (i + 1 < length) ? romanToDecimal(roman[i + 1]) : 0;

// If current value is less than next value, subtract current from the total

if (current < next)

{

decimal -= current;

}

else

{

decimal += current;

}

}

return decimal;

}

int main()

{

char roman[20];

printf("Enter a Roman numeral: ");

scanf("%s", roman);

int decimal = convertRomanToDecimal(roman);

printf("Decimal value: %d\n", decimal);

return 0;

}

**Input:**

Enter a Roman numeral: MCMXCIV

**Output:**

Decimal value: 1994

**AIM:**

**Write a C Program to display the Currency in words**

#include <stdio.h>

#include <string.h>

// Arrays for number names

char \*ones[] = {"", "one", "two", "three", "four", "five", "six", "seven", "eight", "nine"};

char \*teens[] = {"", "eleven", "twelve", "thirteen", "fourteen", "fifteen", "sixteen", "seventeen", "eighteen", "nineteen"};

char \*tens[] = {"", "ten", "twenty", "thirty", "forty", "fifty", "sixty", "seventy", "eighty", "ninety"};

char \*thousands[] = {"", "thousand", "lakh", "crore"};

// Function to convert a number below 1000 into words

void convertToWords(int num, char \*output)

{

if (num >= 100)

{

strcat(output, ones[num / 100]);

strcat(output, " hundred ");

num %= 100;

}

if (num >= 11 && num <= 19)

{

strcat(output, teens[num - 10]);

strcat(output, " ");

}

else

{

strcat(output, tens[num / 10]);

strcat(output, " ");

strcat(output, ones[num % 10]);

strcat(output, " ");

}

}

// Function to convert the entire amount to words

void currencyToWords(int rupees, int paise, char \*result)

{

char output[1000] = "";

if (rupees == 0)

{

strcat(output, "zero rupees ");

}

else

{

int units[] = {1000, 100000, 10000000}; // For thousand, lakh, crore

int values[] = {rupees % 1000, (rupees / 1000) % 100, (rupees / 100000) % 100};

for (int i = 2; i >= 0; i--)

{

if (values[i] != 0)

{

convertToWords(values[i], output);

strcat(output, thousands[i]);

strcat(output, " ");

}

}

strcat(output, "rupees ");

}

if (paise > 0) {

char paiseWords[100] = "";

convertToWords(paise, paiseWords);

strcat(output, "and ");

strcat(output, paiseWords);

strcat(output, "paise");

}

strcpy(result, output);

}

int main()

{

int rupees, paise;

char result[1000];

printf("Enter rupees: ");

scanf("%d", &rupees);

printf("Enter paise: ");

scanf("%d", &paise);

currencyToWords(rupees, paise, result);

printf("In words: %s\n", result);

return 0;

}

**Input:**

Enter rupees: 100001

Enter paise: 10

**Output:**

In words: one lakh rupees and ten paise