A Micro Project Report

on

Problem Solving using C Language

Submitted by

SHAIK SAMEER

(24475A042)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NARASARAOPETA ENGINEERING COLLEGE: NARASARAOPET

(AUTONOMOUS)

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2024-2025

NARASARAOPETA ENGINEERING COLLEGE: NARASARAOPET

(AUTONOMOUS)

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CERTIFICATE

This is to certify that SHAIK SAMEER , Roll No: 24475A0542 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..

Project Co-Ordinator

Dr. Eluri. Rama Krishna , M.Tech., Ph.D.

Ph.D. **Asst. Professor**

HEAD OF THE DEPARTMENT

Dr. S. N. Tirumala Rao, M.Tech.,

Professor

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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

C Programs

— To convert Numbers to Roman Numerals

—To Convert Roman Numerals to Decimal Number

—To Display the Currency in Words