# Assignment
# Of
# Problem Solving using C Programming
# 22CS002

**Submitted**

**in partial fulfillment for the award of the degree**

of

## BACHELEOR OF ENGINEERING

**in**

COMPUTER SCIENCE & ENGINEERING


**CHITKARA UNIVERSITY**

**CHANDIGARH-PATIALA NATIONAL HIGHWAY**
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**Problem statement 1** :-

Write a program to print the multiplication table of a given number within a specified range. The user should input the number and the range.

# Input

```c
#include <stdio.h>

void printMultiplicationTable(int number, int startRange, int endRange) {
    printf("Multiplication table for %d from %d to %d:\n", number, startRange, endRange);
    for (int i = startRange; i <= endRange; i++) {
        int result = number * i;
        printf("%d * %d = %d\n", number, i, result);
    }
}
int main() {
    int number, startRange, endRange;

    printf("Enter the number for multiplication table: ");
    scanf("%d", &number);

    printf("Enter the starting range: ");
    scanf("%d", &startRange);

    printf("Enter the ending range: ");
    scanf("%d", &endRange);
    if (startRange > endRange) {
        printf("Error: Starting range should be less than or equal to the ending range.\n");
    } else {
        printMultiplicationTable(number, startRange, endRange);
    }
    return 0;
}
```

# Output

```
Enter the number for multiplication table: 15
Enter the starting range: 1
Enter the ending range: 12
Multiplication table for 15 from 1 to 12:
15 * 1 = 15
15 * 2 = 30
15 * 3 = 45
15 * 4 = 60
15 * 5 = 75
15 * 6 = 90
15 * 7 = 105
15 * 8 = 120
15 * 9 = 135
15 * 10 = 150
15 * 11 = 165
15 * 12 = 180

Process returned 0 (0x0)   execution time : 6.842 s
Press any key to continue.
```

## **Problem statement 2** :-

**Palindrome number -** Write a program to check if a given number is a palindrome. A palindrome number reads the same backward as forward (e.g., 121).

# Input

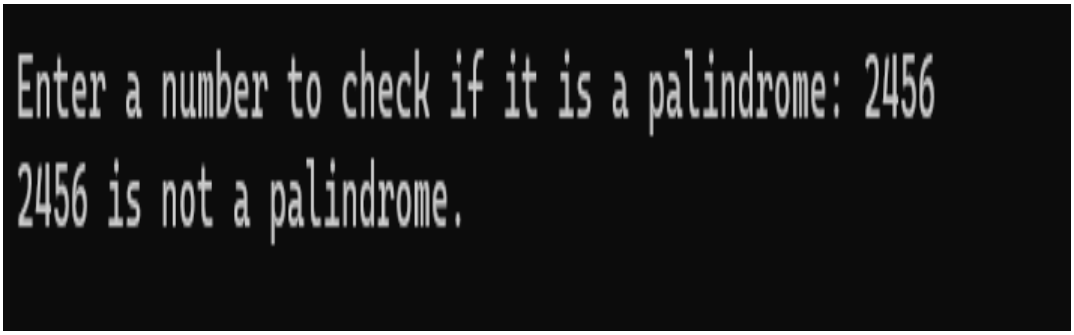
```c
#include <stdio.h>

int isPalindrome(int num) {
    int originalNum = num, reversedNum = 0, remainder;

    while (num > 0) {
        remainder = num % 10;
        reversedNum = reversedNum * 10 + remainder;
        num /= 10;
    }
    if (originalNum == reversedNum) {
        return 1;
    } else {
        return 0;
    }
}

int main() {
    int number;
    printf("Enter a number to check if it is a palindrome: ");
    scanf("%d", &number);
    if (isPalindrome(number)) {
        printf("%d is a palindrome.\n", number);
    } else {
        printf("%d is not a palindrome.\n", number);
    }
    return 0;
}
```

# Output



## **Problem statement 3** :-

**Power calculation -** Write a program to calculate and print the result of raising a given base to a specified power. The user should input the base and the power.

# Input

```c
#include <stdio.h>
double power(double base, int exponent) {
    if (exponent == 0) {
        return 1;
    } else if (exponent > 0) {
        return base * power(base, exponent - 1);
    } else {
        return 1 / power(base, -exponent);
    }
}
int main() {
    double base;
    int exponent;
    printf("Enter the base: ");
    scanf("%lf", &base);
    printf("Enter the exponent: ");
    scanf("%d", &exponent);
    printf("%.2lf raised to the power of %d is: %.2lf\n", base, exponent, power(base, exponent));

    return 0;
}
```

# Output

```
Enter the base: 545
Enter the exponent: 5
545.00 raised to the power of 5 is: 48081998590625.00
```

## **Problem statement 4** :-

**Sum of series -** Write a program to find and print the sum of the series: 1 + 2 + 3 + ... + n. The user should input the value of n.

# Input

```c
#include <stdio.h>
int calculateSum(int n) {
    return n * (n + 1) / 2;
}

int main() {
    int n;
    printf("Enter the value of n: ");
    scanf("%d", &n);
    int sum = calculateSum(n);
    printf("The sum of the series 1 + 2 + 3 + ... + %d is: %d\n", n, sum);

    return 0;
}
```

# Output

```
Enter the value of n: 78
The sum of the series 1 + 2 + 3 + ... + 78 is: 3081
```