

**### Easy (10 programs)**

1. Positive or Negative
  - Read an integer; print whether it is positive, negative or zero.
2. Largest of Two Numbers
  - Read two integers; print the largest one.
3. Sum of First N Natural Numbers
  - Read \$\$N\$\$; print sum \$\$1+2+\dots+N\$\$ using loop.
4. Even or Odd using Modulus
  - Read integer; use 'if' with '% 2' to decide even/odd.
5. Simple Calculator (Switch)
  - Read two numbers and an operator (+, -, , /); print result.
6. Table of a Number
  - Read integer; print its multiplication table up to 10.
7. Factorial of a Number (Iterative)
  - Read non-negative integer; compute factorial using 'for' loop.
8. Sum of Digits
  - Read integer; find sum of its digits using '%' and '/'.
9. Reverse of a Number
  - Read integer; print reverse (e.g., 123 → 321).
10. Count Digits in a Number
  - Read integer; print how many digits it contains.

**### Medium (15 programs)**

11. Largest of Three Numbers
12. Check Leap Year
13. Check Prime or Not
14. Print All Primes in a Range
15. Fibonacci Series up to N Terms
16. Palindrome Number Check

17. Armstrong Number Check (3-digit)
18. Menu Driven: Odd/Even, Positive/Negative, Prime/Not
19. Array – Sum and Average of N Numbers
20. Array – Largest and Smallest Element
21. Array – Linear Search
22. Array – Sorting (Bubble Sort)
23. String – Length without `strlen`
24. String – Count Vowels and Consonants
25. String – Check Palindrome

### Hard (10 programs)

26. Matrix Addition (2D Array)
  27. Matrix Multiplication (2D Array)
  28. Transpose of Matrix
  29. Recursive Factorial
  30. Recursive Fibonacci
  31. Pointer – Swap Two Numbers using Function and Pointers
  32. Structure – Student Details (name, roll, 3 marks; compute total & average)
  33. Array of Structures – Find Topper
  34. File Handling – Copy one text file to another
  35. File Handling – Count number of characters, words, lines in a file
- 

## 1) Positive / Negative / Zero

```
```c
#include <stdio.h>

int main() {
    int n;
    printf("Enter a number: ");
    scanf("%d", &n);

    if (n > 0)
        printf("Positive\n");
    else if (n < 0)
        printf("Negative\n");
    else
        printf("Zero\n");
}
```

```
    printf("Zero\n");

    return 0;
}

```

```

Sample Output

```

Enter a number: 5

Positive

```

\*\*\*

## 2) Largest of Two Numbers

```
```c
#include <stdio.h>

int main() {
    int a, b;
    printf("Enter two numbers: ");
    scanf("%d %d", &a, &b);

    if (a > b)
        printf("%d is larger\n", a);
    else if (b > a)
        printf("%d is larger\n", b);
    else
        printf("Both are equal\n");

    return 0;
}

```

```

Sample Output

```

Enter two numbers: 10 20

20 is larger

```

\*\*\*

### ## 3) Sum of First N Natural Numbers

```
```c
#include <stdio.h>

int main() {
    int n, i, sum = 0;
    printf("Enter N: ");
    scanf("%d", &n);

    for (i = 1; i <= n; i++) {
        sum = sum + i;
    }

    printf("Sum = %d\n", sum);
    return 0;
}
````
```

#### Sample Output

```
```
Enter N: 5
Sum = 15
````
```

\*\*\*

### ## 4) Even or Odd

```
```c
#include <stdio.h>

int main() {
    int n;
    printf("Enter a number: ");
    scanf("%d", &n);
```

```

if (n % 2 == 0)
    printf("Even\n");
else
    printf("Odd\n");

return 0;
}
...

```

## Sample Output

```

```

```

```

Enter a number: 7

```

```

Odd
```

```

```

***
```

## # 5) Simple Calculator (switch)

```

```c
#include <stdio.h>

int main() {
    float a, b;
    char op;

    printf("Enter expression (a op b): ");
    scanf("%f %c %f", &a, &op, &b);

    switch (op) {
        case '+': printf("Result = %.2f\n", a + b); break;
        case '-': printf("Result = %.2f\n", a - b); break;
        case '*': printf("Result = %.2f\n", a * b); break;
        case '/':
            if (b != 0)
                printf("Result = %.2f\n", a / b);
            else
                printf("Division by zero not allowed\n");
            break;
        default: printf("Invalid operator\n");
    }
}
```

```

    }
    return 0;
}
```

```

## Sample Output

```

```
Enter expression (a op b): 5 + 3
Result = 8.00
```

```

\*\*\*

## #6) Multiplication Table of a Number

```

```
c
#include <stdio.h>

int main() {
    int n, i;
    printf("Enter a number: ");
    scanf("%d", &n);

    for (i = 1; i <= 10; i++) {
        printf("%d x %d = %d\n", n, i, n * i);
    }
    return 0;
}
```

```

## Sample Output

```

```
Enter a number: 4
4 x 1 = 4
...
4 x 10 = 40
```

```

\*\*\*

## ## 7) Factorial (Iterative)

```
```c
#include <stdio.h>

int main() {
    int n, i;
    long long fact = 1;

    printf("Enter a non-negative integer: ");
    scanf("%d", &n);

    if (n < 0) {
        printf("Factorial not defined for negative numbers\n");
        return 0;
    }

    for (i = 1; i <= n; i++) {
        fact = fact * i;
    }

    printf("Factorial = %lld\n", fact);
    return 0;
}
```

```

## Sample Output

```
```

```

```
Enter a non-negative integer: 5
```

```
Factorial = 120
```

```
```

```

```
***
```

## ## 8) Sum of Digits of a Number

```
```c
#include <stdio.h>

int main() {
```

```

int n, rem, sum = 0;
printf("Enter an integer: ");
scanf("%d", &n);

while (n != 0) {
    rem = n % 10;
    sum = sum + rem;
    n = n / 10;
}

printf("Sum of digits = %d\n", sum);
return 0;
}
```

```

## Sample Output

````

Enter an integer: 1234

Sum of digits = 10

````

\*\*\*

## # 9) Reverse of a Number

```

```c
#include <stdio.h>

int main() {
    int n, rem, rev = 0;
    printf("Enter an integer: ");
    scanf("%d", &n);

    while (n != 0) {
        rem = n % 10;
        rev = rev * 10 + rem;
        n = n / 10;
    }

    printf("Reversed number = %d\n", rev);
}

```

```
    return 0;  
}  
...
```

## Sample Output

...

Enter an integer: 123  
Reversed number = 321  
...

\*\*\*

## # 10) Count Digits in a Number

```
```c  
#include <stdio.h>  
  
int main() {  
    int n, count = 0;  
  
    printf("Enter an integer: ");  
    scanf("%d", &n);  
  
    if (n == 0) {  
        count = 1;  
    } else {  
        if (n < 0)  
            n = -n; /* ignore sign */  
  
        while (n != 0) {  
            n = n / 10;  
            count++;  
        }  
    }  
  
    printf("Number of digits = %d\n", count);  
    return 0;  
}  
...
```

Sample Output

...

Enter an integer: 2025

Number of digits = 4

...

.....  
## Medium Level Programs (11–25)

### 11) Largest of Three Numbers

```
```c
#include <stdio.h>

int main() {
    int a, b, c;
    printf("Enter three numbers: ");
    scanf("%d %d %d", &a, &b, &c);

    if (a >= b && a >= c)
        printf("%d is largest\n", a);
    else if (b >= a && b >= c)
        printf("%d is largest\n", b);
    else
        printf("%d is largest\n", c);

    return 0;
}
````
```

Sample:

...

Enter three numbers: 4 9 2

9 is largest

...

\*\*\*

### 12) Leap Year Check

```
```c
#include <stdio.h>

int main() {
    int year;
    printf("Enter year: ");
    scanf("%d", &year);

    if ((year % 400 == 0) || (year % 4 == 0 && year % 100 != 0))
        printf("Leap year\n");
    else
        printf("Not a leap year\n");

    return 0;
}
```

```

Sample:

```

Enter year: 2024

Leap year

```

\*\*\*

### 13) Prime or Not

```
```c
#include <stdio.h>

int main() {
    int n, i, flag = 0;
    printf("Enter a number: ");
    scanf("%d", &n);

    if (n <= 1) {
        printf("Not prime\n");
        return 0;
    }
}
```

```

```

for (i = 2; i * i <= n; i++) {
    if (n % i == 0) {
        flag = 1;
        break;
    }
}

if (flag == 0)
    printf("Prime\n");
else
    printf("Not prime\n");

return 0;
}
...

```

Sample:

...

Enter a number: 13

Prime

...

\*\*\*

### 14) All Primes in a Range

```

```c
#include <stdio.h>

int main() {
    int low, high, i, j, flag;
    printf("Enter low and high: ");
    scanf("%d %d", &low, &high);

    for (i = low; i <= high; i++) {
        if (i <= 1) continue;
        flag = 0;
        for (j = 2; j * j <= i; j++) {
            if (i % j == 0) {
                flag = 1;

```

```

        break;
    }
}
if (flag == 0)
    printf("%d ", i);
}
printf("\n");
return 0;
}
```

```

Sample:

```

Enter low and high: 10 20

11 13 17 19

```

\*\*\*

### 15) Fibonacci Series up to N Terms

```

```c
#include <stdio.h>

int main() {
    int n, i;
    int a = 0, b = 1, c;
    printf("Enter number of terms: ");
    scanf("%d", &n);

    if (n >= 1) printf("%d ", a);
    if (n >= 2) printf("%d ", b);

    for (i = 3; i <= n; i++) {
        c = a + b;
        printf("%d ", c);
        a = b;
        b = c;
    }
    printf("\n");
}

```

```
    return 0;  
}  
...
```

Sample:

...

Enter number of terms: 6

0 1 1 2 3 5

...

\*\*\*

### ### 16) Palindrome Number

```
```c  
#include <stdio.h>  
  
int main() {  
    int n, temp, rem, rev = 0;  
    printf("Enter an integer: ");  
    scanf("%d", &n);  
  
    temp = n;  
    while (temp != 0) {  
        rem = temp % 10;  
        rev = rev * 10 + rem;  
        temp = temp / 10;  
    }  
  
    if (rev == n)  
        printf("Palindrome\n");  
    else  
        printf("Not palindrome\n");  
  
    return 0;  
}
```

Sample:

...

Enter an integer: 121

Palindrome

```

\*\*\*

### 17) Armstrong Number (3-digit)

```
'''c
#include <stdio.h>
```

```
int main() {
    int n, temp, rem, sum = 0;
    printf("Enter a 3-digit number: ");
    scanf("%d", &n);

    temp = n;
    while (temp != 0) {
        rem = temp % 10;
        sum = sum + rem * rem * rem;
        temp = temp / 10;
    }

    if (sum == n)
        printf("Armstrong number\n");
    else
        printf("Not Armstrong number\n");

    return 0;
}
'''
```

Sample:

```

Enter a 3-digit number: 153

Armstrong number

```

\*\*\*

### 18) Menu Driven (Odd/Even, +/-, Prime)

```
```c
#include <stdio.h>

int isPrime(int n) {
    int i;
    if (n <= 1) return 0;
    for (i = 2; i * i <= n; i++)
        if (n % i == 0) return 0;
    return 1;
}

int main() {
    int choice, n;
    printf("1. Odd or Even\n2. Positive or Negative\n3. Prime or Not\n");
    printf("Enter your choice: ");
    scanf("%d", &choice);

    printf("Enter a number: ");
    scanf("%d", &n);

    switch (choice) {
        case 1:
            if (n % 2 == 0) printf("Even\n");
            else printf("Odd\n");
            break;
        case 2:
            if (n > 0) printf("Positive\n");
            else if (n < 0) printf("Negative\n");
            else printf("Zero\n");
            break;
        case 3:
            if (isPrime(n)) printf("Prime\n");
            else printf("Not prime\n");
            break;
        default:
            printf("Invalid choice\n");
    }
    return 0;
}
```

```
}
```

Sample:

```
...
```

1. Odd or Even
2. Positive or Negative
3. Prime or Not

Enter your choice: 3

Enter a number: 11

Prime

```
...
```

\*\*\*

### ### 19) Array – Sum and Average

```
'''c
```

```
#include <stdio.h>
```

```
int main() {
```

```
    int n, i;
```

```
    int a[100];
```

```
    int sum = 0;
```

```
    float avg;
```

```
    printf("Enter number of elements: ");
```

```
    scanf("%d", &n);
```

```
    printf("Enter %d integers:\n", n);
```

```
    for (i = 0; i < n; i++) {
```

```
        scanf("%d", &a[i]);
```

```
        sum += a[i];
```

```
}
```

```
    avg = (float)sum / n;
```

```
    printf("Sum = %d\nAverage = %.2f\n", sum, avg);
```

```
    return 0;
```

```
}
```

```
...
```

Sample:

...

Enter number of elements: 4

Enter 4 integers:

1 2 3 4

Sum = 10

Average = 2.50

...

\*\*\*

### 20) Array – Largest and Smallest

```c

```
#include <stdio.h>
```

```
int main() {
    int n, i;
    int a[100], max, min;
```

```
printf("Enter number of elements: ");
scanf("%d", &n);
```

```
printf("Enter %d integers:\n", n);
for (i = 0; i < n; i++)
    scanf("%d", &a[i]);
```

```
max = min = a[0];
```

```
for (i = 1; i < n; i++) {
    if (a[i] > max) max = a[i];
    if (a[i] < min) min = a[i];
}
```

```
printf("Max = %d\nMin = %d\n", max, min);
return 0;
```

```
}
```

...

Sample:

...

Enter number of elements: 5

Enter 5 integers:

3 9 1 7 4

Max = 9

Min = 1

...

\*\*\*

### ### 21) Linear Search

```
```c
#include <stdio.h>

int main() {
    int n, i, key, pos = -1;
    int a[100];

    printf("Enter number of elements: ");
    scanf("%d", &n);

    printf("Enter %d integers:\n", n);
    for (i = 0; i < n; i++)
        scanf("%d", &a[i]);

    printf("Enter element to search: ");
    scanf("%d", &key);

    for (i = 0; i < n; i++) {
        if (a[i] == key) {
            pos = i;
            break;
        }
    }

    if (pos == -1)
        printf("Element not found\n");
    else
```

```

    printf("Element found at index %d\n", pos);

    return 0;
}
...

```

Sample:

...

Enter number of elements: 5

Enter 5 integers:

2 5 7 1 9

Enter element to search: 7

Element found at index 2

...

\*\*\*

### ### 22) Bubble Sort

```

```c
#include <stdio.h>

int main() {
    int n, i, j, temp;
    int a[100];

    printf("Enter number of elements: ");
    scanf("%d", &n);

    printf("Enter %d integers:\n", n);
    for (i = 0; i < n; i++)
        scanf("%d", &a[i]);

    for (i = 0; i < n - 1; i++) {
        for (j = 0; j < n - 1 - i; j++) {
            if (a[j] > a[j + 1]) {
                temp = a[j];
                a[j] = a[j + 1];
                a[j + 1] = temp;
            }
        }
    }
}

```

```

    }
}

printf("Sorted array:\n");
for (i = 0; i < n; i++)
    printf("%d ", a[i]);
printf("\n");
return 0;
}
```

```

Sample:

```

Enter number of elements: 5

Enter 5 integers:

5 1 4 2 3

Sorted array:

1 2 3 4 5

```

\*\*\*

### ### 23) String Length without `strlen`

```

```c
#include <stdio.h>

int main() {
    char str[100];
    int i = 0, len = 0;

    printf("Enter a string: ");
    gets(str); /* for lab use only */

    while (str[i] != '\0') {
        len++;
        i++;
    }

    printf("Length = %d\n", len);
}

```

```

    return 0;
}
...

```

Sample:

...

Enter a string: hello

Length = 5

...

\*\*\*

### ### 24) Count Vowels and Consonants

```

```c
#include <stdio.h>

int main() {
    char str[100];
    int i, vowels = 0, consonants = 0;

    printf("Enter a string: ");
    gets(str);

    for (i = 0; str[i] != '\0'; i++) {
        char ch = str[i];
        if (ch >= 'A' && ch <= 'Z')
            ch = ch + 32;

        if (ch >= 'a' && ch <= 'z') {
            if (ch == 'a' || ch == 'e' || ch == 'i' ||
                ch == 'o' || ch == 'u')
                vowels++;
            else
                consonants++;
        }
    }

    printf("Vowels = %d\nConsonants = %d\n", vowels, consonants);
    return 0;
}

```

```
}
```

Sample:

```
...
```

Enter a string: hello world

Vowels = 3

Consonants = 7

```
...
```

\*\*\*

### ### 25) String Palindrome Check

```
```c
#include <stdio.h>

int main() {
    char str[100];
    int i, j, flag = 0;

    printf("Enter a string: ");
    gets(str);

    for (i = 0; str[i] != '\0'; i++);
        j = i - 1;

    for (i = 0; i < j; i++, j--) {
        if (str[i] != str[j]) {
            flag = 1;
            break;
        }
    }

    if (flag == 0)
        printf("Palindrome string\n");
    else
        printf("Not palindrome string\n");

    return 0;
}
```

```

}
```

```

Sample:

```

```

```

Enter a string: level

Palindrome string

```

```

```

\*\*\*

## ## Hard Level Programs (26–35)

### ### 26) Matrix Addition

```

```c
#include <stdio.h>

int main() {
    int a[10][10], b[10][10], c[10][10];
    int r, col, i, j;

    printf("Enter rows and columns: ");
    scanf("%d %d", &r, &col);

    printf("Enter elements of first matrix:\n");
    for (i = 0; i < r; i++)
        for (j = 0; j < col; j++)
            scanf("%d", &a[i][j]);

    printf("Enter elements of second matrix:\n");
    for (i = 0; i < r; i++)
        for (j = 0; j < col; j++)
            scanf("%d", &b[i][j]);

    for (i = 0; i < r; i++)
        for (j = 0; j < col; j++)
            c[i][j] = a[i][j] + b[i][j];

    printf("Resultant matrix:\n");

```

```

for (i = 0; i < r; i++) {
    for (j = 0; j < col; j++)
        printf("%d ", c[i][j]);
    printf("\n");
}
return 0;
}
...

```

\*\*\*

### ### 27) Matrix Multiplication

```

```c
#include <stdio.h>

int main() {
    int a[10][10], b[10][10], c[10][10];
    int r1, c1, r2, c2, i, j, k;

    printf("Enter rows and columns of first matrix: ");
    scanf("%d %d", &r1, &c1);
    printf("Enter rows and columns of second matrix: ");
    scanf("%d %d", &r2, &c2);

    if (c1 != r2) {
        printf("Multiplication not possible\n");
        return 0;
    }

    printf("Enter elements of first matrix:\n");
    for (i = 0; i < r1; i++)
        for (j = 0; j < c1; j++)
            scanf("%d", &a[i][j]);

    printf("Enter elements of second matrix:\n");
    for (i = 0; i < r2; i++)
        for (j = 0; j < c2; j++)
            scanf("%d", &b[i][j]);
}

```

```

for (i = 0; i < r1; i++) {
    for (j = 0; j < c2; j++) {
        c[i][j] = 0;
        for (k = 0; k < c1; k++)
            c[i][j] += a[i][k] * b[k][j];
    }
}

printf("Product matrix:\n");
for (i = 0; i < r1; i++) {
    for (j = 0; j < c2; j++)
        printf("%d ", c[i][j]);
    printf("\n");
}
return 0;
}
...

```

\*\*\*

### ### 28) Transpose of Matrix

```

```c
#include <stdio.h>

int main() {
    int a[10][10], t[10][10];
    int r, c, i, j;

    printf("Enter rows and columns: ");
    scanf("%d %d", &r, &c);

    printf("Enter elements:\n");
    for (i = 0; i < r; i++)
        for (j = 0; j < c; j++)
            scanf("%d", &a[i][j]);

    for (i = 0; i < r; i++)
        for (j = 0; j < c; j++)
            t[j][i] = a[i][j];
}

```

```

printf("Transpose:\n");
for (i = 0; i < c; i++) {
    for (j = 0; j < r; j++)
        printf("%d ", t[i][j]);
    printf("\n");
}
return 0;
}
```

```

\*\*\*

### ### 29) Recursive Factorial

```

```c
#include <stdio.h>

long long fact(int n) {
    if (n == 0 || n == 1) return 1;
    return n * fact(n - 1);
}

int main() {
    int n;
    printf("Enter a non-negative integer: ");
    scanf("%d", &n);

    if (n < 0)
        printf("Not defined\n");
    else
        printf("Factorial = %lld\n", fact(n));

    return 0;
}
```

```

\*\*\*

### ### 30) Recursive Fibonacci

```
```c
#include <stdio.h>

int fib(int n) {
    if (n == 0) return 0;
    if (n == 1) return 1;
    return fib(n - 1) + fib(n - 2);
}

int main() {
    int n, i;
    printf("Enter number of terms: ");
    scanf("%d", &n);

    for (i = 0; i < n; i++)
        printf("%d ", fib(i));
    printf("\n");
    return 0;
}
```
***
```

### ## 31) Swap Using Pointers

```
```c
#include <stdio.h>

void swap(int *x, int *y) {
    int temp = *x;
    *x = *y;
    *y = temp;
}

int main() {
    int a, b;
    printf("Enter two numbers: ");
    scanf("%d %d", &a, &b);

    swap(&a, &b);
```

```
printf("After swap: a = %d, b = %d\n", a, b);
return 0;
}
```
***
```

### ### 32) Structure – Single Student

```
```c
#include <stdio.h>

struct Student {
    char name[30];
    int roll;
    int m1, m2, m3;
    int total;
    float avg;
};

int main() {
    struct Student s;

    printf("Enter name: ");
    gets(s.name);
    printf("Enter roll: ");
    scanf("%d", &s.roll);
    printf("Enter 3 subject marks: ");
    scanf("%d %d %d", &s.m1, &s.m2, &s.m3);

    s.total = s.m1 + s.m2 + s.m3;
    s.avg = s.total / 3.0;

    printf("Total = %d\nAverage = %.2f\n", s.total, s.avg);
    return 0;
}
```
***
```

### 33) Array of Structures – Topper

```
```c
#include <stdio.h>
```

```
struct Student {
    char name[30];
    int roll;
    int total;
};
```

```
int main() {
    struct Student s[50];
    int n, i, topIndex = 0;
```

```
printf("Enter number of students: ");
scanf("%d", &n);

for (i = 0; i < n; i++) {
    printf("Enter name: ");
    scanf("%s", s[i].name);
    printf("Enter roll: ");
    scanf("%d", &s[i].roll);
    printf("Enter total marks: ");
    scanf("%d", &s[i].total);
}
```

```
for (i = 1; i < n; i++) {
    if (s[i].total > s[topIndex].total)
        topIndex = i;
}
```

```
printf("Topper: %s (Roll %d) with %d marks\n",
       s[topIndex].name, s[topIndex].roll, s[topIndex].total);
return 0;
}
```

\*\*\*

## ### 34) File Copy

```
```c
#include <stdio.h>

int main() {
    FILE *fs, *ft;
    char ch;

    fs = fopen("source.txt", "r");
    ft = fopen("target.txt", "w");

    if (fs == NULL || ft == NULL) {
        printf("File error\n");
        return 0;
    }

    while ((ch = fgetc(fs)) != EOF) {
        fputc(ch, ft);
    }

    printf("File copied successfully\n");

    fclose(fs);
    fclose(ft);
    return 0;
}

```
***
```

## ### 35) Count Characters, Words, Lines in File

```
```c
#include <stdio.h>

int main() {
    FILE *fp;
    char ch;
```

```
int chars = 0, words = 0, lines = 0;
int inWord = 0;

fp = fopen("input.txt", "r");
if (fp == NULL) {
    printf("Cannot open file\n");
    return 0;
}

while ((ch = fgetc(fp)) != EOF) {
    chars++;

    if (ch == '\n')
        lines++;

    if (ch == ' ' || ch == '\n' || ch == '\t') {
        if (inWord) {
            words++;
            inWord = 0;
        }
    } else {
        inWord = 1;
    }
}

if (inWord)
    words++;

printf("Characters = %d\nWords = %d\nLines = %d\n",
       chars, words, lines);

fclose(fp);
return 0;
}
```

\*\*\*\*\*

### ## 1) Decimal to Binary

```
```c
#include <stdio.h>

int main() {
    int decimal, rem, i = 0;
    int bin[32];

    printf("Enter a decimal number: ");
    scanf("%d", &decimal);

    if (decimal == 0) {
        printf("Binary = 0\n");
        return 0;
    }

    while (decimal > 0) {
        rem = decimal % 2;
        bin[i] = rem;
        i++;
        decimal = decimal / 2;
    }

    printf("Binary = ");
    while (i > 0) {
        i--;
        printf("%d", bin[i]);
    }
    printf("\n");

    return 0;
}
```

```

Sample:

'Input: 10 → Output: Binary = 1010'

\*\*\*

### ## 2) Binary to Decimal

```
```c
#include <stdio.h>

int main() {
    long long bin;
    int dec = 0, base = 1, rem;

    printf("Enter a binary number: ");
    scanf("%lld", &bin);

    while (bin > 0) {
        rem = bin % 10;
        dec = dec + rem * base;
        base = base * 2;
        bin = bin / 10;
    }

    printf("Decimal = %d\n", dec);
    return 0;
}
```

```

Sample:

'Input: 1011 → Output: Decimal = 11` [1]

\*\*\*

### ## 3) Star Pattern – Right Half Pyramid

```
```c
#include <stdio.h>

int main() {
    int rows, i, j;
    printf("Enter number of rows: ");
    scanf("%d", &rows);
```

```

for (i = 1; i <= rows; i++) {
    for (j = 1; j <= i; j++) {
        printf("* ");
    }
    printf("\n");
}
return 0;
}
```

```

Sample (rows=4):

```

```
*
*
*
*
```

```

## 4) Number Pattern – Floyd's Triangle

```

```c
#include <stdio.h>

int main() {
    int rows, i, j, num = 1;
    printf("Enter number of rows: ");
    scanf("%d", &rows);

    for (i = 1; i <= rows; i++) {
        for (j = 1; j <= i; j++) {
            printf("%d ", num);
            num++;
        }
        printf("\n");
    }
    return 0;
}

```

```

Sample (rows=4):

```

1

2 3

4 5 6

7 8 9 10

```

\*\*\*

## 5) Simple Interest

```c

```
#include <stdio.h>

int main() {
    float P, R, T, SI;

    printf("Enter principal: ");
    scanf("%f", &P);
    printf("Enter rate: ");
    scanf("%f", &R);
    printf("Enter time: ");
    scanf("%f", &T);
```

$$SI = (P * R * T) / 100.0;$$

```
printf("Simple Interest = %.2f\n", SI);
return 0;
```

}

```

Sample:

'P=1000, R=5, T=2 → Simple Interest = 100.00'

\*\*\*\*\*