81. Program to add two numbers using pointer.

```c
#include<stdio.h>
#include<conio.h>
void main()
{
   int first, second, *p, *q, sum;
   clrscr();
   printf("Enter two integers : \n");
   scanf("%d %d", &first, &second);

   p = &first;
   q = &second;

   sum = *p + *q;

   printf("\nSum of entered numbers : %d", sum);
   getch();
}
```

82. Program to add first and last digit of a number.

```c
#include<stdio.h>
#include<conio.h>
void main()
{
   int input, firstNum, lastNum;
   clrscr();

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

   lastNum = input % 10;
   firstNum = input;

   while (firstNum >= 10)
      firstNum /= 10;

   printf("\nAddition of first and last number : %d + %d = %d",
        firstNum, lastNum, firstNum + lastNum);
   getch();
}
```

83. Program to find area of triangle using Heron's formula.

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

void main()
{
    double a, b, c, s, area;
    clrscr();
    printf("\nEnter the sides of triangle : \n");
    scanf("%lf%lf%lf", &a, &b, &c);

    s = (a + b + c) / 2;
    area = sqrt(s * (s - a) * (s - b) * (s - c));

    printf("\nArea of triangle using Heron's Formula : %.2lf", area);
    getch();
}
```

84. Program to convert Binary to Decimal.

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

int binary_decimal(int n);

void main()
{
    int n;
    char c;
    clrscr();
    printf("Enter Binary number :  ");
    scanf("%d", &n);
    printf("%d in binary = %d in decimal", n, binary_decimal(n));
    getch();
}

//Function to convert binary to decimal.

int binary_decimal(int n)
{
    int decimal = 0, i = 0, rem;
    while (n != 0)
    {
        rem = n % 10;
        n /= 10;
```

```
        decimal += rem * pow(2, i);
        ++i;
    }
    return decimal;
}
```

85. Program to convert Decimal numbers to Binary.

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

void main()
{
    int n, c, k;
    clrscr();
    printf("Enter a decimal number : ");
    scanf("%d", &n);

    printf("\n%d in binary number system is : ", n);

    for (c = 31; c >= 0; c--)
    {
        k = n >> c;
        if (k & 1)
        {
            printf("1");
        }
        else
        {
            printf("0");
        }
    }

    printf("\n");
    getch();
}
```

86. Program to find f(x) by Lagrange's interpolation method.

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

void main()
{
    float x[10], y[10], temp = 1, f[10], sum, p;
    int i, n, j, k = 0, c;
    clrscr();
```

```c
    printf("How many record you will enter : ");
    scanf("%d", &n);
    for (i = 0; i < n; i++)
    {
        printf("\n\nenter the value of x%d: ", i);
        scanf("%f", &x[i]);

        printf("\n\nEnter the value of f(x%d): ", i);
        scanf("%f", &y[i]);
    }

    printf("\n\nEnter X for finding f(x): ");
    scanf("%f", &p);

    for (i = 0; i < n; i++)
    {
        temp = 1;
        k = i;
        for (j = 0; j < n; j++)
        {
            if (k == j)
            {
                continue;
            }
            else
            {
                temp = temp * ((p - x[j]) / (x[k] - x[j]));
            }
        }
        f[i] = y[i] * temp;
    }

    for (i = 0; i < n; i++)
    {
        sum = sum + f[i];
    }

    printf("\n\nf(%.1f) = %f ", p, sum);
    getch();
}
```

87. Program to check the leap year.

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

void main()
{
    int year;
    clrscr();
```

```c
    printf("Enter a year : ");
    scanf("%d", &year);

    if (year % 400 == 0)
        printf("\n%d is a leap year.", year);
    else if (year % 100 == 0)
        printf("\n%d is not a leap year.", year);
    else if (year % 4 == 0)
        printf("\n%d is a leap year.", year);
    else
        printf("%d is not a leap year.", year);
    getch();
}
```

88. Program to find nCr & nPr.

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

long factorial(int);

long find_ncr(int, int);

long find_npr(int, int);

void main()
{
    int n, r;
    long ncr, npr;
    clrscr();

    printf("Enter the value of n and r : \n");
    scanf("%d %d", &n, &r);

    ncr = find_ncr(n, r);
    npr = find_npr(n, r);

    printf("%dC%d = %ld\n", n, r, ncr);
    printf("%dP%d = %ld\n", n, r, npr);
    getch();
}

long find_ncr(int n, int r)
{

    long result;

    result = factorial(n) / (factorial(r) * factorial(n - r));

    return result;
```

```c
}

long find_npr(int n, int r)
{

    long result;

    result = factorial(n) / factorial(n - r);

    return result;
}

long factorial(int n)
{

    int c;
    long result = 1;

    for (c = 1; c <= n; c++)
        result = result * c;

    return (result);
}
```

89. Program for Newton Raphson General.

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

int user_power, i = 0, cnt = 0, flag = 0;
int coef[10] = {0};
float x1 = 0, x2 = 0, t = 0;
float fx1 = 0, fdx1 = 0;

int main()
{
    printf("PROGRAM FOR NEWTON RAPHSON GENERAL");

    printf("\nEnter the total no. of power : ");
    scanf("%d", &user_power);

    for (i = 0; i <= user_power; i++)
    {
        printf("\nx^%d : ", i);
        scanf("%d", &coef[i]);
    }

    printf("\n");

    printf("\n\nThe Polynomial is ");
```

```c
    //printing coeff.
    for (i = user_power; i >= 0; i--)
    {
        printf("%dx^%d", coef[i], i);
    }

    printf("\n\nIntial x1 -> ");
    scanf("%f", &x1);

    printf("Iteration\tX1\tFX1\tF'X1");

    do
    {
        cnt++;
        fx1 = fdx1 = 0;
        for (i = user_power; i >= 1; i--)
        {
            fx1 += coef[i] * (pow(x1, i));
        }

        fx1 += coef[0];

        for (i = user_power; i >= 0; i--)
        {
            fdx1 += coef[i] * (i * pow(x1, (i - 1)));
        }

        t = x2;
        x2 = (x1 - (fx1 / fdx1));
        x1 = x2;

        printf("\n\t%d\t%.3f\t%.3f\t%.3f ", cnt, x2, fx1, fdx1);

    }
    while ((fabs(t - x1)) >= 0.0001);

    printf("\n\nThe root of equation is %f", x2);

    return 0;
}
```

90. Program to calculate the sum of even numbers from 1 to n.

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

void main()
{
    int sum = 0, n;
```

```c
    clrscr();

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

    // Using Math formula
    // (n/2)((n / 2) + 1)
    sum = ((n / 2) * ((n / 2) + 1));

    printf("Sum of even numbers from 1 to %d : %d", n, sum);
    getch();
}
```

Schmick