1). Program to reverse a number.

```
int main(){
    int n=321, reverse=0;
    while (n!=0){
        reverse = reverse*10 + n%10;
        n= n/10;
    }
    printf("After Reverse n = %d", reverse);
    return 0;
}
```

2). Program to check a number is Armstrong or not.
Ex: 153, 370. ∵ $1^3+5^3+3^3=153$, $3^3+7^3+0^3=370$.

```
int main(){
    int n, r, sum=0, temp;
    printf("Enter the 3-digit number: ");
    scanf("%d", &n);
    temp = n;
    while (n>0){
        r = n%10;
        sum = sum + (r*r*r);
        n= n/10;
    }
    if (temp==sum)
        printf("Armstrong number");
    else
        printf("Not an Armstrong Number");

    return 0;
}
```

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3). Program to check given number is prime or not.

```
int main(){
    int n, i, temp=0;
    printf("Enter a positive integer");
    scanf("%d", &n);

    if (n==0 || n==1)
        temp=1;

    for(i=2; i<=n/2; i++){
        if(n%i==0){
            temp=1;
            break;
        }
    }
}
if (temp==0)
    printf("%d is a prime number", n);
else
    printf("%d is not a prime number", n);
```

4). Program to print fibonacci series using Iterative method

```
int main(){
    int n, first = 0, second = 1, result, i;
    printf("Enter value of n ");
    scanf("%d", &n);
    printf("Fibbonacci series is \n");
        for (i = 0; i < n; i++) {
            if (i <= 1) {
                result = i;
            }
            else {
                result = first + second;
                first = second;
                second = result;
            }
        printf("%d", result);
    }
    return 0;
}
```

5). Program for Palindrome number.

```
void main(){
    int n, reverse = 0, temp;
    scanf("%d", &n);
    temp = n;
    while (temp != 0){
        reverse = reverse * 10 + temp % 10;
        temp = temp / 10;
    }
    if (reverse == n) printf("Palindrome");
    else printf("Not a Palindrome");
```

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6). Program to find greatest of 3 numbers.

```
void main(){
    int a,b,c;
    printf("Enter three numbers");
    scanf("%d%d%d", &a, &b, &c);
if (a>=b && a>=c)
    printf("A is greatest");
else if (b>=a && b>=c)
    printf("B is greatest");
else if (c>=a && c>=b);
    printf("C is greatest");
```

7). Program to check given no. is binary or not.

```
int main(){
    int j,num;
    pfintf("Enter number to check:");
    scanf("%d", &num);
    while (num>0){
        j= num%10;
        if (j!=0 && j!=1){
            printf("Number is not Binary");
            break;
        }
        num=num/10;
        if (num==0){
            printf("Number is Binary");
        }
    }.
```

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8). Program to find sum of digits.

```
int main(){
    int n, sum = 0, m;
    printf("Enter a number");
    scanf("%d", &n);
    while (n>0){
        m = n % 10;
        sum = sum + m;
        n = n/10;
    }
    printf("Sum is %d ", sum);
    return 0;
}.
```

9). Swap two numbers without using third variable.

```
void main(){
    int a,b;
    scanf("%d%d", &a,&b);
    a = a+b;        // a = a*b;
    b = a-b;        // b = a/b;
    a = a-b;        // a = a/b;
    printf("%d %d", a,b);
```

10). Swap two numbers using third variable.

```
void main(){
    int a,b, temp;
    scanf("%d%d", &a,&b);
    temp = a;
    a = b;
    b = temp;
}.
```

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11). Program to find prime factors of given number

```
void main(){
    int i=0, j, n, temp=0;
    printf("Enter number:");
    scanf("%d", &n);
    while(n%2==0){
        printf("2");
        n=n/2;
    }
    for(i=3; i<=sqrt(n); i++){
        while(n%i==0){
            printf("%d", i);
            n=n/i;
        }
    }
    if(n>2){
        printf("%d", n);
    }
}
```

Eg: OUTPUT: For 50, O/p - 2, 5, 5.

12). Add two numbers without using + operator.

```
int main(){
    int n1, n2;
    scanf("%d %d", &n1, &n2);
    for(i=1; i<=n2; i++){
        n1++;
    }
    printf("%d", n1);
}
```

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13). Program to check Perfect Number.

A Perfect number is a positive integer that is equal to the sum of its positive divisors, excluding number itself.

Ex: 6 factors are 1, 2, 3 & 6 itself.

∴ 1+2+3 = 6.

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

    for(i=1; i<=n/2; i++){
        rem = n%i;
        if(rem==0){
            sum=sum+i;
        }
    }

    if(sum==n)
        printf("Given no. is perfect no");
    else
        printf("Not a perfect number");
```

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14). Program to calculate factorial using Iterative method

```
int main(){
    int n, i, fact = 1;
    scanf("%d", &n);
        for (i=1; i<=n; i++){
            fact = fact * i;
        }
    printf("%d", fact);
    return 0;
}
```

15). Program to check number is even or odd.

```
int main(){
    int n;
    scanf("%d", &n);
    if (n % 2 == 0)
        printf("Even");
    else
        printf("odd");
    return 0;
}
```

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16). Program to print first N prime numbers. (Refer 24).

```
void main(){
    int i,j=0,n,flag,temp=0;
    printf("Enter number");
    scanf("%d",&n);

    for(i=1;i<=n;i++)
        temp=0;
        for(int j=2;j<=(i/2);j++){
            if(i%j==0){
                temp=1;
                break;
            }
        }
    if(temp==0)
        printf("%d",i);
    }
}
```

17). Program to calculate power without pow() function.

```
void main(){
    int exp,base,power=1;
    scanf("%d%d",&base,&expo);

    for(int i=1;i<=expo;i++){
        power=power*base;
    }
    printf("%d",power);
}
```

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9). Program to find GCD or HCF of two numbers.

```
int main(){
    int n1, n2, i, gcd;
    scanf("%d %d", &n1, &n2);

    for(i=1; i<=n1 && i<=n2; i++){
        if(n1%i==0 && n2%i==0){
            gcd=i;
        }
    }
    printf("GDD = %d", gcd);
    return 0;
}
```

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:OR:

i) Read n1, n2 :

ii).
```
while (n1 != n2){
    if (n1 > n2)
        n1 = n1 - n2;
    else
        n2 = n2 - n1;
}
printf ("%d", n1);
```

20). Program to convert decimal no. into binary.

```
int main(){
    int arr[10], num, i, j;
    printf("Enter Number:");
    scanf("%d", &num);

    for (i=0; num>0; i++){
        arr[i] = num % 2;
        num = num/2;
    }
    for (j = i-1; j>=0; j--){
        printf("%d", arr[j]);
    }
    printf("\n");
    return 0;
}
```

NOTE: For Decimal into Octal
Replace 2 by 8.

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21). Program to check given year is leap year or no

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

    if (year % 400 == 0) {
        printf("Given year is leap year");
    else if (year % 100 == 0) {
        printf("Not a leap year");
    else if (year % 4 == 0)
        printf("Given year is leap year");
    else
        printf("Not a leap year");
```

22). Program to find sum of N natural nos.

```
int main(){
    int n;
    cout << "Enter number";
    cin >> n;

    cout << n*(n+1)/2;
    return 0;
}.
```

23). Program to find sum of numbers in a given range.

i). Read two numbers num1 and num2.

```
int sum = 0;
```

ii) `for (int i = num1 ; i<= num2 ; i++)`

```
        sum = sum + i;
```

iii) `cout << sum;`

:OR:

```
int sum = y*(y+1)/2 - x*(x+1)/2 + x;
cout << sum;
```

24). Program to print prime numbers within a given range.

```
bool isPrime(int n){
    if (n<2)
        return false;
    for (int i=2 ; i<=sqrt(n) ; i++){
        if (n%i == 0)
            return false;
    }
    return true;
}

int main(){
    int lower, upper;
    cout<<"Enter lower and upper ranges";
    cin >> lower >> upper;

    for (int i=lower; i<=upper; i++){
        if (isPrime(i))
            cout << i << " ";
    }
```

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25). Program to check Armstrong no. for a given range

```
void main(){
    int number, i=0, n, result=0, number1, temp;
    printf("Enter the number ");
    scanf("%d", &number);
    number1 = number;
    temp = number;
    while(number1 != 0){
        number = number/10;
        i++;
    }
    while(number1 != 0){
        n = number1 % 10;
        result = result + pow(n,i);
        number1 = number1/10;
    }

    if(temp == result)
        printf("Armstrong number");
    else
        printf("Not an Armstrong number");
}.
```

26). Program to find $N^{th}$ term of the Fibonacci series.

```
int F(int N){
    if (N<=1){
        return N;
    }

    return F(N-1)+F(N-2);
}

int main(){
    int N;
    cin>>N;
    cout<<F(N);
    return 0;
}
```

27). Program to find factors of a number.

```
int main(){
    int n;
    cout<<"Enter positive number";
    cin>>n;
    cout<<"Factors of "<<n<<"are"<<endl;

    for(int i=1; i<=n; i++){
        if(n%i==0)
            cout<<i<<" ";
    }
}
```

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28). Program to check strong Number.

A strong number is a number, where the sum of the factorial of the digits is equal to the number itself.

Ex: 145 ⇒ 1! + 4! + 5! = 145.

```
int main(){
    int n,i;
    int fact,rem;
    printf("Enter number:");
    scanf("%d",&n);
    int sum=0;
    int temp=n;
    while(n){
        i=1, fact=1;
        rem=n%10;
        while(i<=rem){
            fact=fact*i;
            i++;
        }
        sum=sum+fact;
        n=n/10;
    }

    if(sum==temp)
        printf("%d is strong No",temp);
    else
        printf("%d is not a strong No",temp);

    return 0;
```

3.

29). Program to find LCM of two numbers.

```
int main(){
    int n1, n2;
    cin>>n1>>n2;
    int lcm;
    for (int i=1; i<=n1 || i<=n2 ; i++){
        if (n1%i==0 && n2%i==0) {
            lcm=i;
        }
    }
    lcm=(n1*n2)/lcm;
    cout<<"LCM is: "<<lcm;
    return 0;
}
```

30). Program to convert Binary no to Decimal no.

```
int main(){
    int binum, decnum=0, i=1, rem;
    cout<<"Enter any Binary number";
    cin>>binum;

    while (binum!=0){
        rem=binum%10;
        decnum=decnum+(rem*i);
        i=i*2;
        binum=binum/10;
    }
    cout<<"Equivalent Decimal value="<<decnum;
    return 0;
}
```

31). Program to convert Hexadecimal to Decimal.

```
int main(){
    int decimalNum=0, rem, i=0, len=0;
    char hexDecNum[20];
    cout<<"Enter Hexadecimal Number";
    cin>>hexDecNum;

    while(hexDecNum[i]!='\0'){
        len++;
        i++;
    }
    len--;
    i=0;
    while(len>=0){
        rem=hexDecNum[len];
        if(rem>=48 && rem<=57)
            rem=rem-48;
        else if(rem>=65 && rem<=70)
            rem=rem-55;
        else if(rem>=97 && rem<=102)
            rem=rem-87;
        else{
            cout<<"Invalid Hex Digit";
            return 0;
        }
        decimalNum=decimalNum+(rem*pow(16,i));
        len--;
        i++;
    }
    cout<<"Equivalent Decimal value:"<<decimalNum;
    return 0;
}
```

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32) Program for octal to decimal conversion.

```
int getOctal(long long num){
    int i=0, decimal=0;
    int base=8;
    while(num!=0){
        int digit= num%10;
        decimal += digit * pow(base,i);
        num=num/10;
        i++;
    }
    return decimal;
}

int main(){
    long long octal;
    cin >> octal;
    cout << getOctal(octal);
    return 0;
}
```

33) Program to find maximum number of handshakes.

```
int main(){
    int num;
    cin>>num;
    int total = num*(num-1)/2;

    cout<<"For" << num << "people there will be"
        << total << "handshakes";
    return 0;
}
```

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34). Program to find Permutations in which n people can occupy r seats in a classroom.

```
int factorial(int num) {
    int fact = 1;
    for (int i = num; i >= 1; i--) {
        fact = fact * i;
    return fact;
}

int main() {
    int n, r;
    cout << "Enter number of people";
    cin >> n;
    cout << "Enter number of seats";
    cin >> r;

    int p = factorial(n) / factorial(n-r);

    printf("Total possible arrangements:
            %d", p);
    return 0;
}
```

35) Program to add two fractions.

```
int findGCD(int n1,int n2){
    int gcd;
        while(n1!=n2){
            if(n1>n2)
                n1=n1-n2;
            else
                n2=n2-n1.
        }
        gcd=n1;
        return gcd;
    }
int main(){
    int num1,den1;
    cin>>num1>>den1;
    int num2,den2;
    cin>>num2>>den2;

    int lcm=(den1*den2)/findGCD(den1,den2);
    //finding lcm of dens.
    int sum=(num1*lcm/den1)+(num2*lcm/den2);
    //finding sum of nos.
    int num3= sum/findGCD(sum,lcm);
    //Normalizing Nr & Dr of result.
    lcm=lcm/findGCD(sum,lcm);

    cout<<num3<<"/"<<lcm;
    return 0;
}
```

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36). Program to print the occurence of a digit in a number.

```
int main(){
    int n;
    cin>>n;      //Enter no.

    int d;
    cin>>d;      //Enter no to check the occurr
    int count=0;
    while(n>0){
        int rem = n%10;
        if(rem==d){
            count++;
        }
        n=n/10;
    }
    cout<<count;
    return 0;
}
```

37). Program to display multiplication table upto 10.

```
int main(){
    int n;
    cout << "Enter positive integer: ";
    cin>>n;

    for(int i=1;i<=10;i++){
        cout<<n<<"*"<<i<<"="<<n*i<<endl;
    }
    return 0;
}
```

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37). Program to generate Fibonacci sequence upto a certain number.

```
int main(){
    int first = 0, second = 1, nextTerm = 0, n;
    cout << "Enter positive number";
    cin >> n;

    cout << "Fibonacci series: " << first << ", " <<
            second << ",";
    nextTerm = first + second;

    while (nextTerm <= n){
        cout << nextTerm << ",";
        first = second;
        second = nextTerm;
        nextTerm = first + second;
    }
    return 0;
}
```

38). Program to print ASCII values.

```
int main(){
    char c;
    cin >> c;
    cout << "ASCII value of " << c << " is " <<
            int(c);
    return 0;
}
```

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39) Program to display simple calculator using switch statement.

```
int main(){
    char op;
    float n1, n2;
    cout << "Enter operator : +, -, *, /";
    cin >> op.
    cout << "Enter two operands";
    cin >> num1 >> num2;

    switch (op){
    case '+':
        cout << num1 << "+" << num2 << "=" << num1+num
        break;
        .
        .
        .
    default:
        cout << "Error! operator is not correct";
        break;
    }
    return 0;
}
```

40). Program to find sum of n numbers and skip negative numbers.

```
int main(){
    int num, sum = 0;   cin>>n;
    for (int i = 1; i <= n; i++){
        printf("Number %d = ", i);
        scanf("%d", &num);
        if (num < 0) {
            continue;
        }
        sum = sum + num;
    }
    printf("%d", sum);
}
```

41). Program to find first and last digit of a number.

```
int main(){
    int n, sum = 0, firstDigit, lastDigit;
    printf("Enter number");
    scanf("%d", &n);

    lastDigit = n % 10;
    while (n >= 10){
        n = n / 10;
    }
    firstDigit = n;

    printf("%d, %d", firstDigit, lastDigit);
    return 0;
}
```

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42) Program to find product of digits of a number.

```
int main(){
    int n, r, p;
    printf("Enter number");
    scanf("%d", &n);
    for(p=1; n>0; n=n/10){
        r = n % 10;
        p = p * r;
    }
    printf("%d", product);
    return 0;
}
```