```cpp
/*
1. Input a number and print how many times each digit (0-9) appears.
*/

#include <iostream>
using namespace std;

int main() {
    int num, digit, count[10] = {0};
    cout << "Enter a number: ";
    cin >> num;
    if (num == 0)
        count[0] = 1;
    while (num > 0) {
        digit = num % 10;
        count[digit]++;
        num = num / 10;
    }
    for (int i = 0; i < 10; i++) {
        if (count[i] > 0)
            cout << i << " occurs " << count[i] << " times\n";
    }
    return 0;
}
```

```
Enter a number: 12389933
1 occurs 1 times
2 occurs 1 times
3 occurs 3 times
8 occurs 1 times
9 occurs 2 times
```

```cpp
/*
2. Code to print if a number is a perfect number or not.
A number is perfect if the sum of its divisors (excluding itself) equals the number.
Example: 28 = 1 + 2 + 4 + 7 + 14.
*/

#include <iostream>
using namespace std;

int main() {
    int num, sum = 0;
    cout << "Enter a number: ";
    cin >> num;
    for (int i = 1; i < num; i++) {
        if (num % i == 0)
            sum = sum + i;
    }
    if (sum == num)
        cout << num << " is a Perfect Number\n";
    else
        cout << num << " is NOT a Perfect Number\n";
    return 0;
}
```

```
Enter a number: 28
28 is a Perfect Number
```

```cpp
/*
3. Check whether an array contains duplicate values.
*/

#include <iostream>
using namespace std;

int main() {
    int n, dup = 0;
    cout << "Enter size of array: ";
    cin >> n;
    int arr[50];   // keep it simple, max 50 elements
    cout << "Enter elements: ";
    for (int i = 0; i < n; i++) {
        cin >> arr[i];
    }
    for (int i = 0; i < n; i++) {
        for (int j = i + 1; j < n; j++) {
            if (arr[i] == arr[j]) {
                dup = 1;
                break;
            }
        }
        if (dup == 1) break;
    }
    if (dup == 1)
        cout << "Array has duplicates\n";
    else
        cout << "Array has NO duplicates\n";
    return 0;
}
```

```
Enter size of array: 5
Enter elements: 1 2 3 4 4
Array has duplicates
```

```cpp
/*
4. Input a number and print its prime factors.
*/

#include <iostream>
using namespace std;

int main() {
    int num;
    cout << "Enter a number: ";
    cin >> num;
    cout << "Prime factors: ";
    for (int i = 2; i <= num; i++) {
        while (num % i == 0) {
            cout << i << " ";
            num = num / i;
        }
    }
    return 0;
}
```

```
Enter size of array: 5
Enter elements: 1 2 3 4 4
Array has duplicates
```