This problem concerns door locks that can be opened by pressing a sequence of digits that constitute
the key. Our door has six digits on it, namely, 1 through 6. The key to open the door must satisfy the
following properties:

- Each of the six digits will be present exactly once in the key
- At any time, the user needs to press no more than two digits.

An example key is 4-1-3-5-6-2. To open the door using this key, one needs to first press the digit 4,
followed by the digits 1 and 3 pressed together (we call this a double-digit stroke), followed by the
digit 5 which is followed by the digit 6 and, finally, the digit 2. Note that each of the six digits (1
through 6) occur in the key and the user will not need to press more than two digits at any time. Other
example keys include 1-5-4-6-23 and 1-3-6-2-4-5. Examples of sequences that are not keys include
16-5-23 (which is missing the digit 4) and 1-245-36 (which cannot be a key because the user will have
to press 3 digits, namely, 2, 4 and 5, at the same time).

Your program needs to compute the total number of different keys. Please note that the sequences
4-1-3-5-2-6, 4-3-1-5-2-6, 4-1-3-2-5-6 and 4-3-1-2-5-6 are considered to be the same key and should be
counted exactly once in your answer.

Your program should determine and print the total number of possible keys that do not contain any
double-digit strokes. An example of such a key is 1-2-3-4-5-6. Your program should then determine
and print the total number of possible keys that contain a single double-digit stroke. An example
of such a key is 4-6-13-5-2 (which contains the double-digit stroke 13.) Your program should then
determine and print the total number of possible keys that contain two double-digit strokes. An
example of such a key is 15-4-23-6. Finally, your program should determine and print the total number
of possible keys that contain three double-digit strokes. An example of such a key is 15-46-23.

The output of your program should be:

The total number of different keys: VALUE_1
The number of keys with no double digit strokes: VALUE_2
The number of keys with one double digit strokes: VALUE_3
The number of keys with two double digit strokes: VALUE_4
The number of keys with three double digit strokes: VALUE_5

Hint: Generate all possible permutations of six distinct digits such as, for example, 1 5 3 4 2 6. Each
permutation yields several different keys, depending on how one separates the digits within it.