

# Devil Number

In this problem you are to complete four methods in the `DevilNumbers` class. The four methods are `isDevilNumber`, `getLargestDevilNumber`, `isTrueDevilNumber` and `getLargestTrueDevilNumber`.

A positive number is a Devil Number if any combination of the individual digits making up the number sum to 6. For example, 472 (  $4 + 2 = 6$  ) and 463 (by default, any number containing a 6 is a Devil Number) are Devil numbers. Since no subset of the digits of 714 can be found that sums to 6, 714 and 471 are not Devil Numbers. The `isDevilNumber(num)` returns true if its `int` parameter `num` is a Devil Number and returns false otherwise.

The following tables show sample results of the `isDevilNumber(int num)` method.  
You may assume `num > 0`

| The following code                               | Returns |
|--|---------|
| <code>DevilNumbers.isDevilNumber(2)</code>       | false   |
| <code>DevilNumbers.isDevilNumber(4305)</code>    | false   |
| <code>DevilNumbers.isDevilNumber(714)</code>     | false   |
| <code>DevilNumbers.isDevilNumber(471)</code>     | false   |
| <code>DevilNumbers.isDevilNumber(18047)</code>   | false   |
| <code>DevilNumbers.isDevilNumber(52370)</code>   | false   |
| <code>DevilNumbers.isDevilNumber(76)</code>      | true    |
| <code>DevilNumbers.isDevilNumber(472)</code>     | true    |
| <code>DevilNumbers.isDevilNumber(111111)</code>  | true    |
| <code>DevilNumbers.isDevilNumber(207060)</code>  | true    |
| <code>DevilNumbers.isDevilNumber(273021)</code>  | true    |
| <code>DevilNumbers.isDevilNumber(7152021)</code> | true    |

The `getLargestDevilNumber(num)` returns the largest Devil Number less than or equal to its `int` parameter `num`. If no Devil Number exists, return -1.

The table on the following page show sample results of the `getLargestDevilNumber(num)` method.

The following tables show sample results of the `getLargestDevilNumber (int num)` method.

You may assume `num > 0`

| The following code                                      | Returns             |
|---|---------------------|
| <code>DevilNumbers.getLargestDevilNumber(5)</code>      | <code>-1</code>     |
| <code>DevilNumbers.getLargestDevilNumber(720310)</code> | <code>720310</code> |
| <code>DevilNumbers.getLargestDevilNumber(43095)</code>  | <code>43093</code>  |
| <code>DevilNumbers.getLargestDevilNumber(1040)</code>   | <code>1036</code>   |

A True Devil Number is a Devil Number which contains no 7. For example, 452 and 643 are Devil numbers, do not contain a 7 and are therefore True Devil Numbers. While 472 and 76 are both Devil Numbers, both are not True Devil Numbers because they contain one (or more) 7s. The `isTrueDevilNumbr(num)` returns true if its `int` parameter `num` is a True Devil Number and returns false otherwise.

The following tables show sample results of the `isTrueDevilNumber(num)` method.

You may assume `num > 0`

| The following code                               | Returns            |
|--|--------------------|
| <code>DevilNumbers.isDevilNumber(472)</code>     | <code>false</code> |
| <code>DevilNumbers.isDevilNumber(76)</code>      | <code>false</code> |
| <code>DevilNumbers.isDevilNumber(720310)</code>  | <code>false</code> |
| <code>DevilNumbers.isDevilNumber(43027)</code>   | <code>false</code> |
| <code>DevilNumbers.isDevilNumber(10471)</code>   | <code>false</code> |
| <code>DevilNumbers.isDevilNumber(52370)</code>   | <code>false</code> |
| <code>DevilNumbers.isDevilNumber(452)</code>     | <code>true</code>  |
| <code>DevilNumbers.isDevilNumber(643)</code>     | <code>true</code>  |
| <code>DevilNumbers.isDevilNumber(111111)</code>  | <code>true</code>  |
| <code>DevilNumbers.isDevilNumber(20060)</code>   | <code>true</code>  |
| <code>DevilNumbers.isDevilNumber(213021)</code>  | <code>true</code>  |
| <code>DevilNumbers.isDevilNumber(9152021)</code> | <code>true</code>  |

The `getLargestDevilNumber(num)` returns the largest Devil Number less than or equal to its `int` parameter `num`. If no Devil Number exists, return -1.

The following tables show sample results of the `getLargestTrueDevilNumber(int num)` method. You may assume `num > 0`

| The following code  | Returns |
|---|---------|
| <code>DevilNumbers.getLargestTrueDevilNumber(4)</code>      | -1      |
| <code>DevilNumbers.getLargestTrueDevilNumber(111110)</code> | 111106  |
| <code>DevilNumbers.getLargestTrueDevilNumber(7060)</code>   | 6999    |
| <code>DevilNumbers.getLargestTrueDevilNumber(217819)</code> | 216999  |