All integers can be partitioned into groups (without rearranging the order of the digits) in such a way that the sum of the individual digits of each group is equal to the sum the individual digits of all the other groups. For example, we say the number 614,377 is Partitionable with degree 7 since it can be partition in 4 groups (61 - 43 - 7 - 7), each with the sum of the digits equal to 7.

Note: For all numbers in this problem, ignore sign. That is use the absolute value of all numbers for your calculations.

In this problem you are to complete three static methods in the PartitionThis class. The three methods are sumDigits, isPartitionable and minPartitionDegree.

The SumDigits(int num) method returns the sum of the individual digits of its argument num. For example, SumDigits(103) returns 4 since 4 = 1 + 0 + 3 and SumDigits(-24) returns 6 since 6 = 2 + 4.

The following code shows the results of the SumDigits method.

|  |  |
| --- | --- |
| The following code | Returns |
| PartionThis.sumDigits(103) | 4 |
| PartionThis.sumDigits(-24) | 2+4 = 6 |
| PartionThis.sumDigits(15086) | 1+5+0+8+6 = 20 |
| PartionThis.sumDigits(-9237) | 9+2+3+7 = 21 |

The isPartitionable(int number, int deg) method returns true if the number can be partitioned with degree deg. For example, isPartitionable(415041131, 5) returns true since 415041131 can be partitioned as = 41-50-41-131 and isPartitionable(415041132, 5) returns false since 415041132 can NOT be partitioned into groups in such a way that the sum of the individual digits of each group is 5.

Remember, you may NOT rearrange the order of the digits in the number.

The following code shows the results of the isPartitionable method.

|  |  |
| --- | --- |
| The following code | Returns |
| PartionThis.isPartionable(415041131, 5) | true |
| PartionThis.isPartionable(410250101, 7) | true |
| PartionThis.isPartionable(415041132, 5) | false |

The minPartionDegree(int num) method returns the minimum value deg such that the degree of the partition of num is deg. Recall that all integers are partitionable by the sum of its digits. For example, minPartionDegree (415041131) returns 5 since 415041131 can be partitioned with degree 5, but cannot be partitioned with degree 0, 1, 2, 3 or 4. And minPartionDegree(3054628) returns 28 since 3054628 can NOT be partitioned into groups in such a way that the sum of the individual digits of each group is any value. The only partition of 3054628 is as a single number, and minPartionDegree(3054628) returns 3+0+5+4+6+2+8 = 28.

The following code shows the results of the minPartionDegree method.

|  |  |
| --- | --- |
| The following code | Returns |
| PartionThis.minPartionDegree(415041131) | 5 |
| PartionThis.minPartionDegree(3054628) | 28 |
| PartionThis.minPartionDegree(0) | 0 |