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Error Handling Architecture

Approach:

Follow the approach “Return an Error Code”.

An exception class named DigitException which contains a private field called ErrorCode and the ErrorCode can only be one of the 2 values: 1. AMBIGIOUS which only happens when there are more than 2 possible solutions for one and only one of the nine digits; 2. FAILURE which will be thrown for all the other errors that is not the case of AMBIGIOUS. Correctness favored.

Erroneous user input handling strategy

Possible errors caused by user input:

1. Input string is not exactly 3 lines and 27 characters each line.

* Will be handled by checking the input size in the DigitReader class and exception will be thrown if the size is incorrect

1. The left top or/and right top of a digit (a 3x3 string) are not space.

* Will be checked in the DigitReader class and exception will be thrown if any of them are not a space.

1. The left column of characters or/and the right column of characters of a digit (a 3x3 string) contain character that are neither a space or a bar.

* Will be checked in the DigitReader class and exception will be thrown if any of the segments is misplaced.

1. The middle column of characters of a digit (a 3x3 string) contains character that are neither a space or an underscore.

* Will be checked in the DigitReader class and exception will be thrown if any of the segments is misplaced.

Global error handling

DigitReader is the global error handling class that it takes care of all the user input errors (it will only throw failure exception). Ambiguous exception will be thrown in the print digit method in DigitDriver.

Barricades

Class DigitReader is the barricade for the project that it separates the calculations before converting the raw user input which is a list of string and the specific digit identify procedures which is after converting the list of string into 9 strings that have length 9 to represent 9 individual potential digits. It separates bad data with the further routines in Digit that if the user input does not meet the requirement, exception will be thrown immediately.