A ten digit number which identifies each book uniquely:

\[ 0 - 12 - 732961 \]

(country) - (publisher) (title & edition) (-)

\[ \sum_{i=1}^{10} i x_i \equiv 0 \pmod{11} \]

CAN DETECT ERRORS:

- one wrong digit
- two digits interchanged

\[ \sum_i i x_i - \sum_i i x_i' \equiv 0 \pmod{11} \]

if one wrong digit, \( i(x_i - x_i') \equiv 0 \pmod{11} \)

Since \( i \) is invertible, \( x_i - x_i' \equiv 0 \pmod{11} \)

if two digits are interchanged

\[ i x_i + j x_j \equiv i x_j + j x_i \]

\[ (i - j)(x_i - x_j) \equiv 0 \pmod{11} \]

\& neither can be zero

**Homework (Friday Sep 13)**

3-540-97285-9 is invalid, two consecutive digits are interchanged.

What are the possible correct numbers?