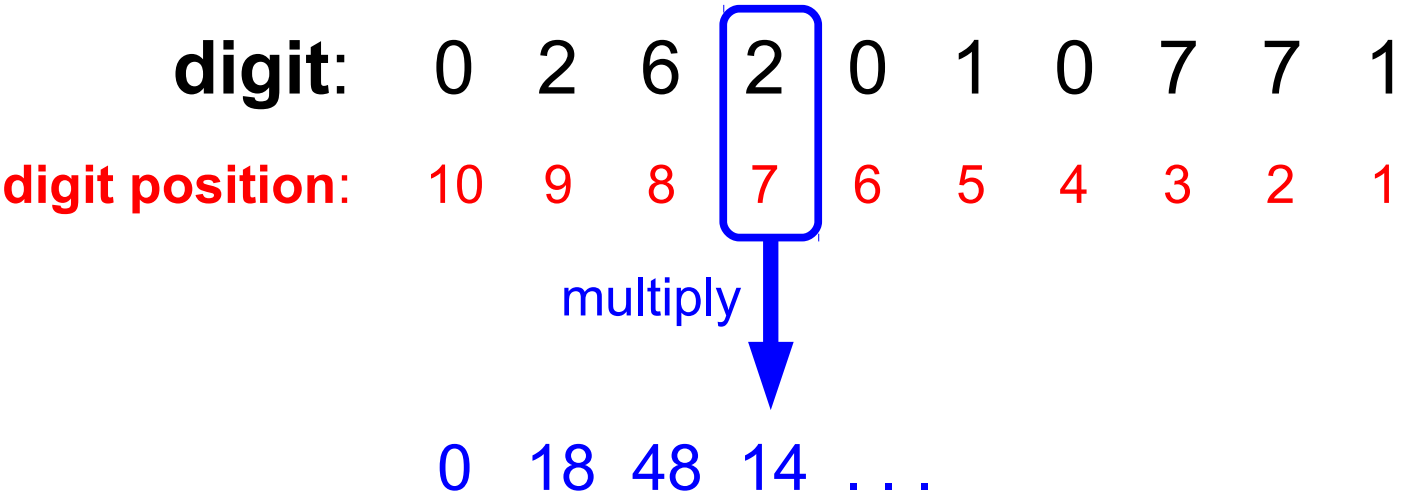
Self-Verifying Numbers

ISBN # 0262010771



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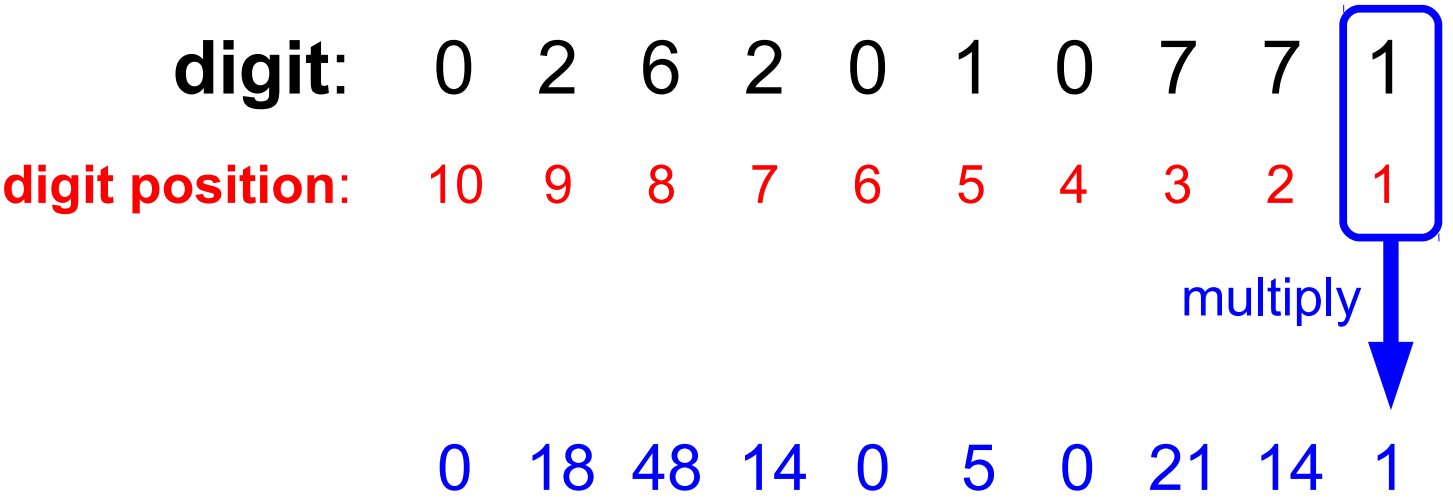

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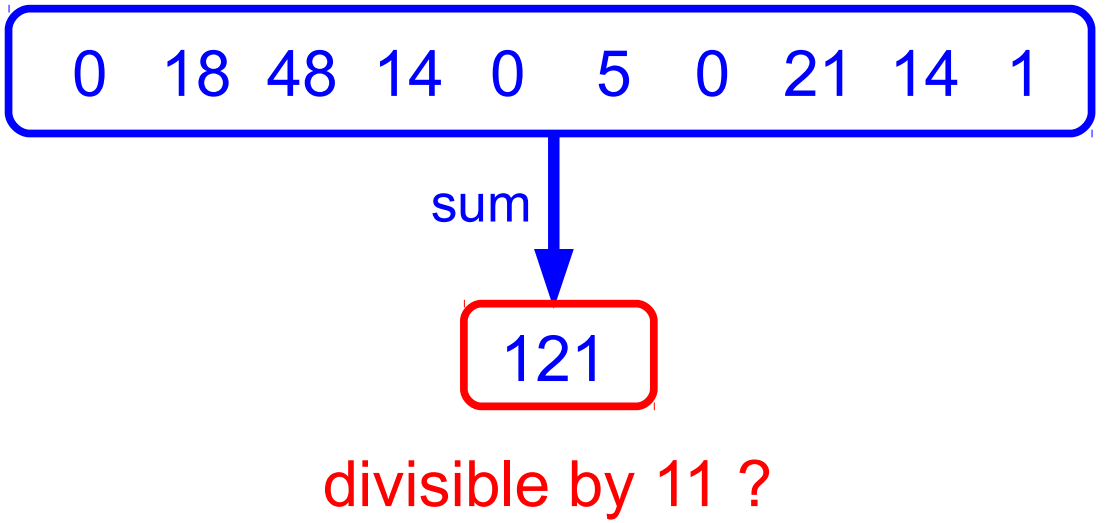
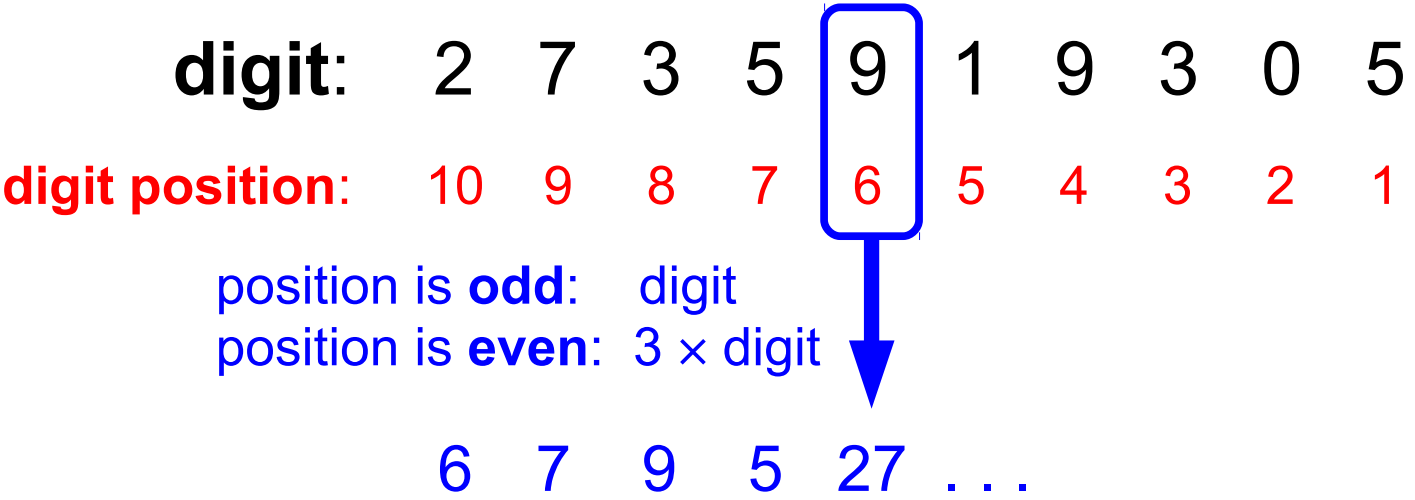
ISBN # 0262010771

digit:	0	2	6	2	0	1	0	7	7	1
digit position:	10	9	8	7	6	5	4	3	2	1



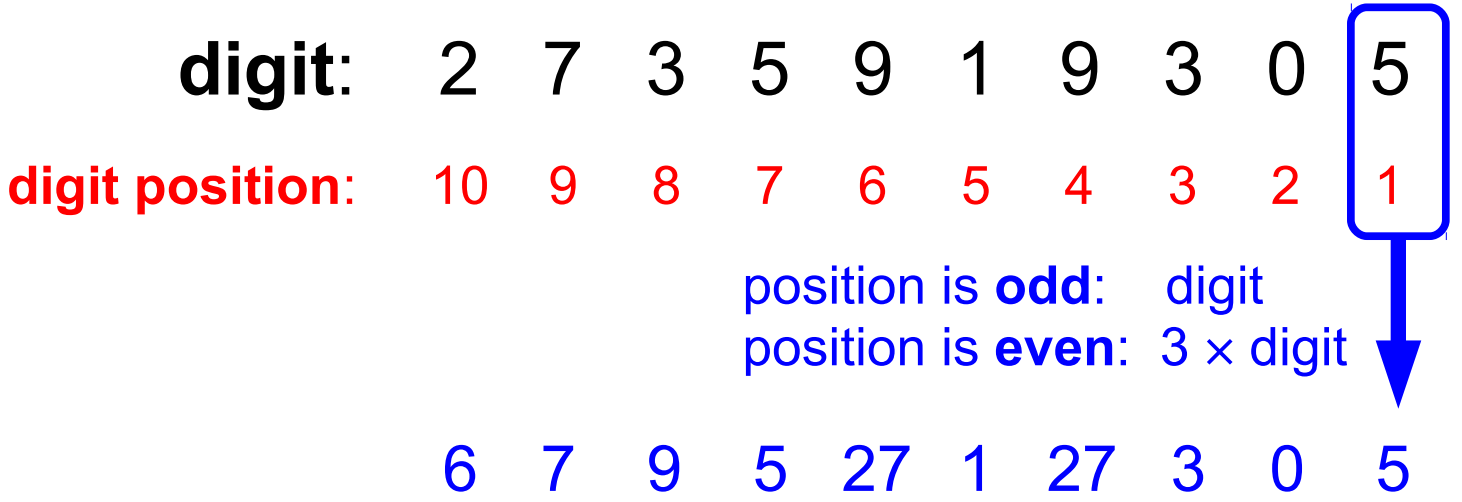
Self-Verifying Numbers

UPC # 2735919305



Self-Verifying Numbers

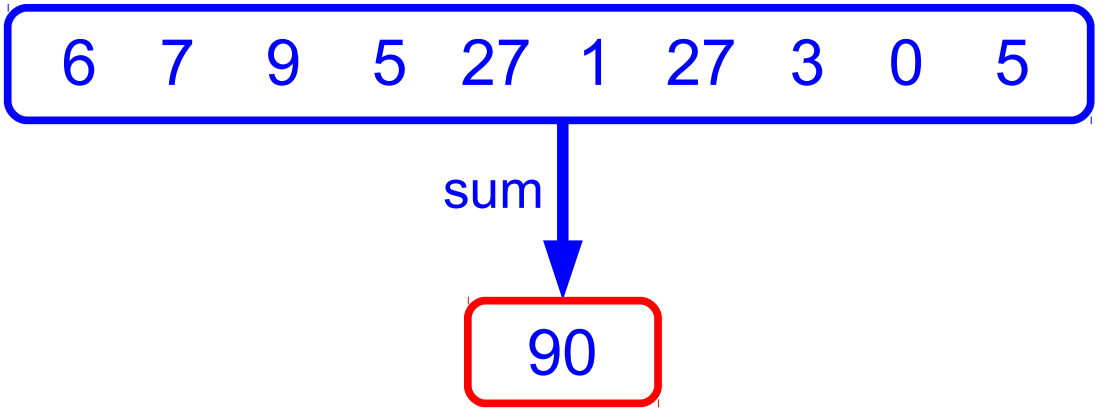
UPC # 2735919305



Self-Verifying Numbers

UPC # 2735919305

digit:	2	7	3	5	9	1	9	3	0	5
digit position:	10	9	8	7	6	5	4	3	2	1



divisible by 10 ?

Self-Verifying Numbers

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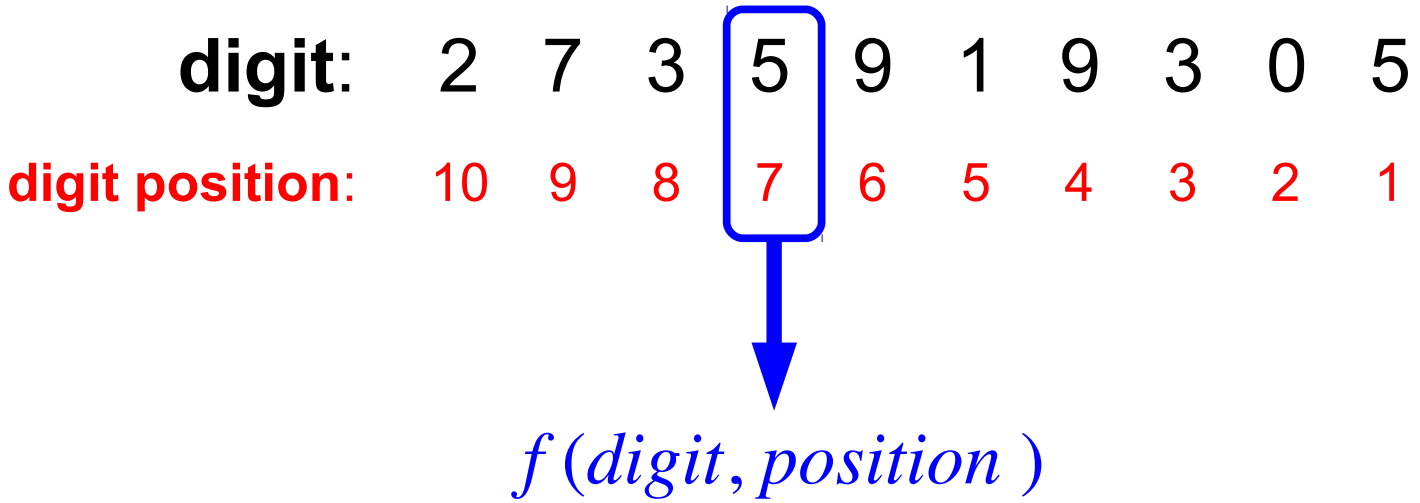


ISBN

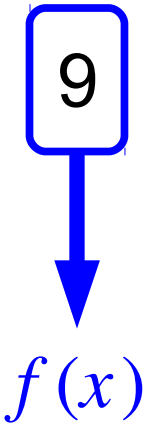
```
(lambda (digit position)
  (* digit position))
```

UPC

```
(lambda (digit position)
  (if (odd? position)
      digit
      (* 3 digit)))
```

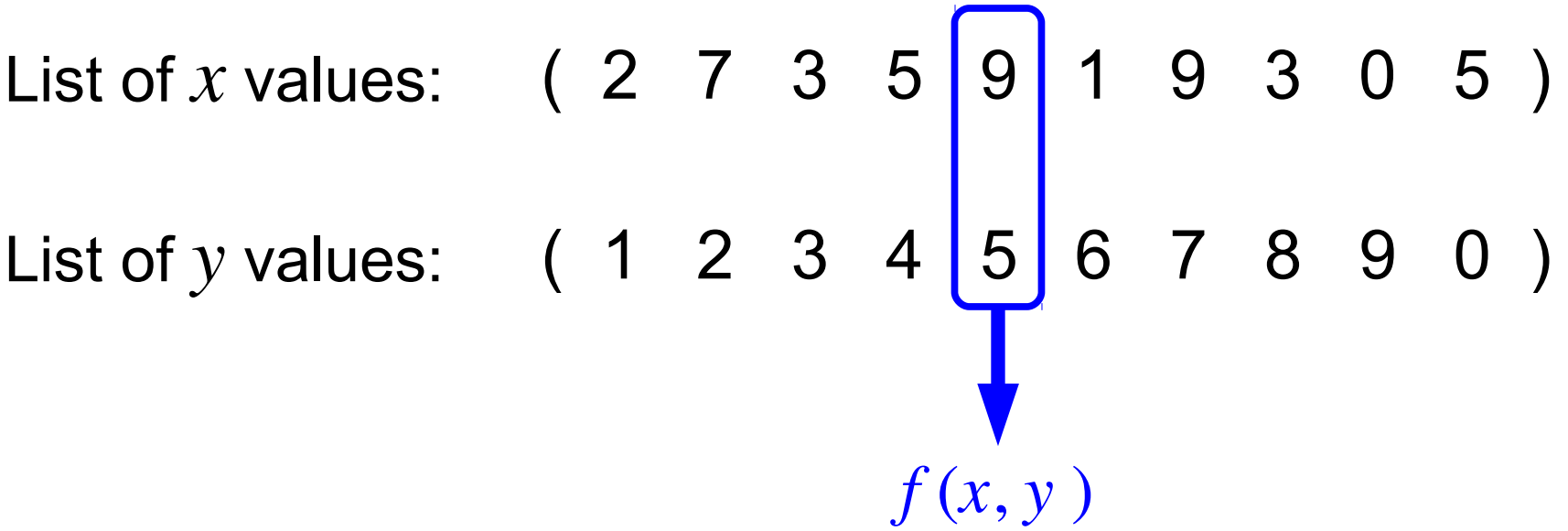
Mapping Across One List

List of x values: (2 7 3 5 9 1 9 3 0 5)



Result: ($f(2)$ $f(7)$ $f(3)$ $f(5)$ $f(9)$ … $f(5)$)

Mapping Across Two Lists



Result: ($f(2,1)$ $f(7,2)$ $f(3,3)$ $f(5,4)$ … $f(5,0)$)

Credit Card Numbers

6011 3026 3145 2178

position is **odd**: digit
position is **even** and digit < 5: $2 \times$ digit
position is **even** and digit $\geq$ 5: $2 \times$ digit + 1

```
(lambda (digit position)
  (cond
    [(odd? position) digit]
    [(< digit 5) (* 2 digit)]
    [else (+ 1 (* 2 digit))]))
```

divisor: **10**