ciuy

Release 1.0.0

May 22, 2020

Contents:

Package for validating Uruguayan identity document numbers.

The functions in this package work with strings and ignore any non-digit characters. Numbers are valid too. So for example, the following expressions represent the same document number:

```
'1.234.567-2'
'12345672'
12345672
```

CHAPTER 1

Installation

ciuy can be installed with pip:

CHAPTER 2

Usage

```
>>> import ciuy
>>> ciuy.validate_ci("1.234.567-2")
True
>>> ciuy.validation_digit("1.234.567")
'2'
>>> ciuy.random()
'82405816'
```

See *Functions and examples* for more detailed documentation of each function.

CHAPTER 3

Testing

This package includes some doctests, as well as unit tests that can be run with `pytest`.

After cloning the repository, you can run the doctests with:

```
$ python3 -m doctest ./ciuy/__init__.py -v
(several lines ommited)
11 passed and 0 failed.
Test passed.
```

Use `pytest` to run the unit tests:

```
$ py.test
============================= test session starts ==============================
platform linux -- Python 3.8.1, pytest-5.3.5, py-1.8.1, pluggy-0.13.1
rootdir: /home/ciuy
collected 98 items

tests\test_clean.py ..........                                           [ 10%]
tests\test_command_line.py .......................                       [ 34%]
tests\test_random_ci.py ..                                               [ 36%]
tests\test_validate_ci.py .......................................        [ 76%]
tests\test_validation_digit.py ........................                  [100%]

============================== 98 passed in 1.09s =============================
```

You can also use `pytest` to run all tests, including doctests, with:

```
$ py.test --doctest-modules
```

CHAPTER 4

Command line

After installation, the following commands become available:

```
$ validate_ci 1.234.567-2
True
$ validation_digit 1.234.567
2
$ random_ci
82405816
```

4.1 Functions and examples

ciuy.**validate_ci**(*ci*)

Validates the document number passed as a paremeter.

Parameters **ci** (*str*) – The document number to validate. Any non-digit characters are ignored. A number can be passed as a parameter as well.

Returns True if the document number is valid, False otherwise.

Return type bool

Raises **ValueError** – if ci, without including the validation digit, is lower than 100.000 or higher than 9.999.999.

```
>>> ciuy.validate_ci(1.234.567-2)
True
```

ciuy.**validation_digit**(*ci*)

Returns the validation digit for a given document number.

Parameters **ci** (*str*) – The document number for which one wants to find the validation digit. Any non-digit characters are ignored. A number can be passed as a parameter as well.

Returns The validation digit.

Return type bool

Raises **ValueError** – if ciis lower than 100.000 or higher than 9.999.999.

```
>>> ciuy.validation_digit(1.234.567)
'2'
```

ciuy.**random**()

Returns a random document number, including validation digit. The document number is in the (100.000, 9.999.999) range.

Returns A random valid document number.

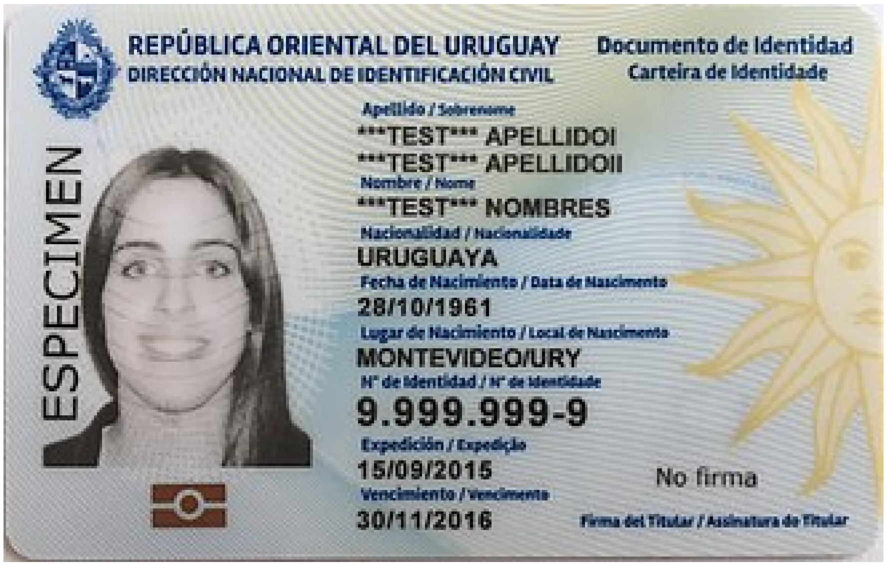
Return type str

```
>>> ciuy.random()
'82405816'
```

4.2 About Uruguayan id numbers

In Uruguay, each person is issued an identity card, which contains all the necessary information to identify the owner unequivocally.

This document is mandatory for all inhabitants Uruguay, whether they are native citizens, legal citizens, or resident aliens in the country, even for children as young as 45 days old.



REPÚBLICA ORIENTAL DEL URUGUAY
DIRECCIÓN NACIONAL DE IDENTIFICACIÓN CIVIL

Documento de Identidad
Carteira de Identidade

ESPECIMEN

Apellido / Sobrenome
TEST APELLIDOI
TEST APELLIDOII

Nombre / Nome
TEST NOMBRES

Nacionalidad / Nacionalidade
URUGUAYA

Fecha de Nacimiento / Data de Nascimento
28/10/1961

Lugar de Nacimiento / Local de Nascimento
MONTEVIDEO/URY

N° de Identidad / N° de Identidade
9.999.999-9

Expedición / Expedição
15/09/2015

Vencimiento / Vencimento
30/11/2016

No firma
Firma del Titular / Assinatura do Titular

Fig. 1: Sample Uruguayan id card.

Each person is issued an identiy number (which is decided at birth for native citizens), which contains 7 digits and a validation number. Old identity number contain only 6 digits, and a validation number.

4.2.1 Calculating the validation number

In order to calculate the validation number for a 7-digit id number, the number must be multiplied, digit by digit, by 8123476. Then the result is added. So if the number is interpreted as a 7 dimensional vector, one must calculate the dot product of said vector by `<8, 1, 2, 3, 4, 7, 6>`.

Then, if the resulting number is `n`, the validation digit will be `n` modulo 10.

Validating 6-digit numbers

6 digit numbers should be multiplied by `<1, 2, 3, 4, 7, 6>`instead. Given `n`, the resulting number, then the validation digit will be `n` modulo 10.

An example

Validating 1.234.567:

$$< 1, 2, 3, 4, 5, 6, 7 > . < 8, 1, 2, 3, 4, 7, 6 >=$$
$$1 * 8 + 2 * 1 + 3 * 2 + 4 * 3 + 5 * 4 + 6 * 7 + 7 * 6 = 132$$

$$132 \, mod \, 10 = 2$$

So the validation digit is `2`. The id number would normally be written as 1.234.567-2.

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