FGA 0238 - Testes de Software – Turma: T01 **Semestre:** 2023.2

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Equipe: Testeiros de Jeová

Atividade 3 – Desenvolver Testes de Unidade

1 Identificação do Projeto

O MEC-Energia tem como objetivo auxiliar e avaliar os contratos de conta de energia elétrica com base em registro das faturas mensais de energia, com relatórios de recomendações, em instituições de ensino superior.

2 Cobertura de testes

A cobertura de teste é a seguinte:

```
tests\settings\test_settings.py .......                                  [  8%]
tests\test_date.py ..                                                    [ 10%]
tests\test_subgroup.py ....                                              [ 15%]
tests\contracts\contract\test_contract_dates.py ....                     [ 20%]
tests\contracts\contract\test_contract_endpoint.py ...                   [ 24%]
tests\contracts\contract\test_contract_subgroup.py .....                 [ 30%]
tests\tariffs\distributors\test_distributors_creation.py ...             [ 34%]
tests\tariffs\distributors\test_distributors_endpoint.py ....            [ 39%]
tests\tariffs\tariff\test_tariff_creation.py ....                        [ 43%]
tests\tariffs\tariff\test_tariffs_endpoint.py ........                   [ 53%]
tests\universities\consumer_unit\test_consumer_unit_creation.py .        [ 54%]
tests\universities\consumer_unit\test_consumer_unit_exception.py .       [ 56%]
tests\universities\consumer_unit\test_consumer_units_endpoint.py ..      [ 58%]
tests\universities\consumer_unit\test_consumer_units_properties.py ..    [ 60%]
tests\universities\university\test_universities_endpoint.py ....         [ 65%]
tests\users\test_university_users_endpoint.py ............              [ 80%]
tests\users_permissions\test_university_permissions.py ...               [ 84%]
tests\test_cnpj_validator.py ..........                                  [ 96%]
tests\recommendation\test_blue_percentile_calculator.py .                [ 97%]
tests\recommendation\test_green_percentile_calculator.py .               [ 98%]
tests\recommendation\test_recommendation.py .                            [100%]
```

Name	Stmts	Miss	Branch	BrPart	Cover
contracts\apps.py	4	0	0	0	100%
contracts\migrations\0001_initial.py	7	0	0	0	100%
contracts\migrations\0002_contract_consumer_unit.py	5	0	0	0	100%
contracts\migrations\0003_energybill_consumer_unit.py	5	0	0	0	100%
contracts\migrations\0004_alter_contract_start_date.py	5	0	0	0	100%
contracts\migrations\0005_alter_contract_supply_voltage.py	4	0	0	0	100%
contracts\migrations\0006_alter_contract_subgroup.py	4	0	0	0	100%
contracts\migrations\0007_contract_distributor_alter_contract_tariff_flag.py	5	0	0	0	100%
contracts\migrations\0008_alter_contract_distributor.py	5	0	0	0	100%
contracts\migrations\0009_alter_contract_distributor.py	5	0	0	0	100%
contracts\migrations\0010_energybill_energy_bill_file.py	5	0	0	0	100%
contracts\migrations\0011_energybill_anotacoes.py	4	0	0	0	100%
contracts\models.py	69	7	14	2	87%
contracts\serializers.py	58	0	0	0	100%
contracts\urls.py	5	0	0	0	100%
contracts\views.py	129	96	10	0	24%
mec_energia\schema.py	6	0	0	0	100%
mec_energia\settings.py	54	1	6	3	93%
mec_energia\urls.py	20	0	0	0	100%
recommendation\admin.py	1	0	0	0	100%
recommendation\apps.py	4	0	0	0	100%
recommendation\blue.py	62	0	6	0	100%
recommendation\calculator.py	89	11	8	3	84%
recommendation\green.py	66	3	6	0	96%
recommendation\helpers.py	28	21	8	0	19%
recommendation\response.py	72	54	8	0	22%
recommendation\serializers.py	5	0	0	0	100%
recommendation\urls.py	5	0	0	0	100%
recommendation\views.py	73	49	18	0	26%
tariffs\apps.py	4	0	0	0	100%
tariffs\migrations\0001_initial.py	6	0	0	0	100%
tariffs\migrations\0002_tariff_subgroup_alter_tariff_unique_together.py	4	0	0	0	100%
tariffs\migrations\0003_alter_tariff_unique_together_tariff_flag_and_more.py	4	0	0	0	100%
tariffs\migrations\0004_alter_tariff_distributor.py	5	0	0	0	100%
tariffs\migrations\0005_distributor_is_active.py	4	0	0	0	100%
tariffs\migrations\0006_alter_tariff_distributor.py	5	0	0	0	100%
tariffs\migrations\0007_alter_distributor_cnpj_and_more.py	4	0	0	0	100%
tariffs\migrations\0008_alter_distributor_name.py	4	0	0	0	100%
tariffs\models.py	134	29	34	4	73%
tariffs\serializers.py	80	2	2	0	98%
tariffs\urls.py	5	0	0	0	100%
tariffs\views.py	124	33	26	7	71%
universities\apps.py	4	0	0	0	100%
universities\migrations\0001_initial.py	5	0	0	0	100%
universities\migrations\0002_consumerunit.py	5	0	0	0	100%
universities\migrations\0003_alter_consumerunit_university.py	5	0	0	0	100%
universities\migrations\0003_university_acronym.py	4	0	0	0	100%
universities\migrations\0004_merge_20221025_0920.py	4	0	0	0	100%
universities\migrations\0005_university_created_on_alter_consumerunit_created_on.py	4	0	0	0	100%
universities\migrations\0006_alter_university_created_on.py	4	0	0	0	100%
universities\migrations\0007_university_is_active.py	4	0	0	0	100%
universities\models.py	118	59	32	0	46%

universities\recommendation.py	44	18	12	0	57%
universities\serializers.py	53	0	0	0	100%
universities\urls.py	5	0	0	0	100%
universities\views.py	150	95	10	0	34%
users\apps.py	4	0	0	0	100%
users\authentications.py	123	61	12	1	50%
users\managers.py	37	16	12	2	51%
users\migrations\0001_initial.py	8	0	0	0	100%
users\migrations\0002_alter_universityuser_favorite_consumer_units.py	4	0	0	0	100%
users\migrations\0003_customuser_type.py	4	0	0	0	100%
users\migrations\0004_alter_customuser_type.py	4	0	0	0	100%
users\migrations\0005_customuser_created_on.py	4	0	0	0	100%
users\migrations\0006_alter_customuser_type.py	4	0	0	0	100%
users\migrations\0007_alter_customuser_type.py	4	0	0	0	100%
users\models.py	78	34	18	1	51%
users\requests_permissions.py	32	5	8	3	80%
users\serializers.py	59	0	0	0	100%
users\urls.py	5	0	0	0	100%
users\views.py	85	29	10	2	65%
utils\cnpj_validator_util.py	25	1	10	1	94%
utils\date_util.py	8	0	0	0	100%
utils\email\send_email.py	29	19	0	0	34%
utils\email\templates_email\password_templates_email.py	10	6	0	0	40%
utils\email\valid_email.py	8	5	2	0	30%
utils\endpoints_util.py	8	3	0	0	62%
utils\energy_bill_util.py	77	33	14	1	52%
utils\subgroup_util.py	20	1	10	0	97%
utils\tariff_util.py	9	8	4	0	8%
utils\user\authentication.py	16	7	2	0	50%
utils\user\user_type_util.py	18	4	10	4	71%
TOTAL	2279	710	312	34	66%

3 Método a ser testado

O método a ser testado é o “validate”, que pertence a classe “CnpjValidator”. O método tem como objetivo validar se um número de CNPJ que foi informado é válido de acordo com as regras brasileiras.

```python
def validate(cls, cnpj: str):
    if not cnpj.isdecimal() or len(cnpj) != 14:
        raise Exception('CNPJ must contain exactly 14 numerical digits')

    cnpj_digits = [int(d) for d in cnpj]
    cnpj_base = cnpj_digits[:13]
    expected_verified_digits = cnpj_digits[12:]

    verifier_digit_1 = cls._verify_digit(cls.multipliers_1, cnpj_base)
    verifier_digit_2 = cls._verify_digit(
        cls.multipliers_2, [*cnpj_base, verifier_digit_1])

    if [verifier_digit_1, verifier_digit_2] != expected_verified_digits:
        raise Exception('Invalid CNPJ')
```

https://gitlab.com/GuilhermeSoaress/mec-energia-api-testes/-/blob/develop/utils/cnpj_validator_util.py?ref_type=heads

4 Classe de Teste

```python
import pytest
from utils.cnpj_validator_util import CnpjValidator

valid_cnpjs_as_params = pytest.mark.parametrize('cnpj', [
    ('58577114000189'),
    ('11222333000181'),
    ('00038174000143'),  # UnB
])

invalid_cnpjs_as_params = pytest.mark.parametrize('cnpj', [
    ('11111111111111'),
])

wrong_length_or_non_numeric_cnpjs_as_params = pytest.mark.parametrize('cnpj', [
    # wrong length
    (''),
    ('1234567890123'),
    ('123456789012345'),
    # non numeric
    ('0003817400014_'),
    ('F0038174000143'),
    ('00!38174000143'),
])

sut = CnpjValidator.validate

@valid_cnpjs_as_params
def test_accepts_valid_cnpj(cnpj: str):
    sut(cnpj)

@wrong_length_or_non_numeric_cnpjs_as_params
def test_rejects_cnpj_with_non_numeric_digits(cnpj: str):
    with pytest.raises(Exception) as e:
        sut(cnpj)
    assert 'must contain exactly 14 numerical digits' in str(e.value)

@invalid_cnpjs_as_params
def test_rejects_invalid_cnpjs(cnpj: str):
    with pytest.raises(Exception) as e:
        sut(cnpj)
    assert 'Invalid' in str(e.value)
```

https://gitlab.com/GuilhermeSoaress/mec-energia-api-testes

5 Tabela de decisões/condições

<Apresentar a tabela de decisões e condições>

Tabela 1: Decisões e Condições

ID	Decisão (linha)	Condição	Situação para Verdadeiro	Situação para Falso
CD1				
...				
CDN				

6 Tabelas verdade, pares de independência e combinações de condições MC/DC

<Apresentar a tabela verdade para cada decisão com mais de uma condição>

Tabela 2: Tabela Verdade para Decisão da linha N

ID	<condição 1>	...	<condição n>	Resultado
1				
...				
N				

Pares de independência para cada condição:

- Condição 1:
- ...
- Condição n:

Combinações obtidas a partir dos pares de independência:

- Combinação 1:
- ...