

Gráficos: Django + Highcharts

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<http://rg3915.github.io>

github.com/grupy-sp/encontros

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Django

Se você não conhece Django sugiro que leia este tutorial.

<http://pythonclub.com.br/tutorial-django-17.html>

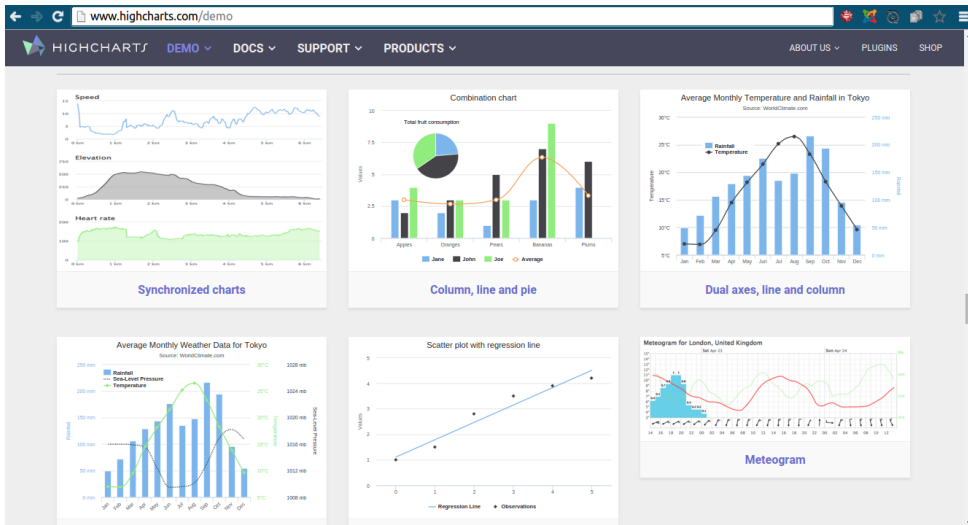
Além da documentação oficial.

<https://docs.djangoproject.com/en/1.9/intro/tutorial01/>

Django==1.9.6

Highcharts

<http://www.highcharts.com/>



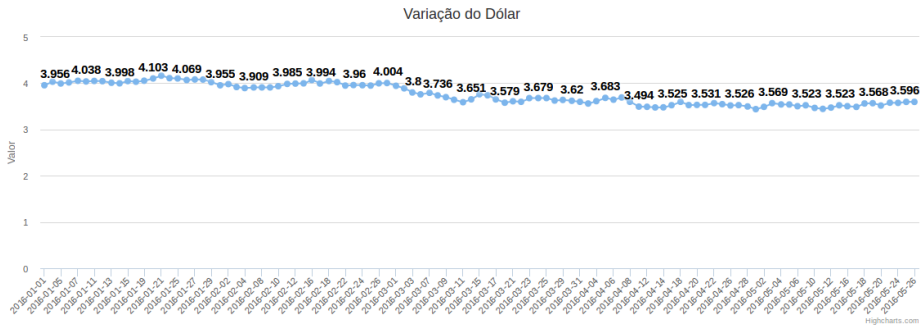
Objetivo

[Variação do Dólar](#)

[Variação do Euro](#)

[Porcentagem de Categorias](#)

[Admin](#)



Começando...

```
$ git clone https://github.com/rg3915/highcharts.git  
$ cd highcharts  
$ source setup.sh
```

Modelo

```
1  # models.py
2  from django.db import models
3
4
5  class Dollar(models.Model):
6      date = models.DateField('data')
7      value = models.DecimalField('valor', max_digits=4,
8                                  decimal_places=3)
9
10
11 class Euro(models.Model):
12     date = models.DateField('data')
13     value = models.DecimalField('valor', max_digits=4,
14                                 decimal_places=3)
```

```
1 class Category(models.Model):
2     category = models.CharField('categoria', max_length=50,
3                                   unique=True)
4
5
6 class Product(models.Model):
7     category = models.ForeignKey('Category',
8                                   verbose_name='categoria')
9     product = models.CharField('Produto', max_length=60,
10                                 unique=True)
11     price = models.DecimalField('Preço', max_digits=6,
12                                  decimal_places=2)
```

Importando os dados de um CSV

Variação do dólar

<http://www.dolarhoje.net.br/dolar-comercial.php>

```
1  # dollar.csv
2  date,value
3  1/1/2016,3.956
4  4/1/2016,4.033
5  5/1/2016,3.994
6  6/1/2016,4.017
7  7/1/2016,4.052
8  8/1/2016,4.038
9  11/1/2016,4.049
10 ...
```

Variação do euro

<http://br.investing.com/currencies/eur-brl-historical-data>


```
1 # shell_dollar.py
2 import csv
3 import datetime as dt
4 from highcharts.core.models import Dollar
5
6 dollar_list = []
7 with open('highcharts/fix/dollar.csv', 'r') as f:
8     r = csv.DictReader(f)
9     for dct in r:
10         # Convert '%d/%m/%Y' to '%Y-%m-%d'.
11         d = dt.datetime.strptime(dct['date'], '%d/%m/%Y') \
12             .strftime('%Y-%m-%d')
13         dollar_list.append((d, dct['value']))
14     f.close()
15
16 obj = [Dollar(date=val[0], value=val[1]) for val in dollar_list]
17 Dollar.objects.bulk_create(obj)
```

Importando os dados via shell

```
python manage.py shell < highcharts/shell/shell_dollar.py
```

graphics.py

```
1  # graphics.py
2  import json
3  from django.db.models import Count
4  from django.core.serializers.json import DjangoJSONEncoder
5  from django.http import HttpResponse
6  from .models import Dollar, Euro, Product
7
8
9  def dollar_json(request):
10     data = Dollar.objects.values('date', 'value')
11     lista = [{'dia': i['date'],
12              'valor': float(i['value'])} for i in data]
13     resp = json.dumps(lista, cls=DjangoJSONEncoder)
14     return HttpResponse(resp)
```

```
1 def euro_json(request):
2     data = Euro.objects.values('date', 'value')
3     lista = [{'dia': i['date'],
4               'valor': float(i['value'])} for i in data]
5     resp = json.dumps(lista, cls=DjangoJSONEncoder)
6     return HttpResponse(resp)
```

urls.py

```
1  # urls.py
2  from django.conf.urls import include, url
3  from django.contrib import admin
4
5  urlpatterns = [
6      url(r'', include('highcharts.core.urls', namespace='core')),
7      url(r'^admin/', include(admin.site.urls)),
8  ]
```

core/urls.py

```
1  # core/urls.py
2  from django.conf.urls import url
3  from highcharts.core.graphics import dollar_json, euro_json, product_json
4  from highcharts.core import views as v
5
6  urlpatterns = [
7      url(r'^$', v.home, name='home'),
8      url(r'^dollar-graphic/$', v.dollar_graphic, name='dollar-graphic'),
9      url(r'^euro-graphic/$', v.euro_graphic, name='euro-graphic'),
10     url(r'^product-graphic/$', v.product_graphic, name='product-graphic'),
11     url(r'^dollar_json/$', dollar_json),
12     url(r'^euro_json/$', euro_json),
13     url(r'^product_json/$', product_json),
14 ]
```

Views

```
1  # views.py
2  from django.shortcuts import render
3
4  def home(request):
5      return render(request, 'index.html')
6
7  def dollar_graphic(request):
8      return render(request, 'dollar_graphic.html')
9
10 def euro_graphic(request):
11     return render(request, 'euro_graphic.html')
12
13 def product_graphic(request):
14     return render(request, 'product_graphic.html')
```

Templates

Dentro da pasta `highcharts/core/` crie a pasta `templates`.

```
mkdir templates  
touch templates/base.html  
touch templates/dollar_graphic.html  
touch templates/euro_graphic.html  
touch templates/product_graphic.html
```


base.html

```
1  {% load static %}
2  <html>
3  <head>
4      <!-- jQuery -->
5      <script src="{% static "js/jquery.min.js" %}"></script>
6      <!-- HighCharts JS -->
7      <script src="{% static "js/highcharts.js" %}"></script>
8  </head>
9  <body>
10     {% include "nav.html" %}
11     <div class="container">
12         {% block content %}{% endblock content %}
13         {% block js %}{% endblock js %}
14     </div>
15 </body>
16 </html>
```

dollar_graphic.html

```
1  {% extends "base.html" %}
2  {% load static %}
3
4  {% block content %}
5      <div id="dollar-chart"></div>
6  {% endblock %}
7
8  {% block js %}
9      <script src="{% static 'js/dollar_graphic.js' %}"></script>
10 {% endblock js %}
```

Crie a pasta `static/js`.

```
mkdir -p static/js  
touch static/js/dollar_graphic.js  
touch static/js/euro_graphic.js  
touch static/js/product_graphic.js
```

dollar_graphic.js

```
1  # dollar_graphic.js
2  $(function () {
3      var url = "/dollar_json/";
4
5      $.getJSON(url, function(res){
6          /* Transformando o dicionário em lista.
7             Com o comando map eu coloco uma lista dentro da outra,
8             necessário para este tipo de gráfico. */
9          var data = res.map(function (v) {
10              return [v.dia, v.valor]
11          });
```

dollar_graphic.js

```
1      $(' #dollar-chart').highcharts({  
2          chart: {  
3              type: 'line'  
4          },  
5          title: {  
6              text: 'Variação do Dólar'  
7          },  
8          xAxis: {  
9              type: 'category'  
10         },  
11     });
```

dollar_graphic.js

```
1      yAxis: {  
2          min: 0,  
3          title: {  
4              text: 'Valor'  
5          },  
6          plotOptions: {  
7              line: {  
8                  dataLabels: {  
9                      enabled: true  
10                 },  
11             }  
12         },  
13     },  
14     legend: {  
15         enabled: false  
16     },
```

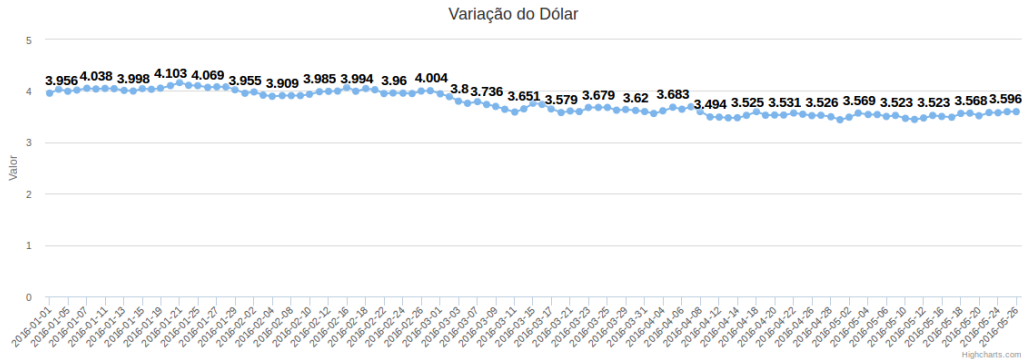
dollar_graphic.js

```
1         series: [{
2             data: data,
3             dataLabels: {
4                 enabled: true,
5                 align: 'center',
6                 style: {
7                     fontSize: '15px'
8                 }
9             }
10        }],
11    });
12 });
13 });
```

Varição do Dólar

Varição do Euro

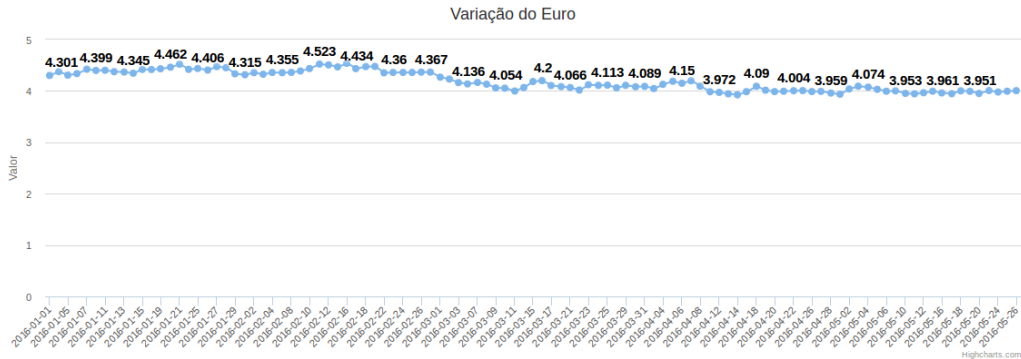
Porcentagem de Categorias



Varição do Dólar

Varição do Euro

Porcentagem de Categorias



```
1 def product_json(request):
2     ''' Porcentagem de produtos por categoria '''
3     data = Product.objects.values('category')\
4         .annotate(value=Count('category'))\
5         .order_by('category')\
6         .values('category', 'category__category', 'value')
7     total = Product.objects.all().count()
8     '''Podemos reescrever o dicionário com nossos próprios
9     nomes de campos. '''
10    lista = [{'categoria': item['category__category'],
11              'porcentagem': float((item['value'] / total) * 100)}
12             for item in data]
13    s = json.dumps(lista, cls=DjangoJSONEncoder)
14    return HttpResponse(s)
```

product_graphic.js

```
1 $(function () {  
2     var url = "/product_json/";  
3  
4     $.getJSON(url, function(res){  
5         /* Transformando o dicionário em lista.  
6            Com o comando map eu coloco uma lista dentro da outra,  
7            necessário para este tipo de gráfico. */  
8         var data = res.map(function (v) {  
9             return [v.categoria, v.porcentagem]  
10        });  
    });
```

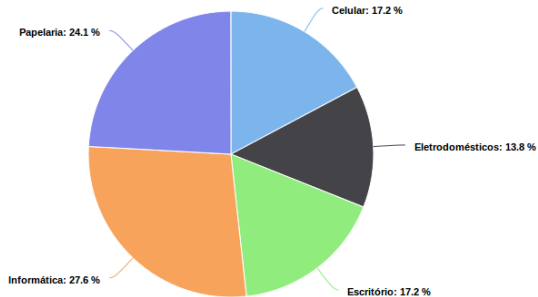
product_graphic.js

```
1      $('#product-chart').highcharts({
2          chart: {
3              type: 'pie'
4          },
5          title: {
6              text: 'Porcentagem de produtos por categoria'
7          },
8          tooltip: {
9              pointFormat: '<b>{point.percentage:.1f}%</b>'
10         },
11         plotOptions: {
12             pie: {
13                 allowPointSelect: true,
14                 cursor: 'pointer',
15                 dataLabels: {
16                     enabled: true,
17                     format: '<b>{point.name}</b>: {point.percentage:.1f}%'
```

product_graphic.js

```
1         series: [{  
2             name: 'Categoria',  
3             colorByPoint: true,  
4             data: data  
5         }],  
6     });  
7 });  
8 });
```

Porcentagem de produtos por categoria



Obrigado!

Dúvidas?

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