

ng6-o2-chart Chart Library for Angular6 by TypeScript2

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ng6-o2-chart is a chart library using d3.js (version 4) for Angular6 written by TypeScript2.

Test Project for This Library,

<https://github.com/Ohtsu/Ng6O2ChartTest/> (<https://github.com/Ohtsu/Ng6O2ChartTest/>)

Video Explanation (Japanese),

<https://www.youtube.com/watch?v=PsLDZFqXTGw> (<https://www.youtube.com/watch?v=PsLDZFqXTGw>)

Video Explanation (English),

<https://www.youtube.com/watch?v=uf5ipN2LJ78> (<https://www.youtube.com/watch?v=uf5ipN2LJ78>)

Overview

- ng6-o2-chart is a wrapper library of d3.js (version 4) for Angular6
- 12 main charts are supported

(Line, Bar, Pie, ScatterPlot, Histogram, Stack Bar, Geo Map, Geo Orthographic, Tree, Pack Layout, Choropleth, Force)

- Axis

You can include axis automatically by the configuration file.

- Legend

You can include legend automatically by the configuration file.

- Animation

You can animate such charts as Bar, Pie, Histogram, Stack Bar, Geo Orthographic and Pack Layout charts by the configuration file.

Prerequisite

- node.js
- Typescript2
- Angular6

Installation

To install this consumer project, run simply:

```
$ npm install
```

Start project

If you start local server as follows, you can get many kinds of charts in your browser by accessing <http://localhost:4200>.

```
$ ng serve
```

Version

- ng6-o2-chart-test : 0.3
- ng6-o2-chart : 0.2.
- Angular6 : 6.0.0
- TypeScript : 2.7.2
- d3.js : 4.3.0

Reference

- "Angular 5, Angular 6 Custom Library: Step-by-step guide",
<https://www.udemy.com/angular5-custom-library-the-definitive-step-by-step-guide/> (<https://www.udemy.com/angular5-custom-library-the-definitive-step-by-step-guide/>)
- "Discount Coupon Code (until 2018.7.12)",
<https://www.udemy.com/angular5-custom-library-the-definitive-step-by-step-guide/?couponCode=CUSTLIB-EN-20180713> (<https://www.udemy.com/angular5-custom-library-the-definitive-step-by-step-guide/?couponCode=CUSTLIB-EN-20180713>)
- "Angular 5, Angular 6用 カスタムライブラリの作成: 完全ステップ・バイ・ステップ・ガイド",
<https://www.udemy.com/angular5-/> (<https://www.udemy.com/angular5-/>)
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- "データビジュアライゼーションのためのD3.js徹底入門 Webで魅せるグラフとチャートの作り方", 2014/6/6, by 古旗 一浩,
http://www.amazon.co.jp/s/ref=nb_sb_noss?__mk_ja_JP=%E3%82%AB%E3%82%BF%E3%82%AB%E3%83%8A&url=search-alias%3Daps&field-keywords=ISBN978-4-7973-6886-4&rh=i%3Aaps%2C%3AISBN978-4-7973-6886-4 (http://www.amazon.co.jp/s/ref=nb_sb_noss?__mk_ja_JP=%E3%82%AB%E3%82%BF%E3%82%AB%E3%83%8A&url=search-alias%3Daps&field-keywords=ISBN978-4-7973-6886-4&rh=i%3Aaps%2C%3AISBN978-4-7973-6886-4)
- "D3.js by Example", 2015/12/29, by Michael Heydt
http://www.amazon.co.jp/s/ref=nb_sb_noss?__mk_ja_JP=%E3%82%AB%E3%82%BF%E3%82%AB%E3%83%8A&url=search-alias%3Daps&field-keywords=ISBN978-1-78528-008-5&rh=i%3Aaps%2C%3AISBN978-1-78528-008-5 (http://www.amazon.co.jp/s/ref=nb_sb_noss?__mk_ja_JP=%E3%82%AB%E3%82%BF%E3%82%AB%E3%83%8A&url=search-alias%3Daps&field-keyword=ISBN978-1-78528-008-5&rh=i%3Aaps%252C%253AISBN978-1-78528-008-5)
- "Mastering D3.js", 2014/8/25, by Pablo Navarro,
http://www.amazon.co.jp/s/ref=nb_sb_noss?__mk_ja_JP=%E3%82%AB%E3%82%BF%E3%82%AB%E3%83%8A&url=search-alias%3Daps&field-keywords=ISBN978-1-78328-627-0&rh=i%3Aaps%2C%3AISBN978-1-78328-627-0 (http://www.amazon.co.jp/s/ref=nb_sb_noss?__mk_ja_JP=%E3%82%AB%E3%82%BF%E3%82%AB%E3%83%8A&url=search-alias%3Daps&field-keyword=ISBN978-1-78328-627-0&rh=i%3Aaps%252C%253AISBN978-1-78328-627-0)
- "Data Visualization With D3 and Angular.js", 2015/4/27, by Christoph Komer,
http://www.amazon.co.jp/s/ref=nb_sb_noss?__mk_ja_JP=%E3%82%AB%E3%82%BF%E3%82%AB%E3%83%8A&url=search-alias%3Daps&field-keywords=ISBN978-1-78439-848-4&rh=i%3Aaps%2C%3AISBN978-1-78439-848-4 (http://www.amazon.co.jp/s/ref=nb_sb_noss?__mk_ja_JP=%E3%82%AB%E3%82%BF%E3%82%AB%E3%83%8A&url=search-alias%3Daps&field-keyword=ISBN978-1-78439-848-4&rh=i%3Aaps%252C%253AISBN978-1-78439-848-4)
- "Mastering TypeScript", 2015/4/23, by Nathan Rozentals,
http://www.amazon.co.jp/s/ref=nb_sb_noss?__mk_ja_JP=%E3%82%AB%E3%82%BF%E3%82%AB%E3%83%8A&url=search-alias%3Daps&field-keywords=ISBN978-1-78439-966-5&rh=i%3Aaps%2C%3AISBN978-1-78439-966-5 (http://www.amazon.co.jp/s/ref=nb_sb_noss?__mk_ja_JP=%E3%82%AB%E3%82%BF%E3%82%AB%E3%83%8A&url=search-alias%3Daps&field-keyword=ISBN978-1-78439-966-5&rh=i%3Aaps%252C%253AISBN978-1-78439-966-5)
- "D3 Tips and Tricks v4.x", by Malcolm Maclean, Leanpub,
<https://leanpub.com/d3-t-and-t-v4/read> (<https://leanpub.com/d3-t-and-t-v4/read>)

Change Log

- 2018.6.20 version 0.3 uploaded

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Step by Step Intallation of *ng6-o2-chart*

Video Explanation (Japanese),
https://www.youtube.com/watch?v=Psl_DZFqXTGw (https://www.youtube.com/watch?v=Psl_DZFqXTGw)

Video Explanation (English),
<https://www.youtube.com/watch?v=uf5ipN2LJ78> (<https://www.youtube.com/watch?v=uf5ipN2LJ78>)

Install @angular/cli

```
$ npm install -g @angular/cli
```

Create New Project

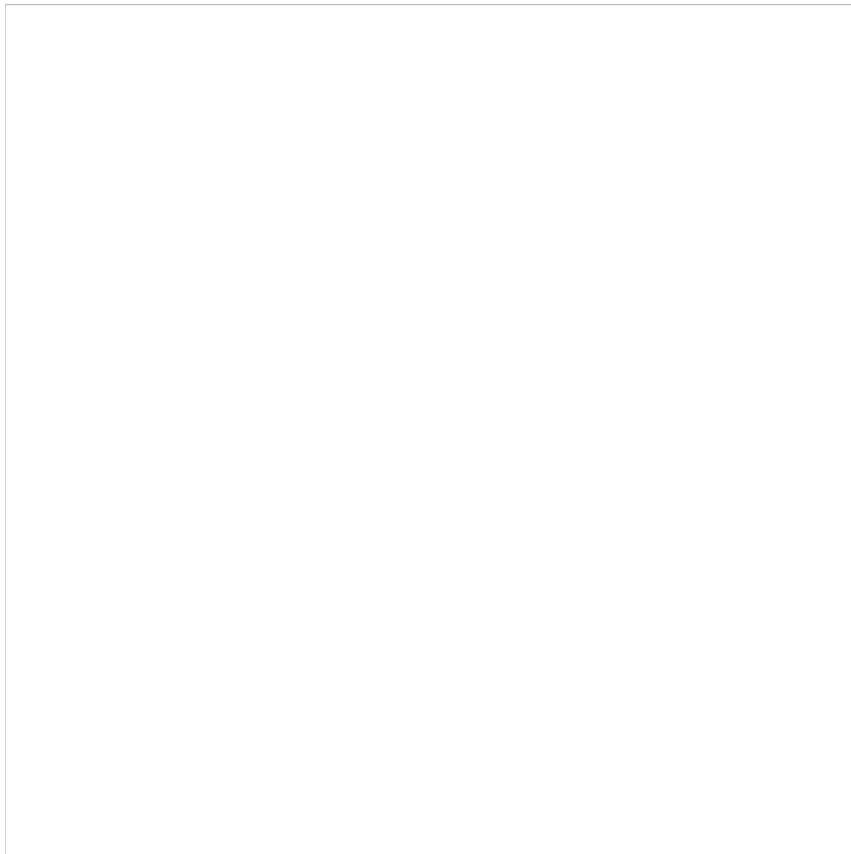
```
$ ng new sample-chart (Your project name)
$ cd sample-chart
```

Check Your Program

If you start local server as follows, you can get the first page in your browser by accessing <http://localhost:4200>.

```
$ ng serve -o
```

- *First Page*



Stop Local Server

Input **Ctrl+C** and **y+Return** to stop the local server.

Install d3.js and ng6-o2-chart

```
$ npm install d3@4.3.0 --save
$ npm install ng6-o2-chart --save
```

Modify app.module.ts

```
$ cd src/app
```

Change directory to "src/app", you will find **app.module.ts**.
Modify this file as follows.

```

import { BrowserModule } from '@angular/platform-browser';
import { NgModule } from '@angular/core';

import { AppComponent } from './app.component';
import { Ng6O2ChartModule } from 'ng6-o2-chart'; // <= Add

@NgModule({
  declarations: [
    AppComponent
  ],
  imports: [
    BrowserModule,
    Ng6O2ChartModule // <= Add
  ],
  providers: [],
  bootstrap: [AppComponent]
})
export class AppModule { }

```

Modify app.component.ts

In the same directory, modify **app.component.ts** as follows.

```

import { Ng6O2ChartModule } from 'ng6-o2-chart';
import { Component } from '@angular/core';

import * as ChartConst from 'ng6-o2-chart';

@Component({
  selector: 'app-root',
  templateUrl: './app.component.html',
  styleUrls: ['./app.component.css']
})

export class AppComponent {
  title = 'app';

  // Add Start -----

  chartType:string;
  configData:any;
  barDataJson:any;

  geoMapDataJson:any;
  geoOrthographicDataJson:any;
  choroplethDataJson:any;
  scatterPlotDataJson:any;
  lineDataJson:any;
  histogramDataJson:any;
  pieDataJson:any;
  packLayoutDataJson:any;
  treeMapDataJson:any;
  stackBarDataJson:any;
  treeDataJson:any;
  forceDataJson:any;
  DataSetJson:string;

  lineTypeName:string;
  barTypeName: string;
  pieTypeName:string;
  scatterPlotTypeName:string;
  histogramTypeName:string;
  stackBarTypeName:string;
  geoMapTypeName:string;
  geoOrthographicTypeName:string;
  treeMapTypeName:string;
  packLayoutTypeName:string;
  choroplethTypeName:string;
  treeTypeName:string;
  forceTypeName:string;

  constructor() {
    this.barTypeName = ChartConst.LINE_CHART_TYPE_NAME;
    this.lineTypeName = ChartConst.LINE_CHART_TYPE_NAME;
    this.barTypeName = ChartConst.BAR_CHART_TYPE_NAME;
    this.pieTypeName = ChartConst.PIE_CHART_TYPE_NAME;
    this.scatterPlotTypeName = ChartConst.SCATTER_PLOT_CHART_TYPE_NAME;
    this.histogramTypeName = ChartConst.HISTOGRAM_CHART_TYPE_NAME;
    this.stackBarTypeName = ChartConst.STACK_BAR_CHART_TYPE_NAME;
    this.geoMapTypeName = ChartConst.GEO_MAP_CHART_TYPE_NAME;
    this.geoOrthographicTypeName= ChartConst.GEO_ORTHOGRAPHIC_CHART_TYPE_NAME;
    this.treeMapTypeName = ChartConst.TREE_MAP_CHART_TYPE_NAME;
    this.packLayoutTypeName = ChartConst.PACK_LAYOUT_CHART_TYPE_NAME;
    this.choroplethTypeName = ChartConst.CHOROPLETH_CHART_TYPE_NAME;
    this.treeTypeName = ChartConst.TREE_CHART_TYPE_NAME;
    this.forceTypeName = ChartConst.FORCE_CHART_TYPE_NAME;

    this.initilizeData();
  }

  private initilizeData() {
    // ConfigData = this.httpClient.get('assets/json/ConfigData.json');
    this.configData = {
      // tslint:disable-next-line:quotemark
      "className": {
        'axis': 'axis',
        'axisXBorder': 'axis_x',
        'axisXText': 'axis-x-text',

```

```

    'bar': 'bar',
    'barValue': 'bar-value',
    'line': 'line',
    'multilinePrefix': 'line-',
    'grid': 'grid',
    'pie': 'pie',
    'pieInnerTitle': 'pie-inner-title',
    'pieInnerRadius': 'total',
    'histogram': 'histogram',
    'histogramBar': 'histogram-bar',
    'treemap': 'treemap',
    'treemapLabel': 'treemap-label',
    'packlayout': 'packlayout',
    'packlayoutLabel': 'packlayout-label',
  },
  'label': {
    'display': true,
  },
  'title': {
    'display': true,
    'name': 'Title',
    'className': 'chart-title',
    'height': 30,
    'leftMargin': -20,
    'bottomMargin': 10
  },
  'maxValue': {
    'auto': true,
    'x': 100,
    'y': 100,
  },
  'legend': {
    'display': true,
    'position': 'right',
    'totalWidth': 80,
    'initXPos': 5,
    'initYPos': 10,
    'rectWidth': 10,
    'rectHeight': 10,
    'xSpacing': 2,
    'ySpacing': 2
  },
  'color': {
    'auto': true, //
    'defaultColorNumber': 10,
    'opacity': 1.0,
    'userColors': [
      'blue',
      'red',
      'green',
      'yellow',
      'PaleGoldenrod',
      'Khaki',
      'DarkKhaki',
      'Gold',
      'Cornsilk',
      'BlanchedAlmond',
      'Bisque',
      'NavajoWhite',
      'Wheat',
      'BurlyWood',
      'Tan',
      'RosyBrown',
      'SandyBrown',
      'Goldenrod',
      'DarkGoldenrod',
      'Peru',
      'Chocolate'
    ],
    'focusColor': 'red',
  },
  'pie': {
    'innerRadius': {
      'percent': 20,
      'title': 'Total'
    },
    'value': {
      'display': true,
    },
    'percent': {
      'display': false,
    }
  },
  'line': {
    'legend': 'lineEnd',
    'interpolate': 'linear',
  },
  'grid': {
    'x': {
      'display': true,
    },
    'y': {
      'display': true,
    },
  },
  'margin': {
    'top': 30,
    'left': 30,
    'right': 10,
    'bottom': 20,
    'between': 5
  },
  'axis': {
    'rotation': 0,

```

```

        'borderLineWidth': 1,
        'xLabel': {
            'leftMargin': 0,
            'bottomMargin': 5
        },
        'yLabel': {
            'leftMargin': 0,
            'bottomMargin': 0
        },
    },
    'animation': {
        'enable': true,
        'duration': 4000,
    },
};

this.barDataJson =
{
    'series': [
        'English',
        'Math'
    ],
    'data': [
        {
            'x': 'suzuki',
            'y': [92, 73],
        },
        {
            'x': 'inoue',
            'y': [69, 45],
        },
        {
            'x': 'sato',
            'y': [70, 100],
        },
        {
            'x': 'tanaka',
            'y': [43, 66],
        },
        {
            'x': 'ida',
            'y': [60, 70],
        },
        {
            'x': 'kato',
            'y': [55, 63],
        },
    ],
};

this.lineDataJson = {
    'series': [
        'year',
        'sell',
    ],
    'data': [
        {
            'name': 'software',
            'value': [
                {
                    'x': '2010',
                    'y': 18
                },
                {
                    'x': '2011',
                    'y': 22
                },
                {
                    'x': '2012',
                    'y': 30
                },
                {
                    'x': '2013',
                    'y': 31
                },
            ]
        },
        {
            'name': 'hardware',
            'value': [
                {
                    'x': '2010',
                    'y': 15
                },
                {
                    'x': '2011',
                    'y': 16
                },
                {
                    'x': '2012',
                    'y': 10
                },
                {
                    'x': '2013',
                    'y': 21
                },
            ]
        },
        {
            'name': 'device',
            'value': [
                {
                    'x': '2010',
                    'y': 25
                },
            ]
        },
    ],
};

```

```

        },
        {
            'x': '2011',
            'y': 26
        },
        {
            'x': '2012',
            'y': 30
        },
        {
            'x': '2013',
            'y': 31
        },
    ]
},
{
    'name': 'others',
    'value': [
        {
            'x': '2010',
            'y': 100
        },
        {
            'x': '2011',
            'y': 16
        },
        {
            'x': '2012',
            'y': 20
        },
        {
            'x': '2013',
            'y': 41
        },
    ]
},
],
};

this.geoOrthographicDataJson =
{
    'map': {
        'baseGeoDataUrl': 'https://raw.githubusercontent.com/Ohtsu/data/master/o2-chart/world.geojson',
        'keyDataName': 'features',
        'targetPropertyName': 'properties.name',
        'scale': 160,
        'colorNumber': 10,
        'rotate': {
            'horizontal': 210,
            'vertical': 5
        },
        'clipAngle': 90,
        'oceanColor': 'navy',
        'antarcticaColor': 'white',
    },
    'data': [
        {
            'name': 'Australia',
            'color': 'red'
        },
        {
            'name': 'Antarctica',
            'color': 'white'
        },
        {
            'name': 'Japan',
            'color': 'teal'
        },
    ]
}

this.geoMapDataJson =
{
    'map': {
        'baseGeoDataUrl': 'https://raw.githubusercontent.com/Ohtsu/data/master/o2-chart/world.geojson',
        'scale': 75,
        'keyDataName': 'features',
        'targetPropertyName': 'properties.name',
    },
    'data': [
        {
            'name': 'Australia',
            'color': 'red'
        },
        {
            'name': 'Antarctica',
            'color': 'white'
        },
        {
            'name': 'Japan',
            'color': 'blue'
        },
    ],
};

this.stackBarDataJson =
{
    'config': {
        'timeFormat': '%Y',
    },
    'series': [
        'year',
    ]
}

```

```

'sell',
],
'data':[
{
  'name': 'software',
  'value':[
    {
      'x':'2010',
      'y':18
    },
    {
      'x':'2011',
      'y':22
    },
    {
      'x':'2012',
      'y':30
    },
    {
      'x':'2013',
      'y':31
    },
  ]
},
{
  'name': 'hardware',
  'value':[
    {
      'x':'2010',
      'y':15
    },
    {
      'x':'2011',
      'y':16
    },
    {
      'x':'2012',
      'y':10
    },
    {
      'x':'2013',
      'y':21
    },
  ]
},
{
  'name': 'device',
  'value':[
    {
      'x':'2010',
      'y':25
    },
    {
      'x':'2011',
      'y':26
    },
    {
      'x':'2012',
      'y':30
    },
    {
      'x':'2013',
      'y':31
    },
  ]
},
{
  'name': 'others',
  'value':[
    {
      'x':'2010',
      'y':5
    },
    {
      'x':'2011',
      'y':16
    },
    {
      'x':'2012',
      'y':20
    },
    {
      'x':'2013',
      'y':41
    },
  ]
},
],
];

this.scatterPlotDataJson =
{
  'series':[
    'seriesA',
    'seriesB',
    'seriesC'
  ],
  'data':[
    {
      'name': 'suzuki',
      'value':[
        {'x':30,'y':40,'r':5},

```

```

        {'x':120,'y':115,'r':10},
        {'x':125,'y':90,'r':2},
        {'x':150,'y':160,'r':1},
        {'x':150,'y':160,'r':3},
        {'x':128,'y':215,'r':5},
        {'x':130,'y':40,'r':15},
        {'x':220,'y':115,'r':25},
    ]
},
{
    'name': 'inoue',
    'value':[
        {'x':130,'y':140,'r':5},
        {'x':20,'y':15,'r':10},
        {'x':25,'y':190,'r':2},
        {'x':250,'y':60,'r':1},
        {'x':50,'y':60,'r':3},
        {'x':28,'y':15,'r':5},
        {'x':230,'y':140,'r':15},
        {'x':20,'y':215,'r':25},
    ]
},
],
};

this.histogramDataJson =
{
    'range':[0,100],
    'bins': [0,10,20,30,40,50,60,70,80,90,100],
    'data':[
        50,95,60,44,60,50,35,20,10,8,
        56,70,65,42,22,33,40,53,52,89,
        90,55,50,55,65,72,45,35,15,45,
        50,95,60,44,60,50,35,20,10,8,
        56,70,65,42,22,33,40,53,52,89,
        90,55,50,55,65,72,45,35,15,45,
        50,95,60,44,60,50,35,20,10,8,
        56,70,65,42,22,33,40,53,52,89,
        90,55,50,55,65,72,45,35,15,45,
    ],
};

this.packLayoutDataJson = {
    'name':'United States', 'value' :281421906,
    'children': [
        {'name':'California', 'value' :33871648},
        {'name':'Texas', 'value' :20851820},
        {'name':'New York', 'value' :18976457},
        {'name':'Florida', 'value' :15982378},
        {'name':'Illinois', 'value' :12419293},
        {'name':'Pennsylvania', 'value' :12281054},
        {'name':'Ohio', 'value' :11353140},
    ]
}

this.treeDataJson =
{
    'name': 'Eve',
    'children': [
        { 'name': 'Cain'
        },
        {
            'name': 'Seth',
            'children': [
                { 'name': 'Enos' },
                { 'name': 'Noam' }
            ]
        },
        { 'name': 'Abel'
        },
        {
            'name': 'Awan',
            'children': [
                { 'name': 'Enoch' }
            ]
        },
        { 'name': 'Azura'
        },
    ]
};

this.treeMapDataJson = {
    'name': 'Root',
    'children': [
        { 'name': 'Dir1', 'children': [
            { 'name': 'Dir2', 'children': [
                { 'name': 'FileA', value: 5000 },
                { 'name': 'FileB', value: 3000 },
                { 'name': 'Dir3', 'children': [
                    { 'name': 'FileC', value: 2000 },
                    { 'name': 'Dir4', 'children': [
                        { 'name': 'FileD', value: 1000 },
                        { 'name': 'FileE', value: 1500 }
                    ]
                }
            ]
            }
        ]
        },
    ]
};

```



```

}

this.choroplethDataJson = {
  'map': {
    'baseGeoDataUrl': 'https://raw.githubusercontent.com/Ohtsu/data/master/o2-chart/japan.geojson',
    'scale': 900,
    'center': [137.571, 37.500],
    'startColor': 'blue',
    'endColor': 'red',
    'colorNumber': 10,
    'keyDataName': 'features',
    'targetPropertyName': 'properties.id'
  },

  'data':
  [
    {
      'id': 1,
      'value': 7.12
    },
    {
      'id': 2,
      'value': 8.97
    },
    {
      'id': 3,
      'value': 7.07
    },
    {
      'id': 4,
      'value': 7.78
    },
    {
      'id': 5,
      'value': 6.97
    },
    {
      'id': 6,
      'value': 5.79
    },
    {
      'id': 7,
      'value': 7.14
    },
    {
      'id': 8,
      'value': 6.68
    },
    {
      'id': 9,
      'value': 6.28
    },
    {
      'id': 10,
      'value': 6.32
    },
    {
      'id': 11,
      'value': 6.29
    },
    {
      'id': 12,
      'value': 6.14
    },
    {
      'id': 13,
      'value': 5.87
    },
    {
      'id': 14,
      'value': 5.75
    },
    {
      'id': 15,
      'value': 5.50
    },
    {
      'id': 16,
      'value': 5.21
    },
    {
      'id': 17,
      'value': 5.37
    },
    {
      'id': 18,
      'value': 5.23
    },
    {
      'id': 19,
      'value': 6.18
    },
    {
      'id': 20,
      'value': 5.44
    },
    {
      'id': 21,
      'value': 5.57
    },
    {
      'id': 22,
      'value': 5.81
    }
  ]
}

```

```
    },
    {
      'id':23,
      'value':5.09
    },
    {
      'id':24,
      'value':5.08
    },
    {
      'id':25,
      'value':5.07
    },
    {
      'id':26,
      'value':6.21
    },
    {
      'id':27,
      'value':7.97
    },
    {
      'id':28,
      'value':6.54
    },
    {
      'id':29,
      'value':7.41
    },
    {
      'id':30,
      'value':6.74
    },
    {
      'id':31,
      'value':5.90
    },
    {
      'id':32,
      'value':4.55
    },
    {
      'id':33,
      'value':7.24
    },
    {
      'id':34,
      'value':5.35
    },
    {
      'id':35,
      'value':5.93
    },
    {
      'id':36,
      'value':7.62
    },
    {
      'id':37,
      'value':6.25
    },
    {
      'id':38,
      'value':7.26
    },
    {
      'id':39,
      'value':7.70
    },
    {
      'id':40,
      'value':7.84
    },
    {
      'id':41,
      'value':6.32
    },
    {
      'id':42,
      'value':6.64
    },
    {
      'id':43,
      'value':6.67
    },
    {
      'id':44,
      'value':7.07
    },
    {
      'id':45,
      'value':7.01
    },
    {
      'id':46,
      'value':6.84
    },
    {
      'id':47,
      'value':11.0
    }
  ]
};
```

```

this.pieDataJson =
{
  'data':[
    {
      'name': 'software',
      'value':30,
    },
    {
      'name': 'hardware',
      'value':25
    },
    {
      'name': 'device',
      'value':16
    },
    {
      'name': 'others',
      'value':4
    },
  ],
};

this.forceDataJson =
{
  'groups': [
    {'id': 1, 'name': 'Hokkaido'},
    {'id': 2, 'name': 'Tohoku'},
    {'id': 3, 'name': 'Kanto'},
    {'id': 4, 'name': 'Chubu'},
    {'id': 5, 'name': 'kinki'},
    {'id': 6, 'name': 'Chugoku'},
    {'id': 7, 'name': 'Shikoku'},
    {'id': 8, 'name': 'Kyushu'},
  ],
  'nodes': [
    {'id': 'Sapporo', 'group': 1},
    {'id': 'Sendai', 'group': 2},
    {'id': 'Morioka', 'group': 2},
    {'id': 'Akita', 'group': 2},
    {'id': 'Fukushima', 'group': 2},
    {'id': 'Mito', 'group': 3},
    {'id': 'Utsunomiya', 'group': 3},
    {'id': 'Saitama', 'group': 3},
    {'id': 'Chiba', 'group': 3},
    {'id': 'Tokyo', 'group': 3},
    {'id': 'Kofu', 'group': 4},
    {'id': 'Nagano', 'group': 4},
    {'id': 'Niigata', 'group': 4},
    {'id': 'Toyama', 'group': 4},
    {'id': 'Kanazawa', 'group': 4},
    {'id': 'Fukui', 'group': 4},
    {'id': 'Shizuoka', 'group': 4},
    {'id': 'Nagoya', 'group': 4},
    {'id': 'Gifu', 'group': 4},
    {'id': 'Otsu', 'group': 5},
    {'id': 'Kyoto', 'group': 5},
    {'id': 'Osaka', 'group': 5},
    {'id': 'Kobe', 'group': 5},
    {'id': 'Nara', 'group': 5},
    {'id': 'Kyoto', 'group': 5},
    {'id': 'Tottori', 'group': 6},
    {'id': 'Hiroshima', 'group': 6},
    {'id': 'Matsue', 'group': 6},
    {'id': 'Matsuyama', 'group': 7},
    {'id': 'Tokushima', 'group': 7},
    {'id': 'Kochi', 'group': 7},
    {'id': 'Fukuoka', 'group': 8},
    {'id': 'Nagasaki', 'group': 8},
    {'id': 'Kumamoto', 'group': 8},
    {'id': 'Naha', 'group': 8},
  ],
  'links': [
    {'source': 'Sendai', 'target': 'Sapporo', 'value': 1},
    {'source': 'Morioka', 'target': 'Sapporo', 'value': 1},
    {'source': 'Akita', 'target': 'Sapporo', 'value': 1},
    {'source': 'Fukushima', 'target': 'Sapporo', 'value': 1},
    {'source': 'Morioka', 'target': 'Sendai', 'value': 10},
    {'source': 'Akita', 'target': 'Sendai', 'value': 10},
    {'source': 'Fukushima', 'target': 'Sendai', 'value': 10},
    {'source': 'Chiba', 'target': 'Tokyo', 'value': 20},
    {'source': 'Utsunomiya', 'target': 'Tokyo', 'value': 20},
    {'source': 'Mito', 'target': 'Tokyo', 'value': 20},
    {'source': 'Saitama', 'target': 'Tokyo', 'value': 30},
    {'source': 'Kofu', 'target': 'Tokyo', 'value': 30},
    {'source': 'Nagano', 'target': 'Tokyo', 'value': 30},
    {'source': 'Naha', 'target': 'Tokyo', 'value': 30},
    {'source': 'Osaka', 'target': 'Tokyo', 'value': 40},
    {'source': 'Sendai', 'target': 'Tokyo', 'value': 40},
    {'source': 'Hiroshima', 'target': 'Tokyo', 'value': 20},
    {'source': 'Shizuoka', 'target': 'Nagoya', 'value': 10},
    {'source': 'Tokyo', 'target': 'Nagoya', 'value': 40},
    {'source': 'Osaka', 'target': 'Nagoya', 'value': 40},
    {'source': 'Kyoto', 'target': 'Nagoya', 'value': 40},
    {'source': 'Kyoto', 'target': 'Osaka', 'value': 30},
    {'source': 'Hiroshima', 'target': 'Osaka', 'value': 20},
    {'source': 'Toyama', 'target': 'Kanazawa', 'value': 10},
    {'source': 'Fukui', 'target': 'Kanazawa', 'value': 10},
    {'source': 'Niigata', 'target': 'Kanazawa', 'value': 10},
    {'source': 'Tottori', 'target': 'Kobe', 'value': 10},
    {'source': 'Tottori', 'target': 'Hiroshima', 'value': 10},
    {'source': 'Matsue', 'target': 'Hiroshima', 'value': 10},
    {'source': 'Matsuyama', 'target': 'Hiroshima', 'value': 10},
    {'source': 'Tokushima', 'target': 'Kochi', 'value': 10},
  ],
};

```

```

        {'source': 'Matsuyama', 'target': 'Kochi', 'value': 10},
        {'source': 'Nagasaki', 'target': 'Fukuoka', 'value': 10},
        {'source': 'Kumamoto', 'target': 'Fukuoka', 'value': 10},
        {'source': 'Naha', 'target': 'Fukuoka', 'value': 10},
    ]
};

}

// Add End -----
}

```

Modify app.component.html

In the same directory, modify **app.component.html** as follows.

```

<div style="text-align:center">
  <hr>
  <h2>GeoOrthographic</h2>
  <lib-Ng602Chart [chartType]="geoOrthographicTypeName" [configData]="configData" [graphData]="geoOrthographicDataJson" [svgWidth]="'600'" [svgHeight]="'400'">
</lib-Ng602Chart>
  <hr>
  <h2>Bar</h2>
  <lib-Ng602Chart [chartType]="barTypeName" [configData]="configData" [graphData]="barDataJson" [svgWidth]="'600'" [svgHeight]="'400'"></lib-Ng602Chart>
  <hr>
  <h2>Pie</h2>
  <lib-Ng602Chart [chartType]="pieTypeName" [configData]="configData" [graphData]="pieDataJson" [svgWidth]="'600'" [svgHeight]="'400'"></lib-Ng602Chart>
  <hr>
  <h2>ScatterPlot</h2>
  <lib-Ng602Chart [chartType]="scatterPlotTypeName" [configData]="configData" [graphData]="scatterPlotDataJson" [svgWidth]="'600'" [svgHeight]="'400'"></lib-
Ng602Chart>
  <hr>
  <h2>Histogram</h2>
  <lib-Ng602Chart [chartType]="histogramTypeName" [configData]="configData" [graphData]="histogramDataJson" [svgWidth]="'600'" [svgHeight]="'400'"></lib-
Ng602Chart>
  <hr>
  <h2>PackLayout</h2>
  <lib-Ng602Chart [chartType]="packLayoutTypeName" [configData]="configData" [graphData]="packLayoutDataJson" [svgWidth]="'600'" [svgHeight]="'400'"></lib-
Ng602Chart>
  <hr>
  <h2>Tree</h2>
  <lib-Ng602Chart [chartType]="treeTypeName" [configData]="configData" [graphData]="treeDataJson" [svgWidth]="'600'" [svgHeight]="'400'"></lib-Ng602Chart>
  <hr>
  <h2>Line</h2>
  <lib-Ng602Chart [chartType]="lineTypeName" [configData]="configData" [graphData]="lineDataJson" [svgWidth]="'600'" [svgHeight]="'400'"></lib-Ng602Chart>
  <hr>
  <h2>GeoMap</h2>
  <lib-Ng602Chart [chartType]="geoMapTypeName" [configData]="configData" [graphData]="geoMapDataJson" [svgWidth]="'600'" [svgHeight]="'400'"></lib-Ng602Chart>
  <hr>
  <h2>StackBar</h2>
  <lib-Ng602Chart [chartType]="stackBarTypeName" [configData]="configData" [graphData]="stackBarDataJson" [svgWidth]="'600'" [svgHeight]="'400'"></lib-
Ng602Chart>
  <hr>
  <h2>Choropleth</h2>
  <lib-Ng602Chart [chartType]="choroplethTypeName" [configData]="configData" [graphData]="choroplethDataJson" [svgWidth]="'600'" [svgHeight]="'400'"></lib-
Ng602Chart>
  <hr>
  <h2>Force</h2>
  <lib-Ng602Chart [chartType]="forceTypeName" [configData]="configData" [graphData]="forceDataJson" [svgWidth]="'600'" [svgHeight]="'400'"></lib-Ng602Chart>
</div>

```

Modify styles.css

Change to the parent directory, you will find **styles.css**. Modify the file as follows.

```

$ cd ..

```

```

.line {fill:none; stroke:black;stroke-width: 1.5;}
.line-0 {fill:none; stroke:#1f77b4;stroke-width: 1.5;stroke-dasharray:4,10;}
.line-1 {fill:none; stroke:#ff7f0e;stroke-width: 1.5;stroke-dasharray:2,5.10;}
.line-2 {fill:none; stroke:#2ca02c;stroke-width: 1.5;}
.line-3 {fill:none; stroke:#d62728;stroke-width: 1.5;}
.line-4 {fill:none; stroke:#9467bd;stroke-width: 1.5;}
.line-5 {fill:none; stroke:#8c564b;stroke-width: 1.5;}
.line-6 {fill:none; stroke:#e377c2;stroke-width: 1.5;}
.line-7 {fill:none; stroke:#7f7f7f;stroke-width: 1.5;}
.line-8 {fill:none; stroke:#bcbd22;stroke-width: 1.5;}
.line-9 {fill:none; stroke:b#17becf;stroke-width: 1.5;}

.bar { fill:#aaa; stroke:white;stroke-width: 1;}
.bar-value { fill:black;font-size: 8pt;}
.name { font-size: 10pt;text-anchor: middle}
path {fill:white;stroke:black;stroke-width:0.5;}
.axis text {
    font-family: sans-serif;
    font-size: 11px;
}
.axis path,
.axis line {
    fill: none;
    stroke: black;
}
.axis_x line {
    fill: none;
    stroke: black;
}
.chart-title { fill:red;font-size: 18pt;text-anchor: middle;}
.histogram-bar{fill:blue; stroke:white;stroke-width: 1;}
.axis-x-text{ fill:blue;font-size: 12pt;}
.treemap { stroke:black;fill:#777}
.treemap-label { font-size: 10pt;text-anchor: middle}
.packlayout{ stroke:black;}
.packlayout-label{ font-size: 10pt;text-anchor: middle}
.pie-inner-title {font-size:9pt;text-anchor:middle;}
.pieNum {font-size:10pt;text-anchor:middle;}
.grid {stroke:gray;stroke-dasharray: 4,2;shape-rendering:crispEdges}

.tree-node circle {
    fill: #fff;
    stroke: steelblue;
    stroke-width: 3px;
}
.tree-node text {
    font: 12px sans-serif;
}
.tree-node-internal text {
    text-shadow: 0 1px 0 #fff, 0 -1px 0 #fff, 1px 0 0 #fff, -1px 0 0 #fff;
}
.tree-node-link {
    fill: none;
    stroke: #ccc;
    stroke-width: 2px;
}
.force-links line {
stroke: #999;
stroke-opacity: 0.6;
}
.force-nodes circle {
stroke: #fff;
stroke-width: 1.5px;
}

```

Restart local server

Restart the local server as follows.

```
$ ng serve -o
```

And you will get many charts in your browser.

- **First Chart (GeoOrthographic)**



Chart Data

There are two types of data: **configData**, **graphData**.

- **configData**

This is a common setting data of all charts. In this file, you can set info as follows.

-Class name defined by "html" file

-Title Name

-Legend (display or not, position, size)

-Color (Auto color number: 10 or 20, Opacity)

-Line (interpolate)

-Grid (display or not, position, size)

-Animation (enable or not, duration)

-Margin (top, left, right, bottom, between)

-Axis (left margin, bottom margin)

- **Sample configData**

```
configData = {
  "className": {
    "axis": "axis",
    "axisXBorder": "axis_x",
    "axisXText": "axis-x-text",
    "bar": "bar",
    "barValue": "bar-value",
    "line": "line",
    "multilinePrefix": "line-",
    "grid": "grid",
    "pie": "pie",
    "pieInnerTitle": "pie-inner-title",
    "pieInnerRadius": "total",
    "histogram": "histogram",
    "histogramBar": "histogram-bar",
    "treemap": "treemap",
    "treemapLabel": "treemap-label",
    "packlayout": "packlayout",
    "packlayoutLabel": "packlayout-label",
  },
  "label": {
    "display": true,
  },
  "title": {
    "display": true,
    "name": "Title",
    "className": "chart-title",
    "height": 30,
    "leftMargin": -20,
    "bottomMargin": 10
  },
  "maxValue": {
    "auto": true,
    "x": 100,
    "y": 100,
  },
  "legend": {
    "display": true,
    "position": "right",
    "totalWidth": 80,
    "initXPos": 5,
    "initYPos": 10,
    "rectWidth": 10,
    "rectHeight": 10,
    "xSpacing": 2,
    "ySpacing": 2
  },
  "color": {
    "auto": true, //
    "defaultColorNumber": 10,
    "opacity": 1.0,
    "userColors": [
      "blue",
      "red",
      "green",
    ]
  }
}
```

```

        "yellow",
        "PaleGoldenrod",
        "Khaki",
        "DarkKhaki",
        "Gold",
        "Cornsilk",
        "BlanchedAlmond",
        "Bisque",
        "NavajoWhite",
        "Wheat",
        "BurlyWood",
        "Tan",
        "RosyBrown",
        "SandyBrown",
        "Goldenrod",
        "DarkGoldenrod",
        "Peru",
        "Chocolate"
    ],
    "focusColor": "red",
},
},
"pie": {
    "innerRadius": {
        "percent": 20,
        "title": "Total"
    },
    "value": {
        "display": true,
    },
    "percent": {
        "display": false,
    }
},
},
"line": {
    "legend": "lineEnd",
    "interpolate": "linear",
},
"grid": {
    "x": {
        "display": true,
    },
    "y": {
        "display": true,
    },
},
},
"margin": {
    "top": 30,
    "left": 30,
    "right": 10,
    "bottom": 20,
    "between": 5
},
},
"axis": {
    "rotation": 0,
    "borderLineWidth": 1,
    "xLabel": {
        "leftMargin": 0,
        "bottomMargin": 5
    },
    "yLabel": {
        "leftMargin": 0,
        "bottomMargin": 0
    },
},
},
},
"animation": {
    "enable": true,
    "duration": 4000,
},
},
};

```

- **graphData**

Each chart needs its own data in Json format.

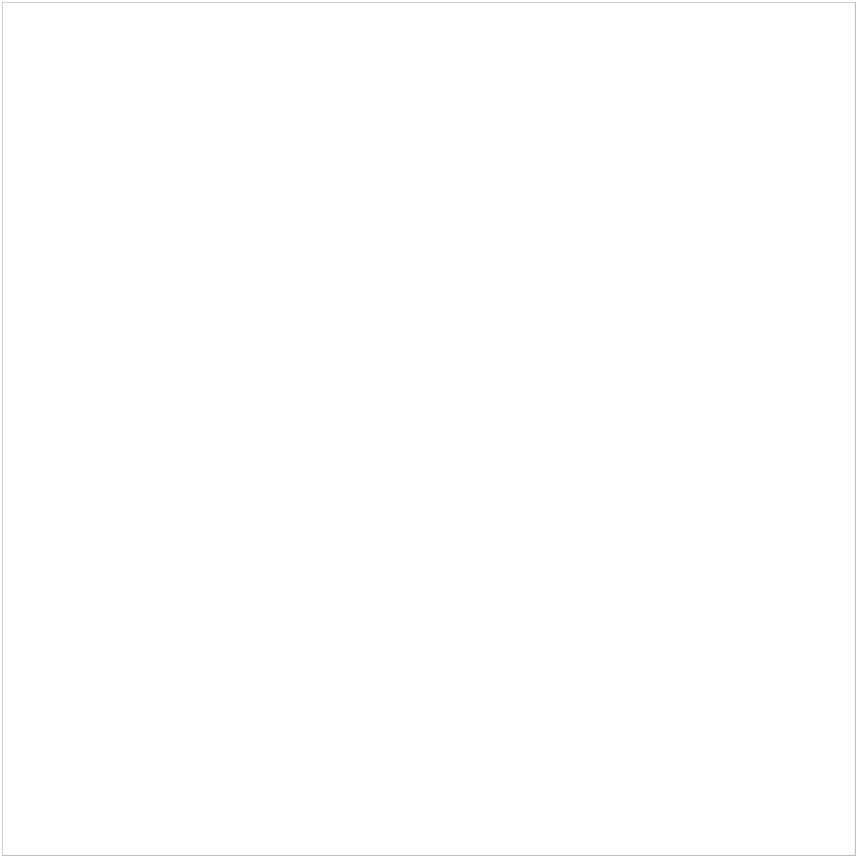
- **Sample GraphData for Line**


```

lineDataJson =
{
    "series":[
        "year",
        "sell",
    ],
    "data":[
        {
            "name": "software",
            "value":[
                {
                    "x":"2010",
                    "y":18
                },
                {
                    "x":"2011",
                    "y":22
                },
                {
                    "x":"2012",
                    "y":30
                },
                {
                    "x":"2013",
                    "y":31
                },
            ]
        },
        {
            "name": "hardware",
            "value":[
                {
                    "x":"2010",
                    "y":15
                },
                {
                    "x":"2011",
                    "y":16
                },
                {
                    "x":"2012",
                    "y":10
                },
                {
                    "x":"2013",
                    "y":21
                },
            ]
        },
        {
            "name": "device",
            "value":[
                {
                    "x":"2010",
                    "y":25
                },
                {
                    "x":"2011",
                    "y":26
                },
                {
                    "x":"2012",
                    "y":30
                },
                {
                    "x":"2013",
                    "y":31
                },
            ]
        },
        {
            "name": "others",
            "value":[
                {
                    "x":"2010",
                    "y":100
                },
                {
                    "x":"2011",
                    "y":16
                },
                {
                    "x":"2012",
                    "y":20
                },
                {
                    "x":"2013",
                    "y":41
                },
            ]
        },
    ],
};

```

- **Sample for Line**



• *Sample GraphData for Bar*

```
barDataJson =
{
  "series": [
    "English",
    "Math"
  ],
  "data": [
    {
      "x": "suzuki",
      "y": [92, 73],
    },
    {
      "x": "inoue",
      "y": [69, 45],
    },
    {
      "x": "sato",
      "y": [70, 100],
    },
    {
      "x": "tanaka",
      "y": [43, 66],
    },
    {
      "x": "ida",
      "y": [60, 70],
    },
    {
      "x": "kato",
      "y": [55, 63],
    },
  ],
};
```

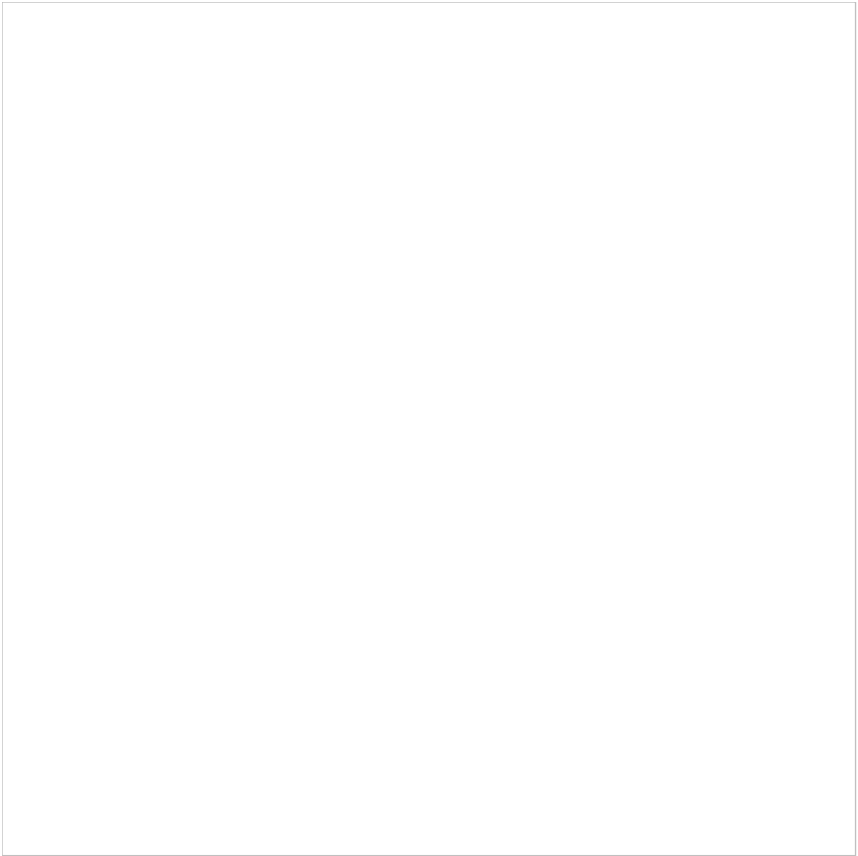
• *Sample for Bar*



- **Sample GraphData for Pie**

```
pieDataJson =
{
  "data":[
    {
      "name": "software",
      "value":30,
    },
    {
      "name": "hardware",
      "value":25
    },
    {
      "name": "device",
      "value":16
    },
    {
      "name": "others",
      "value":4
    },
  ],
};
```

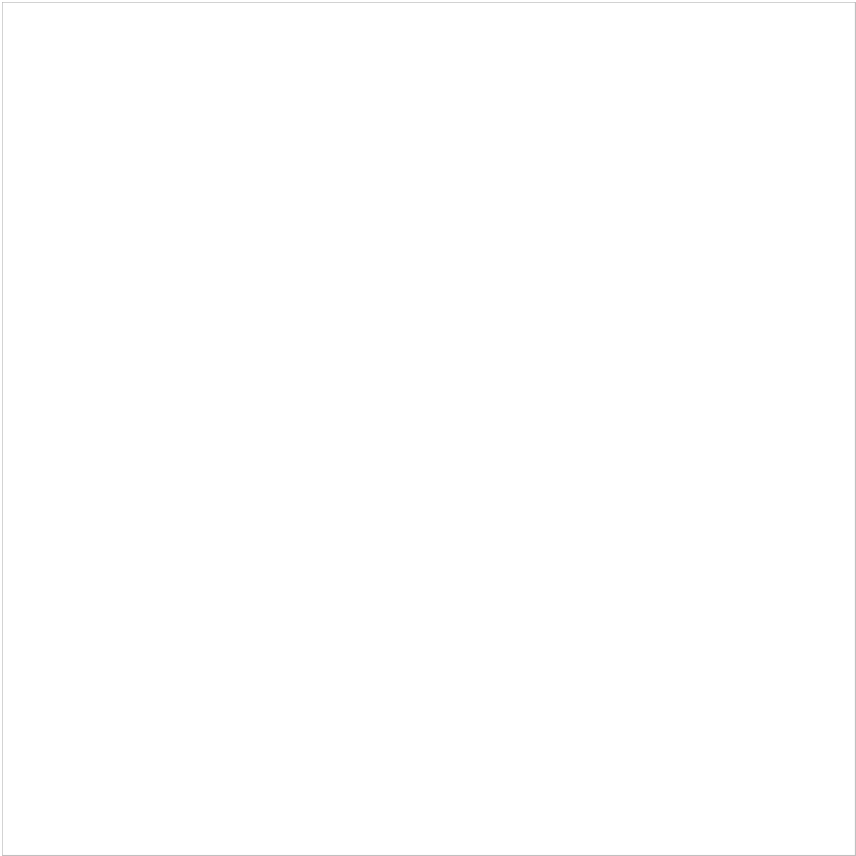
- **Sample for Pie**



• **Sample GraphData for ScatterPlot**

```
scatterPlotDataJson =
{
  "series":[
    "seriesA",
    "seriesB",
    "seriesC"
  ],
  "data":[
    {
      "name": "suzuki",
      "value": [
        {"x":30,"y":40,"z":5},
        {"x":120,"y":115,"z":10},
        {"x":125,"y":90,"z":2},
        {"x":150,"y":160,"z":1},
        {"x":150,"y":160,"z":3},
        {"x":128,"y":215,"z":5},
        {"x":130,"y":40,"z":15},
        {"x":220,"y":115,"z":25},
      ]
    },
    {
      "name": "inoue",
      "value": [
        {"x":130,"y":140,"z":5},
        {"x":20,"y":15,"z":10},
        {"x":25,"y":190,"z":2},
        {"x":250,"y":60,"z":1},
        {"x":50,"y":60,"z":3},
        {"x":28,"y":15,"z":5},
        {"x":230,"y":140,"z":15},
        {"x":20,"y":215,"z":25},
      ]
    }
  ],
};
```

• **Sample for ScatterPlot**



• *Sample GraphData for Histogram*

```
histogramDataJson =
{
  "range": [0,100],
  "bins": [0,10,20,30,40,50,60,70,80,90,100],
  "data": [
    50,95,60,44,60,50,35,20,10,8,
    56,70,65,42,22,33,40,53,52,89,
    90,55,50,55,65,72,45,35,15,45,
    50,95,60,44,60,50,35,20,10,8,
    56,70,65,42,22,33,40,53,52,89,
    90,55,50,55,65,72,45,35,15,45,
    50,95,60,44,60,50,35,20,10,8,
    56,70,65,42,22,33,40,53,52,89,
    90,55,50,55,65,72,45,35,15,45,
  ],
};
```

• *Sample for Histogram*



- *Sample GraphData for StackBar*

```

stackBarDataJson =
{
  "config":{
    "timeFormat":"%Y",
  },
  "series":[
    "year",
    "sell",
  ],
  "data":[
    {
      "name": "software",
      "value":[
        {
          "x":"2010",
          "y":18
        },
        {
          "x":"2011",
          "y":22
        },
        {
          "x":"2012",
          "y":30
        },
        {
          "x":"2013",
          "y":31
        }
      ]
    },
    {
      "name": "hardware",
      "value":[
        {
          "x":"2010",
          "y":15
        },
        {
          "x":"2011",
          "y":16
        },
        {
          "x":"2012",
          "y":10
        },
        {
          "x":"2013",
          "y":21
        }
      ]
    },
    {
      "name": "device",
      "value":[
        {
          "x":"2010",
          "y":25
        },
        {
          "x":"2011",
          "y":26
        },
        {
          "x":"2012",
          "y":30
        },
        {
          "x":"2013",
          "y":31
        }
      ]
    },
    {
      "name": "others",
      "value":[
        {
          "x":"2010",
          "y":5
        },
        {
          "x":"2011",
          "y":16
        },
        {
          "x":"2012",
          "y":20
        },
        {
          "x":"2013",
          "y":41
        }
      ]
    }
  ],
};

```

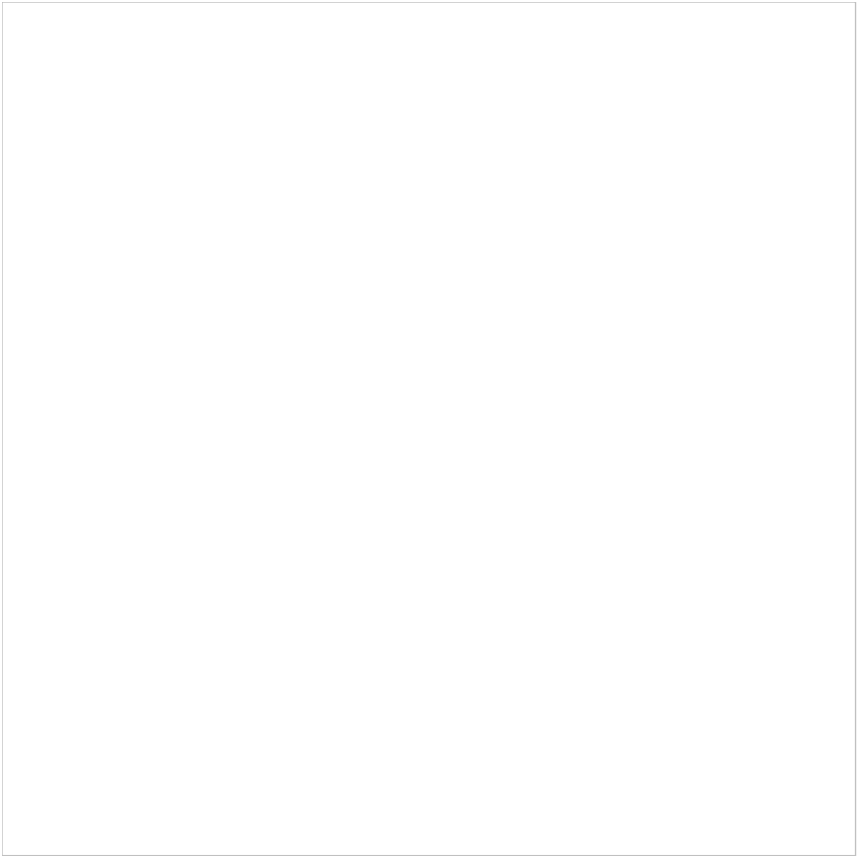
• **Sample for StackBar**



- **Sample GraphData for GeoMap**

```
geoMapDataJson =
{
  "map":{
    "baseGeoDataUrl":"https://raw.githubusercontent.com/Ohtsu/data/master/o2-chart/world.geojson",
    "scale":75,
    "keyDataName":"features",
    "targetPropertyName":"properties.name",
  },
  "data":[
    {
      "name":"Australia",
      "color":"red"
    },
    {
      "name":"Antarctica",
      "color":"white"
    },
    {
      "name":"Japan",
      "color":"blue"
    },
  ],
};
```

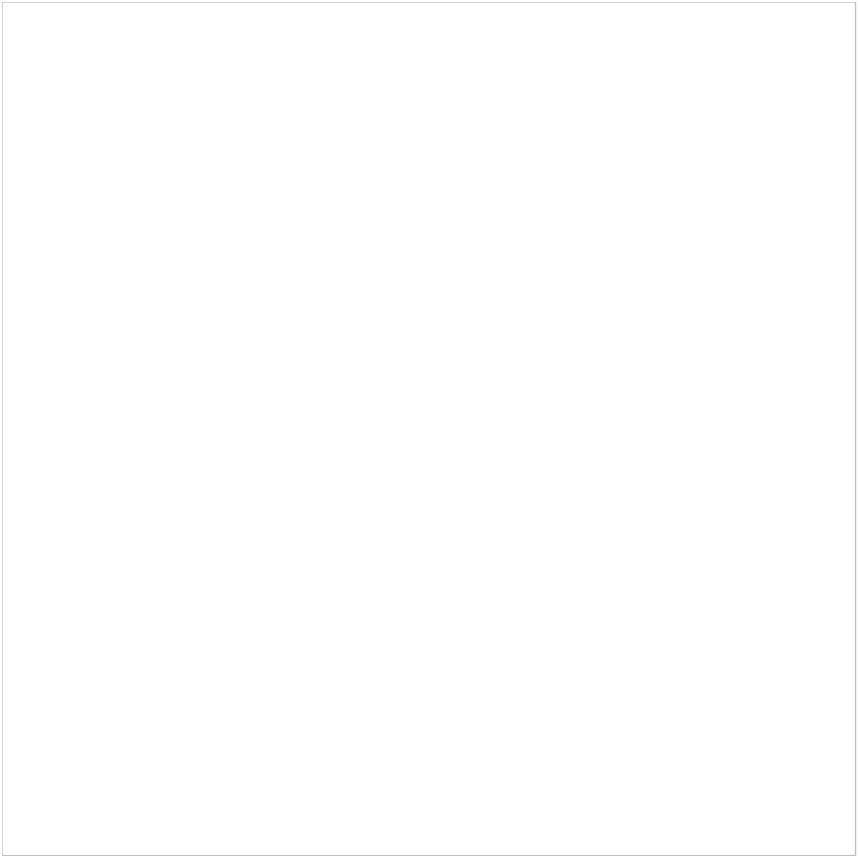
- **Sample for GeoMap**



• **Sample GraphData for GeoOrthographic**

```
geoOrthographicDataJson =
{
  "map":{
    "baseGeoDataUrl":"https://raw.githubusercontent.com/Ohtsu/data/master/o2-chart/world.geojson",
    "keyDataName":"features",
    "targetPropertyName":"properties.name",
    "scale":160,
    "colorNumber":10,
    "rotate":{
      "horizontal":210,
      "vertical":5
    },
    "clipAngle":90,
    "oceanColor":"navy",
    "antarcticaColor":"white",
  },
  "data":[
    {
      "name":"Australia",
      "color":"red"
    },
    {
      "name":"Antarctica",
      "color":"white"
    },
    {
      "name":"Japan",
      "color":"teal"
    }
  ]
}
```

• **Sample for GeoOrthographic**



• **Sample GraphData for Tree**

```
treeDataJson =
{
  "name": "Eve",
  "children": [
    { "name": "Cain"
    },
    {
      "name": "Seth",
      "children": [
        { "name": "Enos" },
        { "name": "Noam" }
      ]
    },
    { "name": "Abel"
    },
    {
      "name": "Awan",
      "children": [
        { "name": "Enoch" }
      ]
    },
    { "name": "Azura"
    },
  ]
};
```

• **Sample for Tree**



- **Sample GraphData for PackLayout**

```
packLayoutDataJson = {
  "name": "United States", "value" : 281421906,
  "children" : [
    {"name": "California", "value" : 33871648},
    {"name": "Texas", "value" : 20851820},
    {"name": "New York", "value" : 18976457},
    {"name": "Florida", "value" : 15982378},
    {"name": "Illinois", "value" : 12419293},
    {"name": "Pennsylvania", "value" : 12281054},
    {"name": "Ohio", "value" : 11353140},
  ]
}
```

- **Sample for PackLayout**

- **Sample GraphData for Choropleth**

```
choroplethDataJson = {
  "map": {
    "baseGeoDataUrl": "https://raw.githubusercontent.com/Ohtsu/data/master/o2-chart/japan.geojson",
    "scale": 900,
    "center": [137.571, 37.500],
    "startColor": "blue",
    "endColor": "red",
    "colorNumber": 10,
    "keyDataName": "features",
    "targetPropertyName": "properties.id"
  },
  "data": [
    {
      "id": 1,
      "value": 7.12
    },
    {
      "id": 2,
      "value": 8.97
    },
    {
      "id": 3,
      "value": 7.07
    },
    {
      "id": 4,
      "value": 7.78
    },
    {
      "id": 5,
      "value": 6.97
    },
    {
      "id": 6,
      "value": 5.79
    },
    {
      "id": 7,
      "value": 7.14
    },
    {
      "id": 8,
      "value": 6.68
    },
    {
      "id": 9,
      "value": 6.28
    },
    {
      "id": 10,
      "value": 6.32
    }
  ]
}
```

```
{
  "id":11,
  "value":6.29
},
{
  "id":12,
  "value":6.14
},
{
  "id":13,
  "value":5.87
},
{
  "id":14,
  "value":5.75
},
{
  "id":15,
  "value":5.50
},
{
  "id":16,
  "value":5.21
},
{
  "id":17,
  "value":5.37
},
{
  "id":18,
  "value":5.23
},
{
  "id":19,
  "value":6.18
},
{
  "id":20,
  "value":5.44
},
{
  "id":21,
  "value":5.57
},
{
  "id":22,
  "value":5.81
},
{
  "id":23,
  "value":5.09
},
{
  "id":24,
  "value":5.08
},
{
  "id":25,
  "value":5.07
},
{
  "id":26,
  "value":6.21
},
{
  "id":27,
  "value":7.97
},
{
  "id":28,
  "value":6.54
},
{
  "id":29,
  "value":7.41
},
{
  "id":30,
  "value":6.74
},
{
  "id":31,
  "value":5.90
},
{
  "id":32,
  "value":4.55
},
{
  "id":33,
  "value":7.24
},
{
  "id":34,
  "value":5.35
},
{
  "id":35,
  "value":5.93
},
{
  "id":36,
  "value":7.62
},
},
```

```
{
  "id":37,
  "value":6.25
},
{
  "id":38,
  "value":7.26
},
{
  "id":39,
  "value":7.70
},
{
  "id":40,
  "value":7.84
},
{
  "id":41,
  "value":6.32
},
{
  "id":42,
  "value":6.64
},
{
  "id":43,
  "value":6.67
},
{
  "id":44,
  "value":7.07
},
{
  "id":45,
  "value":7.01
},
{
  "id":46,
  "value":6.84
},
{
  "id":47,
  "value":11.0
}
]
};
```

- **Sample for Choropleth**

- **Sample GraphData for Force**

```

forceDataJson =
{
  "groups": [
    {"id": 1, "name": "Hokkaido"},
    {"id": 2, "name": "Tohoku"},
    {"id": 3, "name": "Kanto"},
    {"id": 4, "name": "Chubu"},
    {"id": 5, "name": "Kinki"},
    {"id": 6, "name": "Chugoku"},
    {"id": 7, "name": "Shikoku"},
    {"id": 8, "name": "Kyushu"},
  ],
  "nodes": [
    {"id": "Sapporo", "group": 1},
    {"id": "Sendai", "group": 2},
    {"id": "Morioka", "group": 2},
    {"id": "Akita", "group": 2},
    {"id": "Fukushima", "group": 2},
    {"id": "Mito", "group": 3},
    {"id": "Utsunomiya", "group": 3},
    {"id": "Saitama", "group": 3},
    {"id": "Chiba", "group": 3},
    {"id": "Tokyo", "group": 3},
    {"id": "Kofu", "group": 4},
    {"id": "Nagano", "group": 4},
    {"id": "Niigata", "group": 4},
    {"id": "Toyama", "group": 4},
    {"id": "Kanazawa", "group": 4},
    {"id": "Fukui", "group": 4},
    {"id": "Shizuoka", "group": 4},
    {"id": "Nagoya", "group": 4},
    {"id": "Gifu", "group": 4},
    {"id": "Otsu", "group": 5},
    {"id": "Kyoto", "group": 5},
    {"id": "Osaka", "group": 5},
    {"id": "Kobe", "group": 5},
    {"id": "Nara", "group": 5},
    {"id": "Kyoto", "group": 5},
    {"id": "Tottori", "group": 6},
    {"id": "Hiroshima", "group": 6},
    {"id": "Matsue", "group": 6},
    {"id": "Matsuyama", "group": 7},
    {"id": "Tokushima", "group": 7},
    {"id": "Kochi", "group": 7},
    {"id": "Fukuoka", "group": 8},
    {"id": "Nagasaki", "group": 8},
    {"id": "Kumamoto", "group": 8},
    {"id": "Naha", "group": 8},
  ],
  "links": [
    {"source": "Sendai", "target": "Sapporo", "value": 1},
    {"source": "Morioka", "target": "Sapporo", "value": 1},
    {"source": "Akita", "target": "Sapporo", "value": 1},
    {"source": "Fukushima", "target": "Sapporo", "value": 1},
    {"source": "Morioka", "target": "Sendai", "value": 10},
    {"source": "Akita", "target": "Sendai", "value": 10},
    {"source": "Fukushima", "target": "Sendai", "value": 10},
    {"source": "Chiba", "target": "Tokyo", "value": 20},
    {"source": "Utsunomiya", "target": "Tokyo", "value": 20},
    {"source": "Mito", "target": "Tokyo", "value": 20},
    {"source": "Saitama", "target": "Tokyo", "value": 30},
    {"source": "Kofu", "target": "Tokyo", "value": 30},
    {"source": "Nagano", "target": "Tokyo", "value": 30},
    {"source": "Naha", "target": "Tokyo", "value": 30},
    {"source": "Osaka", "target": "Tokyo", "value": 40},
    {"source": "Sendai", "target": "Tokyo", "value": 40},
    {"source": "Hiroshima", "target": "Tokyo", "value": 20},
    {"source": "Shizuoka", "target": "Nagoya", "value": 10},
    {"source": "Tokyo", "target": "Nagoya", "value": 40},
    {"source": "Osaka", "target": "Nagoya", "value": 40},
    {"source": "Kyoto", "target": "Nagoya", "value": 40},
    {"source": "Kyoto", "target": "Osaka", "value": 30},
    {"source": "Hiroshima", "target": "Osaka", "value": 20},
    {"source": "Toyama", "target": "Kanazawa", "value": 10},
    {"source": "Fukui", "target": "Kanazawa", "value": 10},
    {"source": "Niigata", "target": "Kanazawa", "value": 10},
    {"source": "Tottori", "target": "Kobe", "value": 10},
    {"source": "Tottori", "target": "Hiroshima", "value": 10},
    {"source": "Matsue", "target": "Hiroshima", "value": 10},
    {"source": "Matsuyama", "target": "Hiroshima", "value": 10},
    {"source": "Tokushima", "target": "Kochi", "value": 10},
    {"source": "Matsuyama", "target": "Kochi", "value": 10},
    {"source": "Nagasaki", "target": "Fukuoka", "value": 10},
    {"source": "Kumamoto", "target": "Fukuoka", "value": 10},
    {"source": "Naha", "target": "Fukuoka", "value": 10},
  ]
};

```

• Sample for Force

