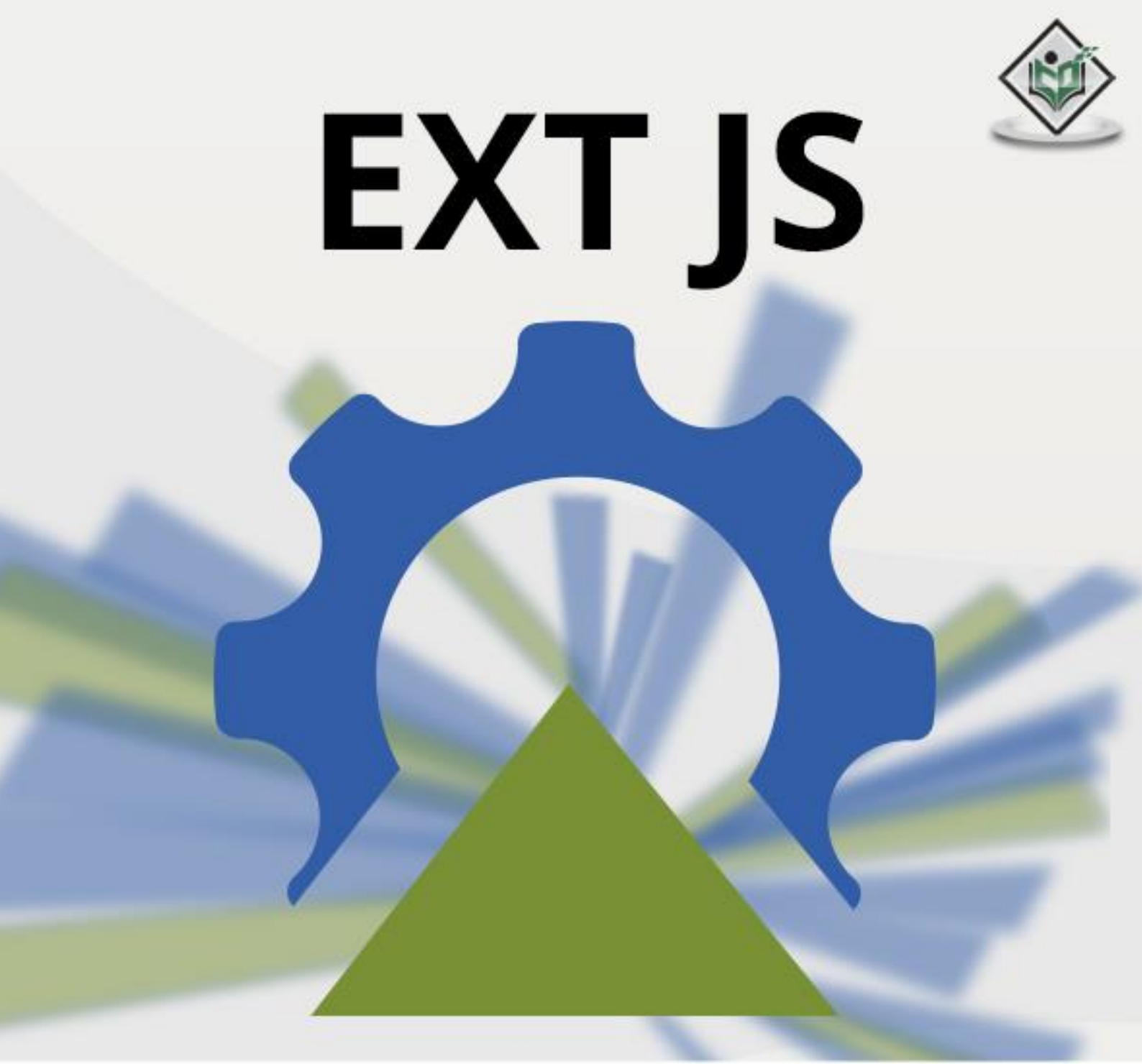
EXT JS



tutorialspoint

SIMPLYEASYLEARNING

www.tutorialspoint.com

https://www.facebook.com/tutorialspointindia

https://twitter.com/tutorialspoint

About the Tutorial

ExtJS stands for Extended JavaScript. It is a JavaScript framework and a product of Sencha, based on YUI (Yahoo User Interface). It is basically a desktop application development platform with modern UI. This tutorial gives a complete understanding of Ext JS. This reference will take you through simple and practical approaches while learning Ext JS.

Audience

This tutorial has been prepared for beginners to help them understand the concepts of ExtJS to build dynamic web UI.

Prerequisites

For this tutorial, the reader should have prior knowledge of HTML, CSS, and JavaScript coding. It would be helpful if the reader knows the concepts of object-oriented programming and has a general idea on creating web applications.

Execute ExtJS Online

For most of the examples given in this tutorial you will find a **Try it** option. Make use of this option to execute your ExtJS programs on the spot and enjoy your learning.

Try the following example using the **Try it** option available at the top right corner of the following sample code box –

```
<!DOCTYPE html>
<html>
   <head>
      <link
href="https://cdnjs.cloudflare.com/ajax/libs/extjs/6.0.0/classic/theme-
classic/resources/theme-classic-all.css" rel="stylesheet" />
      <script type="text/javascript"
src="https://cdnjs.cloudflare.com/ajax/libs/extjs/6.0.0/ext-all.js"></script>
      <script type="text/javascript">
         Ext.onReady(function() {
         Ext.create('Ext.Panel', {
            renderTo: 'helloWorldPanel',
            height: 100,
```


tutorialspoint
SIMPLYEASYLEARNING

```
            width: 200,
            title: 'Hello world',
            html: 'First Ext JS Hello World Program'
            });
         });
      </script>
   </head>
   <body>
      <div id="helloWorldPanel"></div>
   </body>
</html>
```

Copyright & Disclaimer

© Copyright 2017 by Tutorials Point (I) Pvt. Ltd.

All the content and graphics published in this e-book are the property of Tutorials Point (I) Pvt. Ltd. The user of this e-book is prohibited to reuse, retain, copy, distribute or republish any contents or a part of contents of this e-book in any manner without written consent of the publisher.

We strive to update the contents of our website and tutorials as timely and as precisely as possible, however, the contents may contain inaccuracies or errors. Tutorials Point (I) Pvt. Ltd. provides no guarantee regarding the accuracy, timeliness or completeness of our website or its contents including this tutorial. If you discover any errors on our website or in this tutorial, please notify us at contact@tutorialspoint.com

Table of Contents

About the Tutorial i

Audience i

Prerequisites i

Execute ExtJS Online i

Copyright & Disclaimer ii

Table of Contents iii

1. EXT.JS – OVERVIEW 1

History 1

Features 2

Benefits 2

Limitations 2

Tools 3

2. EXT.JS – ENVIRONMENT SETUP 4

Local Environment Setup 5

3. EXT.JS – NAMING CONVENTION 8

4. EXT.JS – ARCHITECTURE 9

5. EXT.JS – FIRST PROGRAM 11

6. EXT.JS – CLASS SYSTEM 13

Defining a Class in Ext JS 13

Creating Objects 14

Inheritance in Ext JS 14

7. EXT.JS - CONTAINERS 16

Components Inside Container 16

Container Inside Container 18

Ext.panel.Panel Container 21

Ext.form.Panel Container 22

Ext.tab.Panel Container 24

Ext.container.Viewport Container 26

8. EXT.JS – LAYOUTS 28

Absolute Layout 29

Accordion Layout 30

Anchor Layout 32

Border Layout 34

Auto Layout 36

card_panel Layout 37

card_wizard Layout 39

Column Layout 41

Fit Layout 43

Table Layout 45

vbox Layout 46

hbox Layout 49

9. EXT.JS – COMPONENTS 51

Grid 52

Form 56

Message box 65

Basic Alert Box 66

Confirm Box 67

Prompt Box 69

Multiline User Input Box 70

tutorialspoint
SIMPLYEASYLEARNING

Yes NO Cancel Box 72

Chart 74

Pie Chart 75

Line Chart 77

Bar Chart 80

Area Chart 82

Tooltip 85

Window 86

HTML Editor 89

Progress Bar 90

10. EXT.JS – DRAG AND DROP 93

Grid to Grid Drag and Drop 96

Grid to Form Drag and Drop 100

11. EXT.JS – THEMES 106

Neptune Theme 106

Crisp Theme 107

Triton Theme 108

Gray Theme 110

12. EXT.JS – CUSTOM EVENTS AND LISTENERS 112

Methods of Writing Events 112

13. EXT.JS – DATA 118

Model 118

Store 118

Proxy 119

tutorialspoint
SIMPLYEASYLEARNING

14. EXT.JS – FONTS 121

Font-Awesome **121**

Font-Pictos **125**

15. EXT.JS – STYLE 126

16. EXT.JS – DRAWING 128

Circle Drawing **129**

Rectangle Drawing **130**

Arc Drawing **132**

Ellipse Drawing **133**

Elliptical Arc Drawing **135**

Image Drawing **136**

Path Drawing **138**

Text Drawing **139**

Translate Drawing **141**

Rotate Drawing **142**

Square Drawing **144**

17. EXT.JS – LOCALIZATION 146

18. EXT.JS – ACCESSIBILITY 150

Accessibility in Ext JS **150**

19. EXT.JS – DEBUGGING EXT JS CODE 155

Debugging JS Code in Debugger **155**

20. EXT.JS – METHODS 156

tutorialspoint
SIMPLYEASYLEARNING

1. EXT.JS – OVERVIEW

Ext JS is a popular JavaScript framework which provides rich UI for building web applications with cross-browser functionality. Ext JS is basically used for creating desktop applications. It supports all the modern browsers such as IE6+, FF, Chrome, Safari 6+, Opera 12+, etc. Whereas another product of Sencha, Sencha Touch is used for mobile applications.

Ext JS is based on MVC/MVVM architecture. The latest version of Ext JS 6 is a single platform, which can be used for both desktop and mobile application without having different code for different platform.

History

Ext JS 1.1

The first version of Ext JS was developed by Jack Slocum in 2006. It was a set of utility classes, which is an extension of YUI. He named the library as YUI-ext.

Ext JS 2.0

Ext JS version 2.0 was released in 2007. This version had a new API documentation for desktop application with limited features. This version doesn't have backward compatibility with previous version of Ext JS.

Ext JS 3.0

Ext JS version 3.0 was released in 2009. This version added new features as chart and list view but at the cost of speed. It had backward compatibility with version 2.0.

Ext JS 4.0

After the release of Ext JS 3, the developers of Ext JS had the major challenge of ramping up the speed. Ext JS version 4.0 was released in 2011. It had the complete revised structure, which was followed by MVC architecture and a speedy application.

Ext JS 5.0

Ext JS version 5.0 was released in 2014. The major change in this release was to change the MVC architecture to MVVM architecture. It includes the ability to build desktop apps on touch-enabled devices, two-way data binding, responsive layouts, and many more features.

Ext JS 6.0

Ext JS 6 merges the Ext JS (for desktop application) and Sencha Touch (for mobile application) framework.

Features

Following are the highlighted features of Ext JS.

- Customizable UI widgets with collection of rich UI such as grids, pivot grids, forms, charts, trees.
- Code compatibility of new versions with the older one.
- A flexible layout manager helps to organize the display of data and content across multiple browsers, devices, and screen sizes.
- Advance data package decouples the UI widgets from the data layer. The data package allows client-side collection of data using highly functional models that enable features such as sorting and filtering.
- It is protocol agnostic, and can access data from any back-end source.
- Customizable Themes Ext JS widgets are available in multiple out-of-the-box themes that are consistent across platforms.

Benefits

Sencha Ext JS is the leading standard for business-grade web application development. Ext JS provides the tools necessary to build robust applications for desktop and tablets.

- Streamlines cross-platform development across desktops, tablets, and smartphones - for both modern and legacy browsers.
- Increases the productivity of development teams by integrating into enterprise development environments via IDE plugins.
- Reduces the cost of web application development.
- Empowers the teams to create apps with a compelling user experience.
- Offers a set of widgets to easily make a powerful UI.
- Follows MVC architecture, hence the code is highly readable.

Limitations

- The size of the library is large, around 500 KB, which makes initial loading time more and makes application slow.
- HTML is full of tags that makes it complex and difficult to debug.
- According to general public license policy, it is free for open source applications but paid for commercial applications.

- Sometimes for loading even simple things require few lines of coding, which is simpler in plain html or JQuery.

- Need quite experienced developer for developing Ext JS applications.

Tools

Following are the tools provided by Sencha used for Ext JS application development mainly at the production level.

Sencha CMD

Sencha CMD is a tool which provides the features of Ext JS code minification, scaffolding, and production build generation.

Sencha IDE Plugins

Sencha IDE plugins integrates Sencha frameworks into IntelliJ, WebStorm IDEs, which helps in improving the developer's productivity by providing features such as code completion, code inspection, code navigation, code generation, code refactoring, template creation, spell-checking, etc.

Sencha Inspector

Sencha Inspector is a debugging tool which helps the debugger to debug any issue while development.

2. EXT.JS – ENVIRONMENT SETUP

Try it Option Online

We have set up ExtJS Programming environment online, so that you can compile and execute all the available examples online. It gives you confidence in what you are reading and enables you to verify the programs with different options. Feel free to modify any example and execute it online.

Try the following example using **Try it** option available at the top right corner of the following sample code box.

```
<!DOCTYPE html>
<html>
   <head>
      <link
href="https://cdnjs.cloudflare.com/ajax/libs/extjs/6.0.0/classic/theme-
classic/resources/theme-classic-all.css" rel="stylesheet" />
      <script type="text/javascript"
src="https://cdnjs.cloudflare.com/ajax/libs/extjs/6.0.0/ext-all.js"></script>
      <script type="text/javascript">
         Ext.onReady(function() {
         Ext.create('Ext.Panel', {
            renderTo: 'helloWorldPanel',
            height: 100,
            width: 200,
            title: 'Hello world',
            html: 'First Ext JS Hello World Program'
            });
         });
      </script>
   </head>
   <body>
      <div id="helloWorldPanel"></div>
   </body>
</html>
```


tutorialspoint
SIMPLYEASYLEARNING

For most of the examples given in this tutorial, you will find a Try It option in our website code sections at the top right corner that will take you to the online compiler. Make use of it and enjoy your learning.

Local Environment Setup

This section guides you on how to download and set up Ext JS on your machine. Please follow the steps to set up the environment.

Downloading Library Files

Download the trial version of Ext JS library files from Sencha https://www.sencha.com. You will get the trial version from the site on your registered mail id, which will be a zipped folder named ext-6.0.1-trial.

Unzip the folder and you will find various JavaScript and CSS files, which you will include in our application. We will mostly include the following files:

JavaScript Files: JS file which you can find under the folder \ext-6.0.1-trial\ext-6.0.1\build are:

File	Description
ext.js	This is the core file which contains all the functionalities to run the application.
ext-all.js	This file contains all the code minified with no comments in the file.
ext-all-debug.js	This is the unminified version of ext-all.js for debugging purpose.
ext-all-dev.js	This file is also unminified and is used for development purpose as it contains all the comments and console logs to check any errors/issue.
ext-all.js	This file is used for production purpose mostly as it is much smaller than any other.

You can add these files to your projects JS folder or you can provide a direct path where the file resides in your system.

CSS Files: There are number of theme-based files, which you can find under folder \ext-6.0.1-trial\ext-6.0.1\build\classic\theme-classic\resources\theme-classic-all.css

- If you are going to use desktop application, then you can use classic themes under folder \ext-6.0.1-trial\ext-6.0.1\build\classic

tutorialspoint
SIMPLYEASYLEARNING

- If we are going to use mobile application, then you can use modern themes which can be found under folder \ext-6.0.1-trial\ext-6.0.1\build\modern

The following library files will be added in an Ext JS application.

```
<html>
   <head>
      <link rel = "stylesheet" type ="text/css" href= "..\ext-6.0.1-trial\ext-
6.0.1\build\classic\theme-classic\resources\theme-classic-all.css" />
      <script type ="text/javascript" src = "..\ext-6.0.1-trial\ext-
6.0.1\build\ext-all.js" > </script>
      <script type ="text/javascript" src = "app.js" > </script>
   </head>
</html>
```

You will keep ExtJS application code in app.js file.

CDN Setup

CDN is content delivery network with which you do not need to download the Ext JS library files, instead you can directly add CDN link for ExtJS to your program as follows:

```
<html>
   <head>
      <link rel = "stylesheet" type ="text/css" href=
"https://cdnjs.cloudflare.com/ajax/libs/extjs/6.0.0/classic/theme-
crisp/resources/theme-crisp-all.css" / >
      <script type ="text/javascript" src =
"https://cdnjs.cloudflare.com/ajax/libs/extjs/6.0.0/ext-all.js" > </script>
      <script type ="text/javascript" src = "app.js" > </script>
   </head>
</html>
```

Popular Editors

As it is a JavaScript framework, which is used for developing web applications, in our project we will have HTML, JS files. To write our Ext JS programs, we will need a text editor. There are even multiple IDEs available in the market. But for now, we can consider one of the following:

- **Notepad:** On Windows machine, you can use any simple text editor such as Notepad (Recommended for this tutorial), Notepad++, sublime.

tutorialspoint
SIMPLYEASYLEARNING

- **Eclipse:** It is an IDE developed by the eclipse open-source community and can be downloaded from http://www.eclipse.org/

Browser

Ext JS supports cross-browser compatibility, it supports all major browsers such as:

- IE 6 and above
- Firefox 3.6 and above
- Chrome10 and above
- Safari 4 and above
- Opera 11 and above

You can use any browser for running Ext JS application.

tutorialspoint
SIMPLYEASYLEARNING

3. EXT.JS – NAMING CONVENTION

Naming convention is a set of rule to be followed for identifiers. It makes the code more readable and understandable to other programmers as well.

Naming convention in Ext JS follows the standard JavaScript convention, which is not mandatory but a good practice to follow. It should follow the camel case syntax for naming the class, method, variable and properties.

If the name is combined with two words, the second word will start with an uppercase letter always. For example, doLayout(), StudentForm, firstName, etc.

Name	Convention
Class Name	It should start with an uppercase letter, followed by camel case. For example, StudentClass
Method Name	It should start with a lowercase letter, followed by camel case. For example, doLayout()
Variable Name	It should start with a lowercase letter, followed by camel case. For example, firstName
Constant Name	It should be in uppercase only. For example, COUNT, MAX_VALUE
Property Name	It should start with a lowercase letter, followed by camel case. For example, enableColumnResize = true

tutorialspoint
SIMPLYEASYLEARNING

4. EXT.JS – ARCHITECTURE

Ext JS follows MVC/ MVVM architecture.

MVC – Model View Controller architecture (version 4)

MVVM – Model View Viewmodel (version 5)

This architecture is not mandatory for the program, however, it is a best practice to follow this structure to make your code highly maintainable and organized.

Project Structure with Ext JS App

```
----------src
----------resources
------------------CSS files
------------------Images
----------JavaScript
--------------------App Folder
------------------------------Controller
-----------------------------------Contoller.js
------------------------------Model
-----------------------------------Model.js
------------------------------Store
-----------------------------------Store.js
------------------------------View
-----------------------------------View.js
------------------------------Utils
-----------------------------------Utils.js
------------------------------app.js
----------HTML files
```

Ext JS app folder will reside in JavaScript folder of your project.

The App will contain controller, view, model, store, and utility files with app.js.

app.js: The main file from where the flow of program will start, which should be included in the main HTML file using <script> tag. App calls the controller of application for the rest of the functionality.

tutorialspoint
SIMPLYEASYLEARNING

Controller.js: It is the controller file of Ext JS MVC architecture. This contains all the control of the application, the events listeners, and most of the functionality of the code. It has the path defined for all the other files used in that application such as store, view, model, require, mixins.

tutorialspoint
SIMPLYEASYLEARNING

End of ebook preview
If you liked what you saw…
Buy it from our store @ **https://store.tutorialspoint.com**

tutorialspoint
SIMPLYEASYLEARNING