

Java FX简介

北京理工大学计算机学院
金旭亮

概述



从Java 1.0开始，JDK中就提供了相应的开发框架，用于构建有可视化界面的Java应用程序。



早期的GUI应用程序开发框架，叫AWT，后来，Sun公司推出了AWT的替代技术——Swing，AWT/Swing在很长的一段时间内都是Java平台主流的GUI开发技术。



Java最新的GUI应用程序开发框架，叫JavaFX，是AWT/Swing的替代者。

早期Java GUI技术存在的问题

AWT:

write once, run anywhere

不同平台的UI控件，在用户交互特性上有许多微妙的差别

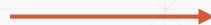
write many times, debug everywhere

Swing:

自己绘制所有的界面控件

用户的抱怨:

太慢



太丑



JavaFX

什么是Java FX?

JavaFX是Java SE所提供的的一个用于构建可视化用户界面（GUI）应用程序的开发框架，是AWT和Swing的取代者。

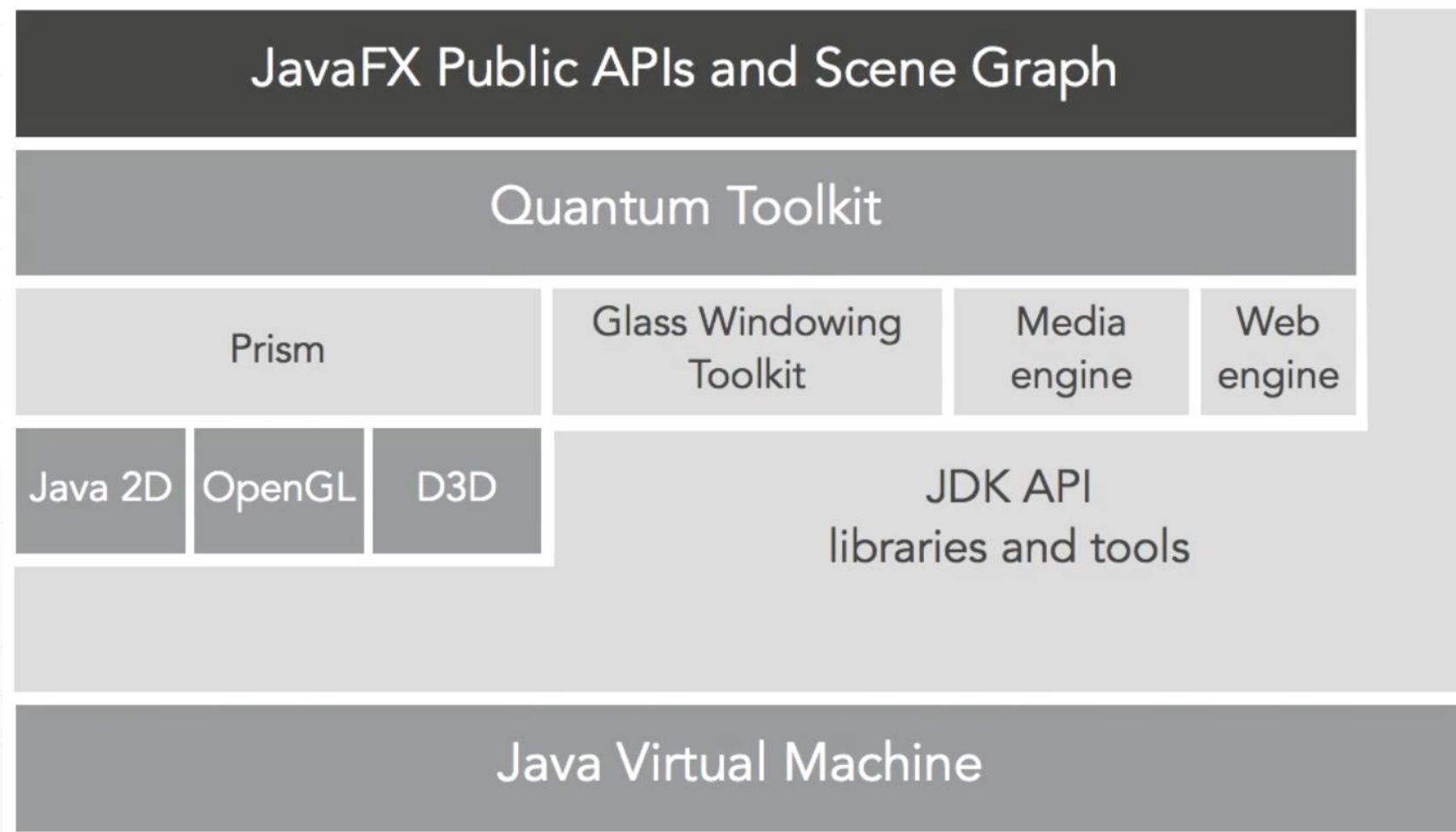
与Swing相比，JavaFX跟上了现代GUI应用技术发展的步伐，学会它之后，也能触类旁通地掌握其他类似的GUI框架或界面开发技术（比如WPF和Android）。



GUI

Graphical user interface

大致了解一下JavaFX技术架构



JavaFX 8官方(Oracle)文档

<http://docs.oracle.com/javase/8/javafx/api/toc.htm>

JavaFX 8

All Classes

Packages

javafx.animation
javafx.application
javafx.beans
javafx.beans.binding
javafx.beans.property
javafx.beans.property.adapter
javafx.beans.value

All Classes

AccessibleAction
AccessibleAttribute
AccessibleRole
Accordion
ActionEvent
Affine
Alert
Alert.AlertType
AmbientLight
AnchorPane
Animation
Animation.Status
AnimationTimer
Application
Application.Parameters

OVERVIEW PACKAGE CLASS USE TREE DEPRECATED INDEX HELP

PREV NEXT FRAMES NO FRAMES

Packages

Package	Description
javafx.animation	Provides the set of classes for ease of use transition based animations.
javafx.application	Provides the application life-cycle classes.
javafx.beans	The package <code>javafx.beans</code> contains the interfaces that define the most generic form of observability.
javafx.beans.binding	Characteristics of Bindings
javafx.beans.property	The package <code>javafx.beans.property</code> defines read-only properties and writable properties, plus a number of implementations.
javafx.beans.property.adapter	
javafx.beans.value	The package <code>javafx.beans.value</code> contains the two fundamental interfaces ObservableValue and WritableValue and all of its sub-interfaces.
javafx.collections	Contains the essential JavaFX collections and collection utilities
javafx.collections.transformation	

访问Oracle官网，可以获取大量的技术资源

<http://docs.oracle.com/javase/8/index.html>



The screenshot shows the Oracle Java SE 8 Documentation page. At the top, there is the Oracle logo and the text "Java™ Documentation". To the right is a search bar labeled "Search Java SE Documentation". Below the header, there is a "Release" dropdown menu set to "Java SE 8". On the right side of the header area, there are links for "Send Feedback" and "Print". The main heading is "Java Platform, Standard Edition (Java SE) 8". Below this, there is a navigation bar with links: "Home", "Client Technologies", "Embedded", and "All Books". The page is divided into three columns. The first column is titled "Java SE" and contains a list of links: API Documentation, Developer Guides, Deployment Guide, Troubleshooting Guide, Installation Guide, Java Mission Control Release Notes, Java SE Release Notes, Specifications, The Java Tutorials, Tools Reference for UNIX Platforms, Tools Reference for Windows Platforms, HotSpot Serviceability Agent API Documentation, HotSpot Virtual Machine Garbage Collection Tuning Guide, and JRockit to HotSpot Migration Guide. The second column is titled "JavaFX" and contains a list of links: Adding HTML Content to JavaFX Applications, Getting Started with JavaFX, Handling Events, Incorporating Media Assets Into JavaFX Applications, Interoperability, JavaFX API Documentation, Mastering FXML, Properties and Binding Tutorial, Sample Applications for Tutorials, Transformations, Animations, and Visual Effects, Using JavaFX Collections, Working with JavaFX Graphics, Working with JavaFX UI Components, Working with Layouts in JavaFX, and Working with the JavaFX Scene Graph. The third column is titled "Oracle Java SE Embedded" and contains a list of links: Developer's Guide, Release Notes, Release 8u6, Release Notes, Release 8.0, and JDK for ARM Release Notes, Release 8u6. Below the "Oracle Java SE Embedded" section, there is a section titled "JavaFX Scene Builder 2" with a list of links: Getting Started with JavaFX Scene Builder, Installing JavaFX Scene Builder, Release Notes, User Guide, and Using JavaFX Scene Builder with Java IDEs.

ORACLE Java™ Documentation

Search Java SE Documentation

Release Java SE 8 ▼

Send Feedback | Print

Java Platform, Standard Edition (Java SE) 8

Home Client Technologies Embedded **All Books**

Java SE

- API Documentation
- Developer Guides
- Deployment Guide
- Troubleshooting Guide
- Installation Guide
- Java Mission Control Release Notes
- Java SE Release Notes
- Specifications
- The Java Tutorials
- Tools Reference for UNIX Platforms
- Tools Reference for Windows Platforms
- HotSpot Serviceability Agent API Documentation
- HotSpot Virtual Machine Garbage Collection Tuning Guide
- JRockit to HotSpot Migration Guide

JavaFX

- Adding HTML Content to JavaFX Applications
- Getting Started with JavaFX
- Handling Events
- Incorporating Media Assets Into JavaFX Applications
- Interoperability
- JavaFX API Documentation
- Mastering FXML
- Properties and Binding Tutorial
- Sample Applications for Tutorials
- Transformations, Animations, and Visual Effects
- Using JavaFX Collections
- Working with JavaFX Graphics
- Working with JavaFX UI Components
- Working with Layouts in JavaFX
- Working with the JavaFX Scene Graph

Oracle Java SE Embedded

- Developer's Guide
- Release Notes, Release 8u6
- Release Notes, Release 8.0
- JDK for ARM Release Notes, Release 8u6

JavaFX Scene Builder 2

- Getting Started with JavaFX Scene Builder
- Installing JavaFX Scene Builder
- Release Notes
- User Guide
- Using JavaFX Scene Builder with Java IDEs

JavaFX的官方(Oracle)示例

<http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>

Java SE Development Kit 8u144 Demos and Samples Downloads

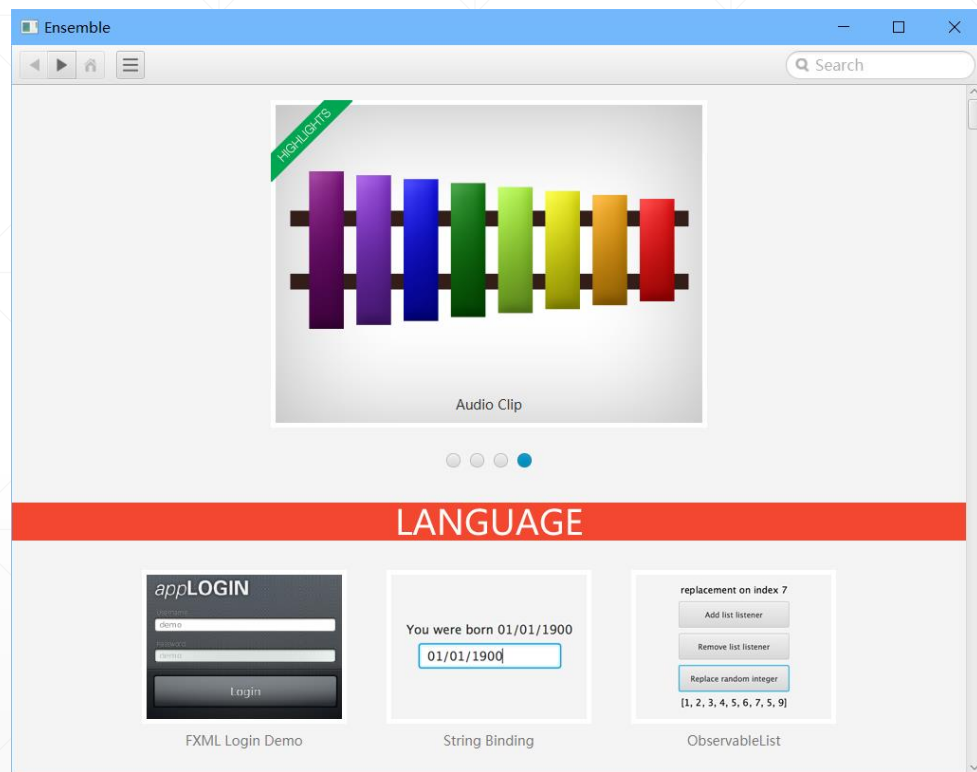
You must accept the [Oracle BSD License](#) to download this software.

☐ Accept License Agreement ☒ Decline License Agreement

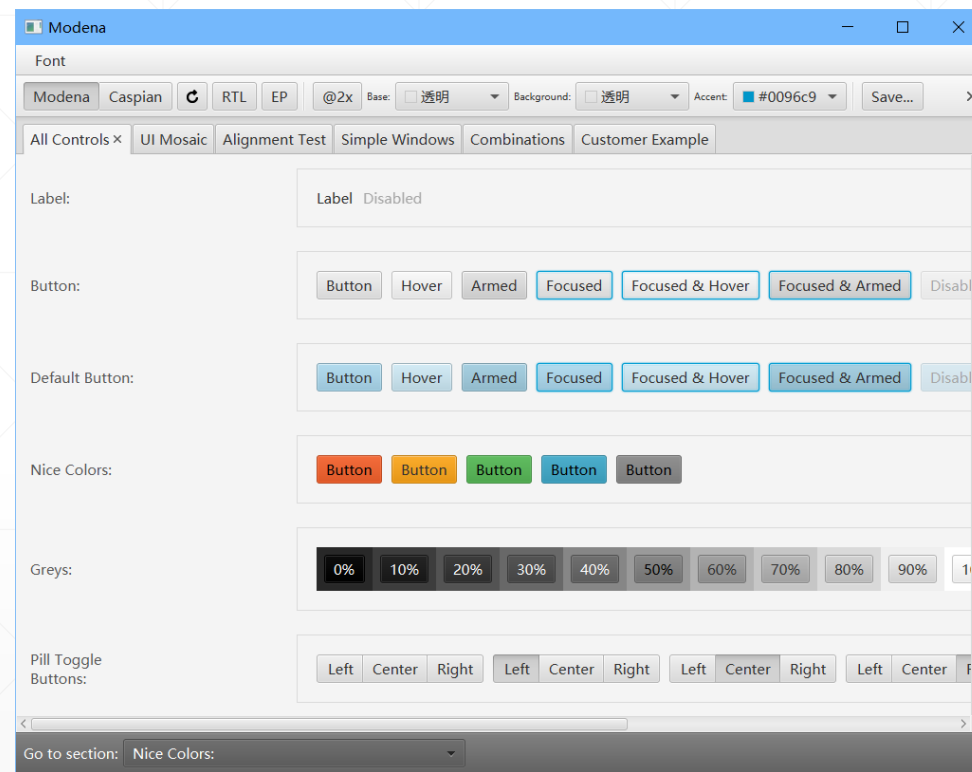
Product / File Description	File Size	Download
Linux ARM 32 Hard Float ABI	9.95 MB	jdk-8u144-linux-arm32-vfp-hflt-demos.tar.gz
Linux ARM 64 Hard Float ABI	9.94 MB	jdk-8u144-linux-arm64-vfp-hflt-demos.tar.gz
Linux x86	52.66 MB	jdk-8u144-linux-i586-demos.rpm
Linux x86	52.52 MB	jdk-8u144-linux-i586-demos.tar.gz
Linux x64	52.72 MB	jdk-8u144-linux-x64-demos.rpm
Linux x64	52.54 MB	jdk-8u144-linux-x64-demos.tar.gz
Mac OS X	53.09 MB	jdk-8u144-macosx-x86_64-demos.zip
Solaris x64	13.52 MB	jdk-8u144-solaris-x64-demos.tar.Z
Solaris x64	9.31 MB	jdk-8u144-solaris-x64-demos.tar.gz
Solaris SPARC 64-bit	13.58 MB	jdk-8u144-solaris-sparcv9-demos.tar.Z
Solaris SPARC 64-bit	9.34 MB	jdk-8u144-solaris-sparcv9-demos.tar.gz
Windows x86	53.8 MB	jdk-8u144-windows-i586-demos.zip
Windows x64	53.82 MB	jdk-8u144-windows-x64-demos.zip

JavaFX的官方示例，打包于相应的JDK 8示例包中。

官方示例截图：



Ensemble8 示例



Modena 示例

JDK 9引发的变化



JDK 9的重大变化，是模块化，相应地，JavaFX被抽取成了单独的模块，但最初仍随JDK一起提供。



从JDK 11开始，JavaFX从JDK中移除了，因此，基于JDK 11以上版本开发JavaFX应用，需要单独地下载和安装JavaFX SDK。


JavaFX社区官网

<https://openjfx.io/>



JavaFX的源码

<https://github.com/openjdk/jfx>

 **openjdk / jfx**

Watch ▾

54


Star

744


Fork


132


<> Code


 Pull requests


27


 Actions

 Security

 Insights


 master ▾


 3 branches




 565 tags

Go to file

Add file ▾

 Code ▾

 **kevinrushforth** 8253123: Switch FX build to use JDK 15 as boot JDK ... 47e67b4 12 hours ago ⌚ 11,669 commits

 .idea	8234174: Change IDEA VCS mapping to Git	10 months ago
 .jcheck	8240499: Enforce whitespace checking for additional source files	3 days ago
 apps	8238434: Ensemble: Update version of Lucene to 7.7.2	7 months ago


About


<https://openjdk.java.net/projects/openjfx/>

openjdk

javafx

java

 Readme

 View license

JavaFX的技术文档-1

JavaFX的文档，放在OpenJDK的官方上，作为OpenJDK网站的一部分：



<https://wiki.openjdk.java.net/display/OpenJFX>

但这个网站上的文档，内容少，且更新不及时。还是参看JavaFX社区官网上的文档比较好，比较全面。

JavaFX的技术文档-2

<https://openjfx.io/openjfx-docs/>

JavaFX

Getting Started with JavaFX

Introduction

Install Java

Run HelloWorld using JavaFX

Run HelloWorld via Maven

Run HelloWorld via Gradle

Runtime images

JavaFX and IntelliJ

JavaFX and NetBeans

JavaFX and Eclipse

Next Steps

Introduction

JavaFX allows you to create Java applications with a modern, hardware-accelerated user interface that is highly portable.

There is [detailed reference documentation for JavaFX](#), and this short tutorial will show you how to write a JavaFX 14 application.

For information on how to run JavaFX applications on mobile platforms, please see [Getting Started with Gluon Mobile](#).

For information on Long Term Support (LTS) for JavaFX 11, please see [JavaFX Long Term Support options](#).