



# JAVAFX: HISTORY, CONCEPTS, NUTSHELL EXAMPLES

BIS Seminar – Sommersemester 2020

Elise Landman h1551237

# AGENDA

1. General Overview
2. History of JavaFX
3. Live Demo
4. JavaFX Architecture
5. Start Using JavaFX
6. Development Examples

# Kahoot!

**Let's do a poll!**

**Please go to [www.kahoot.it](https://www.kahoot.it)**

Source: [https://kahoot.it/shared/theme/kahoot/img/icn\\_kahoot\\_logo.svg](https://kahoot.it/shared/theme/kahoot/img/icn_kahoot_logo.svg)

# WHAT IS JAVA FX?

Toolkit for developing Rich Internet Applications (RIA) and Graphical User Interfaces (GUI) with the programming language Java (Wikipedia, 2020)



Source: [https://en.wikipedia.org/wiki/JavaFX\\_Script](https://en.wikipedia.org/wiki/JavaFX_Script)

# WHAT IS A RICH INTERNET APPLICATION?

- Implemented in Browser Applications
- Offer a better visual user experience
- Better accessibility and usability
- More interactive

.. than traditional HTML (Shaath,Y., 2011).



Source: [https://en.wikipedia.org/wiki/JavaFX\\_Script](https://en.wikipedia.org/wiki/JavaFX_Script)

# WHAT IS A RICH INTERNET APPLICATION?

The screenshot displays a rich internet application (RIA) dashboard for a user named Sam, Gore. The interface is highly interactive and data-rich, featuring several key components:

- Header:** A personalized greeting "Welcome Sam, Gore" with a "Logout" button.
- Calendar:** A calendar for April 2006, showing the current date as the 4th.
- Map:** A map of the United States divided into regions with sales figures:
  - Northwest: \$1,185,427
  - Central: \$880,233
  - Mid Atlantic: \$2,945,337
  - Northeast: \$1,495,111
  - Southwest: \$785,971
  - South: \$875,367
  - South East: \$584,954
- Bar Chart:** A bar chart showing quarterly sales from 2005 Q1 to 2006 Q4. The y-axis ranges from \$0 to \$200,000. Sales are approximately: 2005 Q1: \$140,000; 2005 Q2: \$130,000; 2005 Q3: \$145,000; 2005 Q4: \$150,000; 2006 Q1: \$180,000; 2006 Q2: \$170,000; 2006 Q3: \$175,000; 2006 Q4: \$180,000.
- Weather:** "Current Conditions: Partly Cloudy 70F".
- Blog:** A "My Blog" section with a "Refresh Blog" button and a table of recent posts:

Date	Title
Tue, 09 Jan	Mobile Devices - 4 Feature Length Films
Wed, 02 Jan	Red usability: not just online
Sat, 29 Dec	Hulu is for real!
Fri, 26 Dec 2	Flip-Mac Silverlight Export
Thu, 27 Dec	Loving the Apple Wireless Keyboard
- Store Sales:** A "Store Sales" section showing a central hexagonal chart with arrows pointing to four product categories:
  - Electronics: \$7,618,743
  - Books: \$439,751
  - Movies: \$162,669
  - Music: \$118,747
- My Items to-do:** A list of tasks including "Call Peter on the new proposal", "Prepare for the conf call with NYZ Bank", "Send update to John", "Submit expenses", "Book flight to Paris", and "Bonus payment for the team".
- My Links / My Documents:** Placeholder sections for additional navigation and file access.

Source: [https://w.microstrategy.com/msdz/MSDL/GARRelease\\_Current/\\_GARRelease\\_Archives/931/docs/mergedProjects/GenericContent/topics/sdkintro/SDK\\_Rich\\_Internet\\_Applications\\_\(RIAs\)\\_and\\_Mashups.htm](https://w.microstrategy.com/msdz/MSDL/GARRelease_Current/_GARRelease_Archives/931/docs/mergedProjects/GenericContent/topics/sdkintro/SDK_Rich_Internet_Applications_(RIAs)_and_Mashups.htm)

# WHAT IS A GRAPHICAL USER INTERFACE?



Source: <https://www.conceptdraw.com/How-To-Guide/graphical-user-interface-examples>

## HOW DID JAVA FX COME TO LIFE?

- Released in December 2008
- by Sun Microsystems
- Creator of Java
- Acquired by Oracle in April 2009  
for 5.6 billion USD (Wikipedia, 2020)





## FUN FACT



Sources: <https://www.conceptdraw.com/How-To-Guide/graphical-user-interface-examples>  
<https://www.vancourier.com/living/visiting-google-facebook-and-apple-in-california-s-silicon-valley-1.23401683>

# ANCESTORS OF JAVA FX

## 1995: Abstract Window Toolkit (AWT)

- First Java GUI Library
- Platform Dependent: different interface on different OS
- Heavyweight (JavaTpoint, 2020)

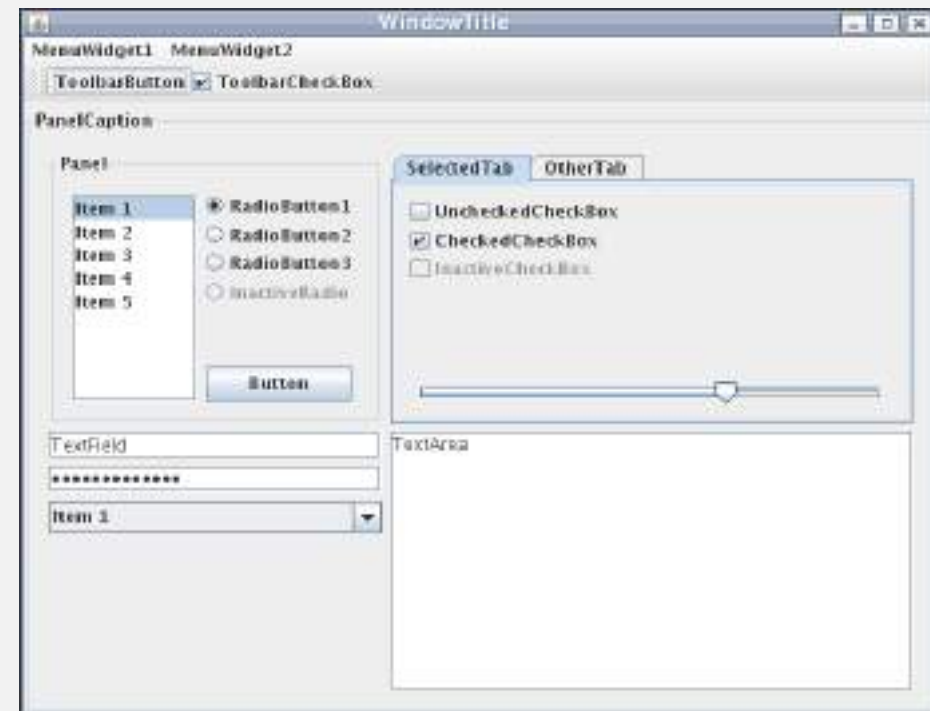


Source: <https://www.javatpoint.com/java-awt>

# ANCESTORS OF JAVA FX

## 1996: Swing

- Successor of AWT
- Platform Independent: same „look and feel“ on each OS and device
- Lightweight (JavaTpoint, 2020)



Source: [https://en.wikipedia.org/wiki/Swing\\_\(Java\)](https://en.wikipedia.org/wiki/Swing_(Java))

# TIME MACHINE

12 years fast forward...



Source: <https://gifer.com/en/Oi8y>

# RELEASE OF JAVA FX

## 2008: JavaFX

- Not an official successor of Swing – but will be replaced in the future (Oracle, 2020)
- Support of RIAs
- Support for Windows, MacOS, Linux, Android, iOS and Raspbian OS (Wikipedia, 2020)

# SWING VS JAVA FX

## Swing:

- Standard UI components
- Decent look and feel
- Basic controls (Buttons, Check Boxes, etc.)
- No support for touch devices
- No new releases

(Educba, 2020)

## JavaFX:

- Rich GUI components
- Modern look and feel
- Many modern and new controls
- Stylish animations
- Touch screen support
- New releases in the future

LIVE DEMO

Live Demo

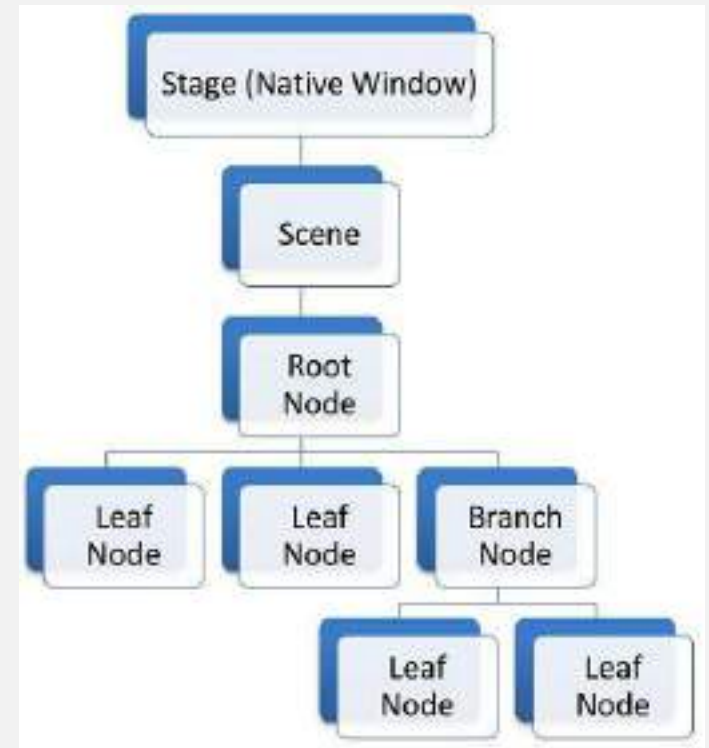
# JAVA FX ARCHITECTURE

- Scene Graph tree structure
- Logical representation of individual UI components

Stage: native OS window

Scene: specific page view of an application

Nodes: images, buttons, text fields, etc.



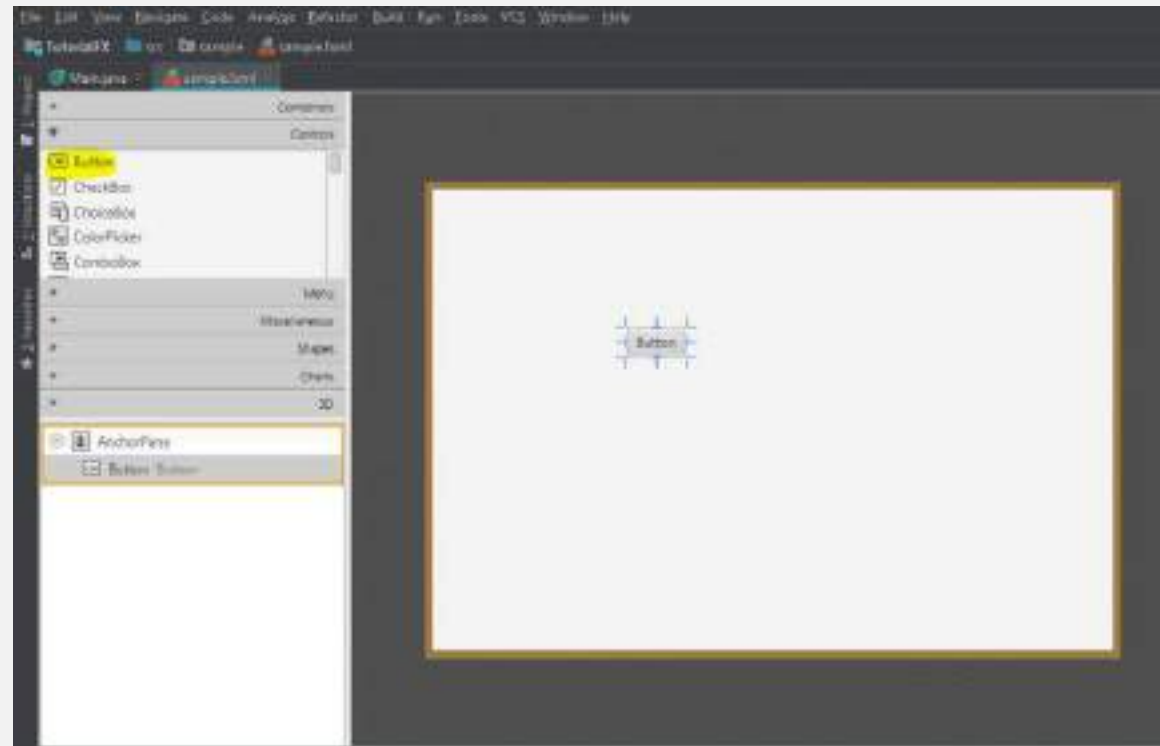
Source: <https://fxdocs.github.io/docs/index.html>

→ A change in parent node is applied to all its child nodes (FXdocs, 2020)



# SCENE BUILDER

- Drag and Drop tool for simplified UI design
- No need of programming experience!



# HOW TO START DEVELOPING?

1. Install Java – JDK: <http://jdk.java.net/14/>
2. Install Java FX: <https://gluonhq.com/products/javafx/>
3. Suggestion - install IntelliJ IDEA: <https://www.jetbrains.com/idea/>

# CODE SNIPPETS

## General-purpose text field:

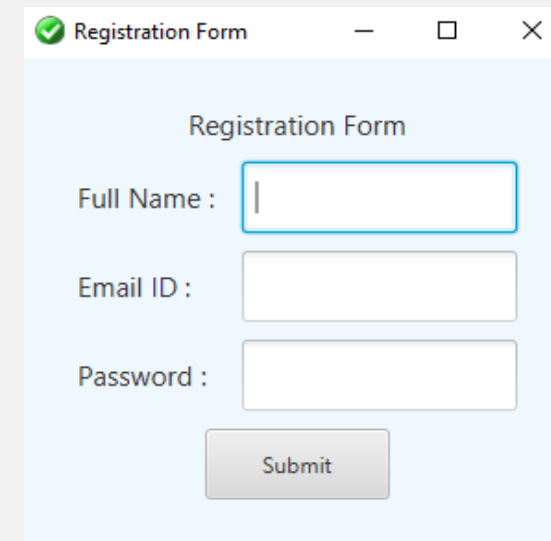
```
<Label text="Full Name : "  
    GridPane.columnIndex="0" GridPane.rowIndex="1" >  
</Label>  
<TextField prefHeight="40"  
    GridPane.columnIndex="1" GridPane.rowIndex="1"/>
```

## Password text field:

```
<Label text="Password : "  
    GridPane.columnIndex="0" GridPane.rowIndex="3" >  
</Label>  
<PasswordField prefHeight="40"  
    GridPane.columnIndex="1" GridPane.rowIndex="3"/>
```

## Application window icon:

```
Stage.getIcons().add(new Image(getClass().getResourceAsStream("icon.png")));
```



THANK YOU FOR YOUR ATTENTION!

Any Questions?



Source: <https://www.pixilart.com/art/mario-and-question-mark-gif-22231991cc24155>

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