Web Application Development Seminar

Google Web Toolkit (GWT) and Google Gears

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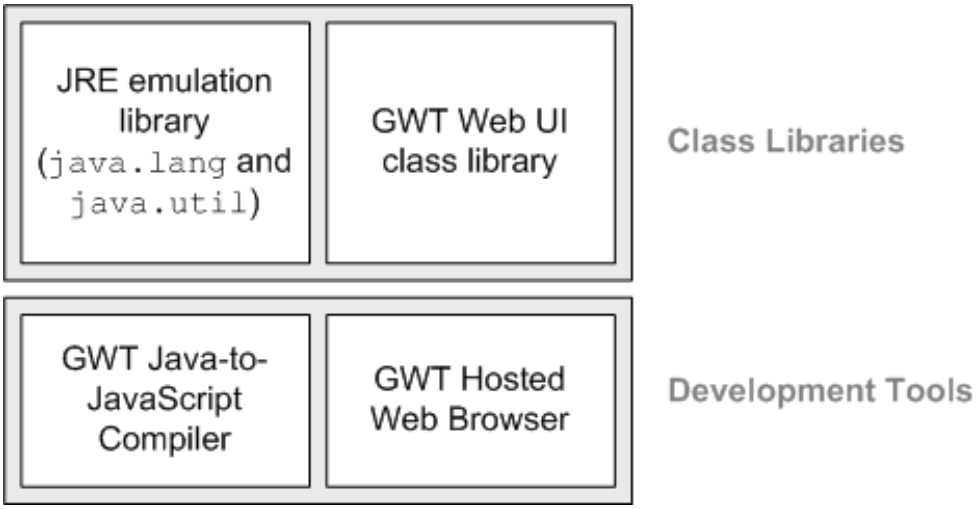
Outline

- Basic Idea
- Benefits
- Installation & Building
- Debugging
- Examples
- Conlusions

Google Web Toolkit (GWT)

GWT - Basic Idea

- Apache 2 licenced Java framework for developing AJAX apps
- Applications are developed with given set of Java libraries => Java code is compiled to JavaScript
- Makes it possible to produce applications that are run in a browser without the developer being a JavaScript specialist
- IDE can be any editor that supports Java (~= Eclipse)
- GWT includes four components (see following slide)



GWT - Benefits

- Web application developers are only required to know Java
- Benefits of object-oriented language and modularity
- Static type checking of Java language
- No need to worry about incompatibilities of browsers
- Developer can really debug web apps with Java language i.e. with Eclipse (vs. JavaScript debugging)
- Usage of Google APIs, e.g. Google Gears
- GWT borrows from the Java Native Interface (JNI) concept to implement Java*Script* Native Interface (JSNI)

GWT - Debugging

- Hosted environment for local use
  - Application runs as Java bytecode within the Java Virtual Machine (JVM)
  - Tomcat launches itself on the background for local debugging (you can debug stuff, i.e. with Eclipse)
  - Needs a special browser that is provided

GWT Examples

Google Gears

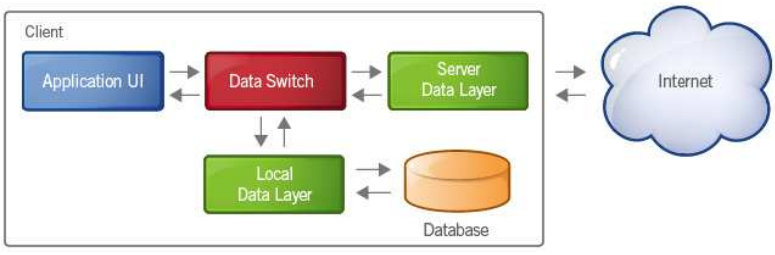
Google Gears - Basic Idea

- An open source browser extension that enables web applications to provide offline functionality
- Serve application resources locally (LocalServer)
- Store data locally in a relational database (DataBase)
- Run asynchronous Javascript (WorkerPool)
- APIs for each component
- Works best for client oriented applications
  - For example Office like apps, e-mail clients, blogs

Regular Web Application Architecture

- Common way to build web application
  - No real data layer
  - AJAX calls originate throughout the code, without any communication layer

Complete Gears Architecture



Gears - Benefits

- Allows web application execution in offline mode
- Narrows the gap between standalone applications and web-based applications
  - Normal web application relies on Internet connection
- Collaboration with Adobe, Mozilla and Opera and other industry partners
  - Drivers for open standard
- Higher-level APIs libraries build on top of Gears even if Gears is currently in beta phase
  - Dojo Offline Toolkit
  - Vortex

Gears Examples

- Zoho
- Gearpad
- Moxie

Conclusions

- GWT has potential to become very popular
  - There are a lot of Java programming capable developers
  - OO-programming and promotes modularity
  - No need to solve browser specific issues
- GWT offers real debugging possibilities compared to JavaScript
- Gears enables web application execution in offline mode
  - Data can be synchronized when online again
  - Offline execution need to be considered at design phase
- We're planning to port an organization chart program implemented with Java utilizing offline functionality