oVirt UI Developer Sessions

Google Web Toolkit

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Topics covered in this session

- What is Google Web Toolkit (GWT)
- GWT development workflow
- Typical GWT project structure
- What happens during GWT application startup
- Useful GWT features (used in oVirt UI)

What is Google Web Toolkit

- Open source set of tools for building JavaScript web applications using Java programming language

What is Google Web Toolkit

- **Open source** set of tools for building JavaScript web applications using Java programming language
- Source code hosted on Google Code
  http://code.google.com/p/google-web-toolkit/
- Documentation available from Google Developers
  https://developers.google.com/web-toolkit/
- Using Apache 2.0 license

What is Google Web Toolkit

- **Open source** set of tools for building JavaScript web applications using Java programming language
- Started as internal Google project
- Google open sourced it in 2006
- GWT 2.0 was the next most significant milestone
- Summer 2012: Google announces GWT Steering Committee

What is Google Web Toolkit

- Open source **set of tools** for building JavaScript web applications using Java programming language
- GWT is not a library nor framework
- GWT is an SDK for developing web applications in Java

What is Google Web Toolkit

- Open source **set of tools** for building JavaScript web applications using Java programming language
- Java to JavaScript compiler

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- Open source **set of tools** for building JavaScript web applications using Java programming language
- Java to JavaScript compiler
- Development mode
- Java runtime (JRE) emulation library
- Widget (web UI) library

What is Google Web Toolkit

- Open source set of tools **for building JavaScript web applications** using Java programming language
- Mission of GWT

What is Google Web Toolkit

- Open source set of tools **for building JavaScript web applications** using Java programming language
- Mission of GWT
- ... but GWT is not ...

What is Google Web Toolkit

- Open source set of tools for building JavaScript web applications **using Java programming language**
- Reason for choosing Java as the source language

Why Google Web Toolkit

- Pitfalls of large-scale web development

Why Google Web Toolkit

- Pitfalls of large-scale web development
- Leverage existing Java tools

Why Google Web Toolkit

- Pitfalls of large-scale web development
- Leverage existing Java tools
- Cross-browser compatibility

GWT development workflow

- Write web application in Java language

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- Debug the application using Java IDE

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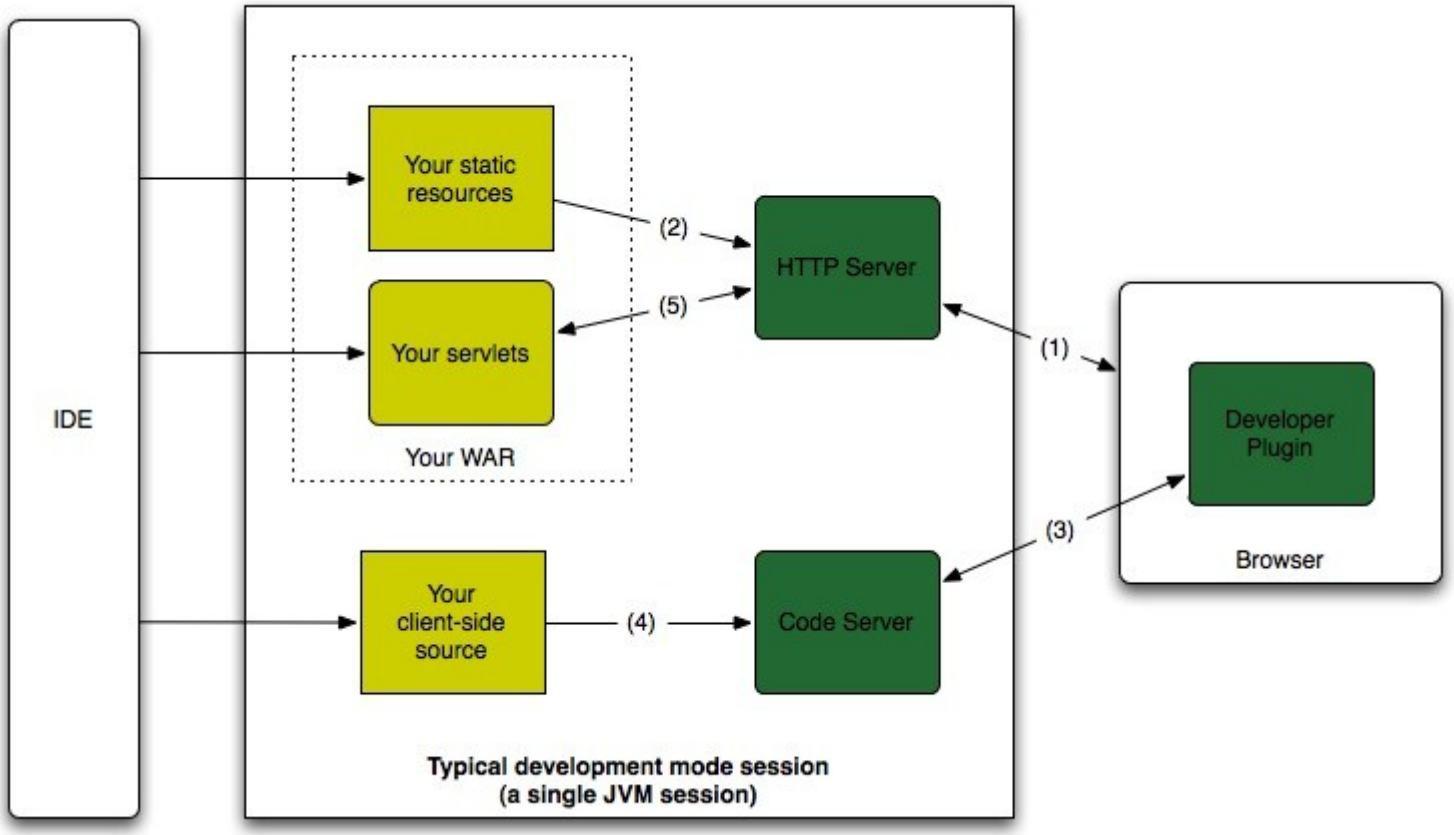
- Compile the application for use in production

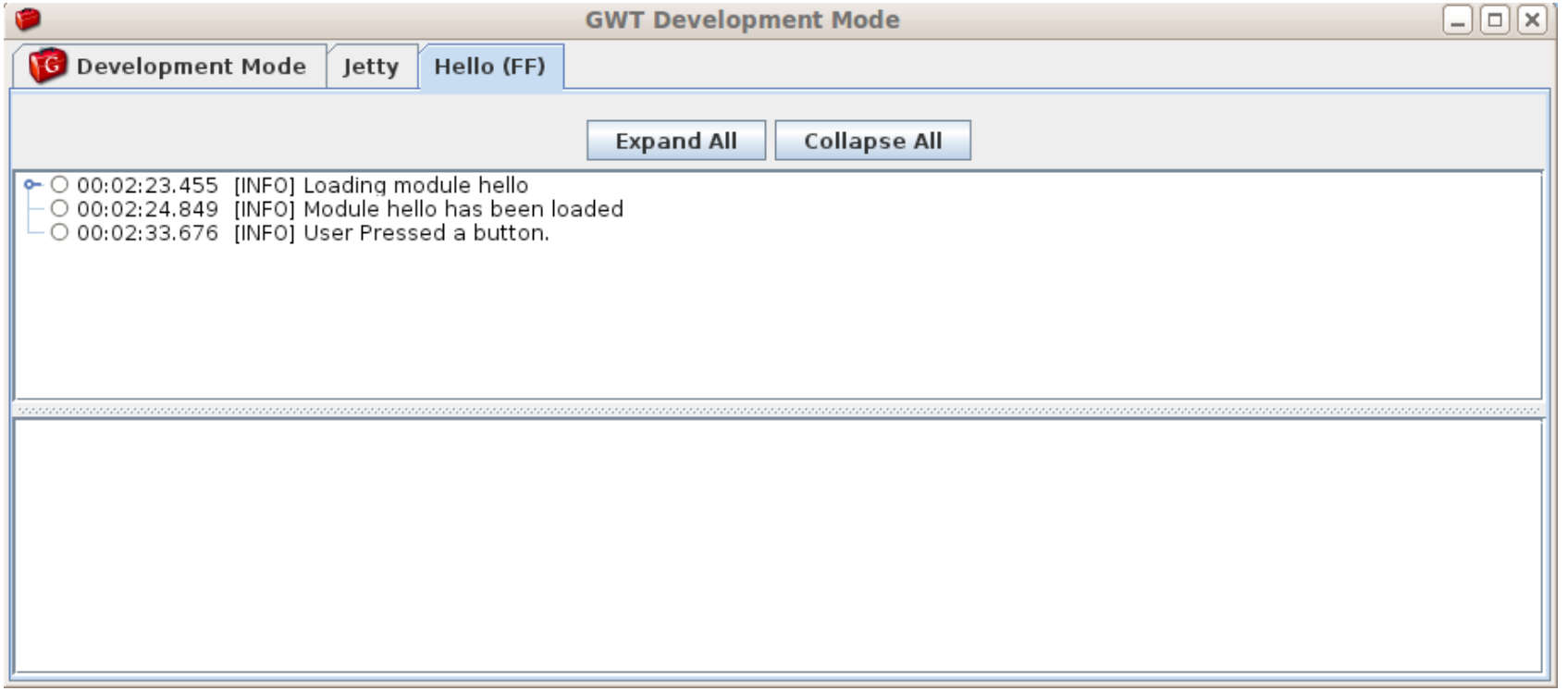
GWT development workflow

- Write web application in Java language
- Debug the application using Java IDE
- Compile the application for use in production
- Deploy compiled application on a web server

Development mode session example

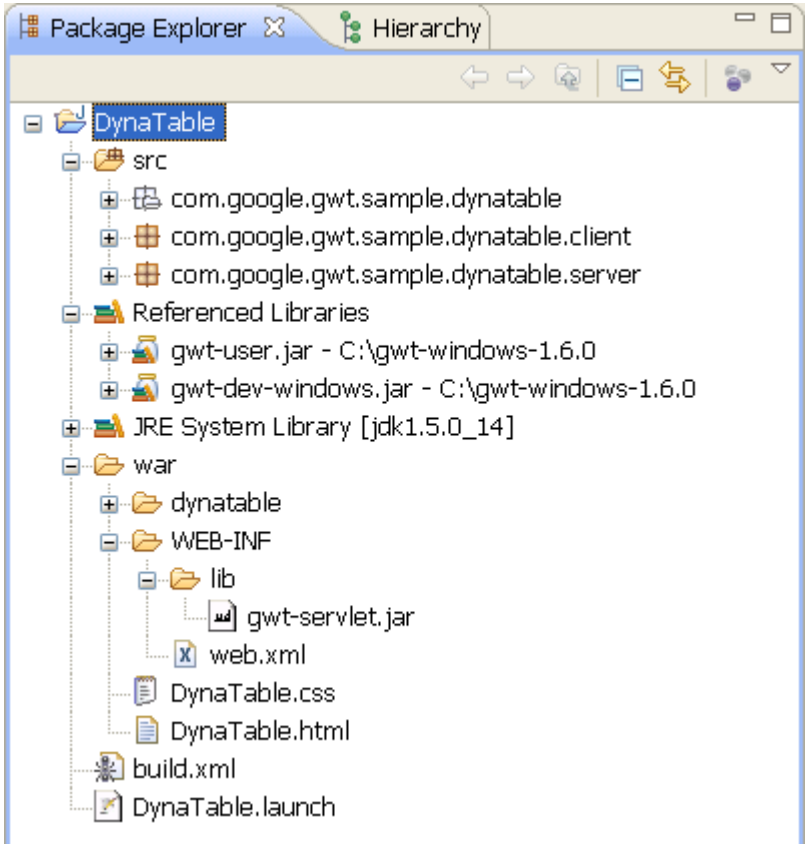


Development mode session example



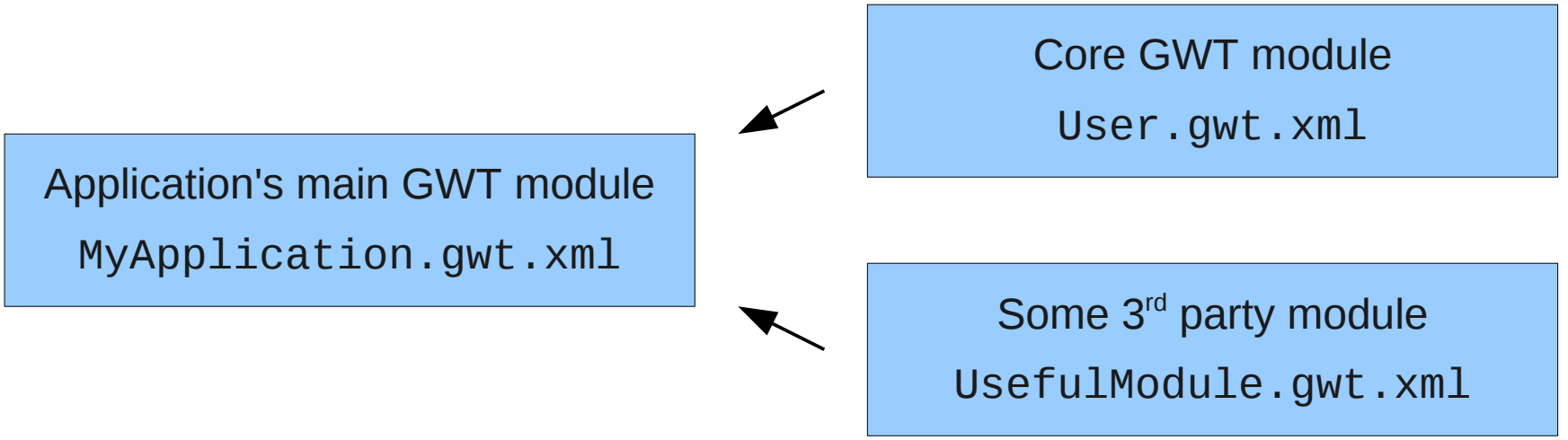
Typical GWT project structure

- Separate client and server code



Typical GWT project structure

- Modules as units of configuration
- Module inheritance



Typical GWT project structure

- Module entry point

```
public class MyApplication implements EntryPoint {

    @Override
    public void onModuleLoad() {
        // Initialize the application
        // Construct user interface using widgets
        // Add widget callbacks for handling user interaction
        // Add code for communicating with the server
    }

}
```

Before running GWT application

- Module compilation into permutations

Before running GWT application

- Module compilation into permutations
- Permutation selector script

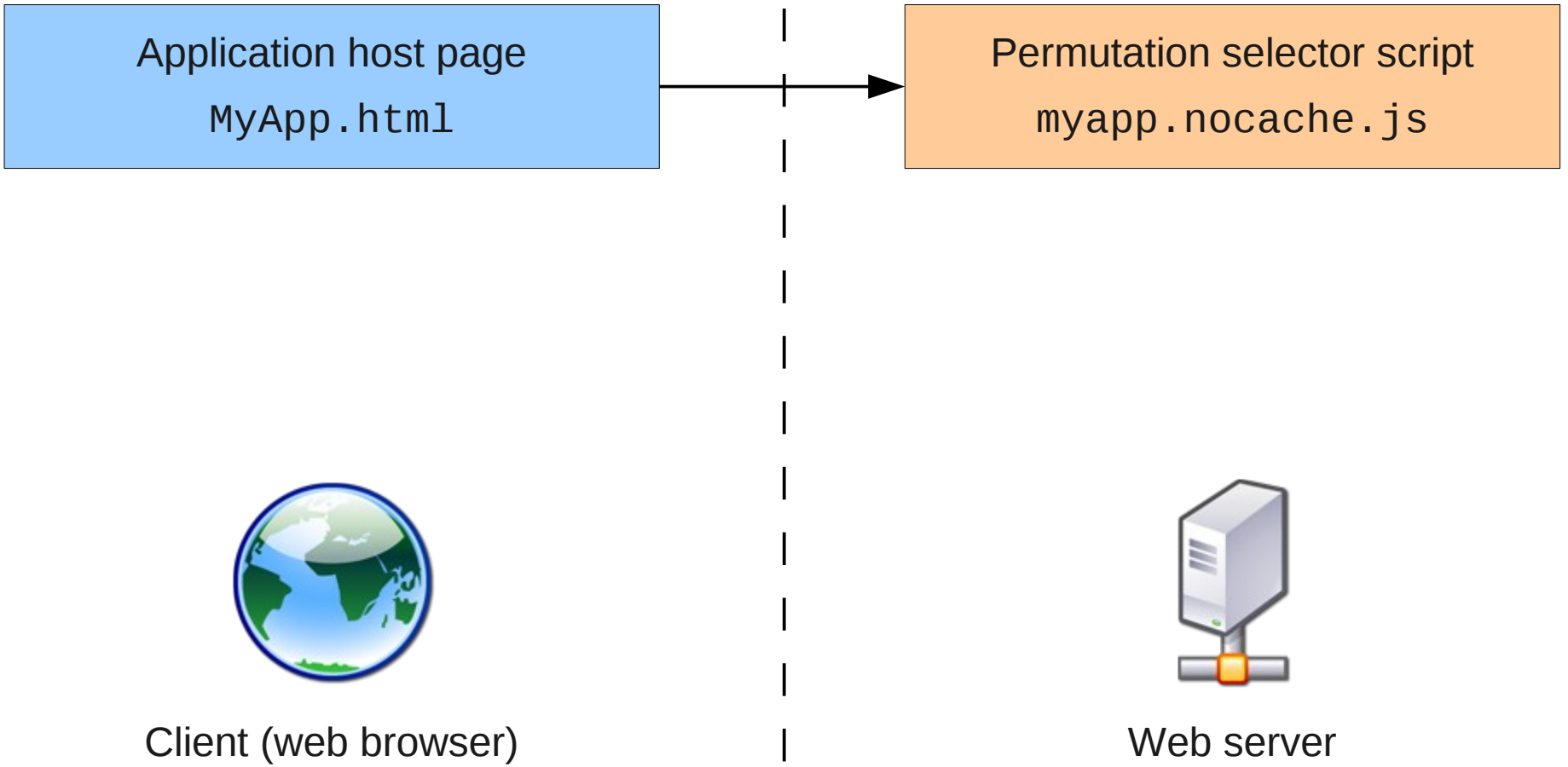
Before running GWT application

- Module compilation into permutations
- Permutation selector script
- Host page (HTML) to load selector script

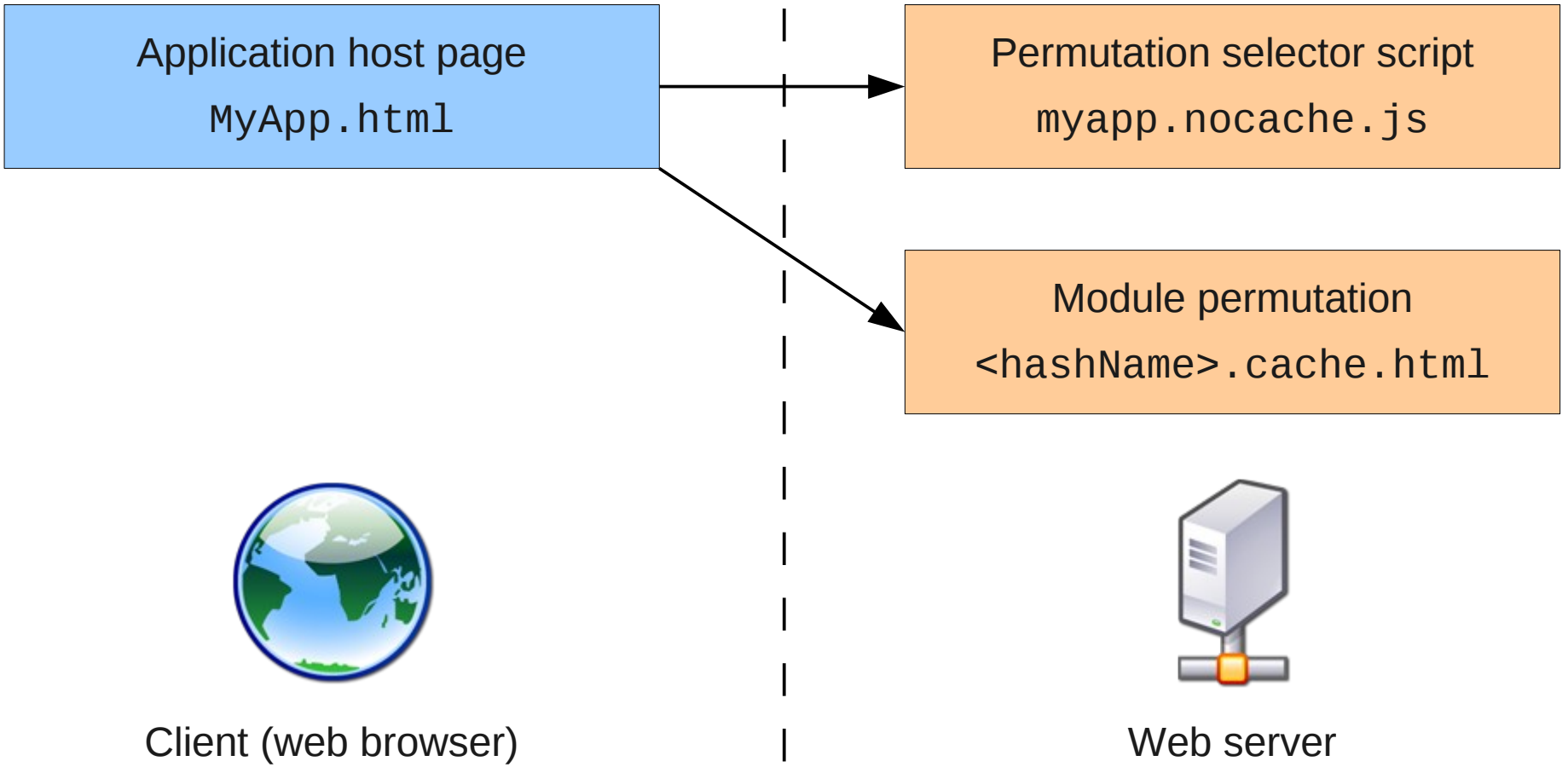
What happens during GWT application startup

```
<html>

 <head>
   <link rel="stylesheet" type="text/css" href="MyApp.css" />
   <title>My GWT Application</title>
 </head>

 <body>
   <!-- Permutation selector script that loads the 'myapp' module -->
   <script language="javascript" src="myapp/myapp.nocache.js"></script>
 </body>

</html>
```

What happens during GWT application startup



What happens during GWT application startup



Useful GWT features

- Code splitting for improved performance

Useful GWT features

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- Building UIs in a declarative way (UiBinder)

```
<ui:UiBinder>

  <g:FlowPanel>

    <g:Label>
      My widget
    </g:Label>

  </g:FlowPanel>

</ui:UiBinder>
```

Declarative way

```
public class MyWidget extends Composite {

  public MyWidget() {
    Label msg = new Label("My widget");
    FlowPanel wrapper = new FlowPanel();
    Wrapper.add(msg);
    initWidget(wrapper);
  }

}
```

Programmatic way

Useful GWT features

- Code splitting for improved performance
- Building UIs in a declarative way (UiBinder)
- Editor framework for UI data binding

Useful GWT features

- Code splitting for improved performance
- Building UIs in a declarative way (UiBinder)
- Editor framework for UI data binding
- Efficient image handling (ClientBundle)

The end

Thanks for attending!