DEVCLOUD

CLOUD BASED INTEGRATED DEVELOPMENT ENVIRONMENT

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Anıl Paçacı

Meriç Taze

Overview

- Motivation
- Existing solutions and their deficiencies
- Our solution
- Design

Motivation

- Why do we need online Integrated Development Environmet(IDE)?
  - drawbacks of stand-alone IDEs
    - locality
    - requirement for additional tools
    - need for high computer resources
  - portability
    - platform independent

Existing Solutions and Their Deficiencies

- Exo IDE
  - very limited extensibility
  - no control over IDE or environment features and tools
- Cloud9 IDE
  - very limited extensibility
  - no database support

Our Solution

- What is our difference?
  - combination of stand-alone and online IDEs
  - plugin-based extensibility

Our Solution

- Server side:
  - user manager
  - code editor
  - debugger
  - command line
- Client side
  - web page
  - restful web services

Our Solution

Client Side Technologies

- HTML5
- Backbone.js
- Marionette.js

Server Side Technologies

- OSGİ – Apache Felix
- Node.js

Client Side Technologies

Backbone.js

Model-View-Controller architecture for rich client-side applications

- With Backbone, you represent the data as Models
- Views that displays that model can be notified of the change
- It helps you to build a client side web application in an organized way.

Marionette.js

A composite application library layer on top of Backbone.js

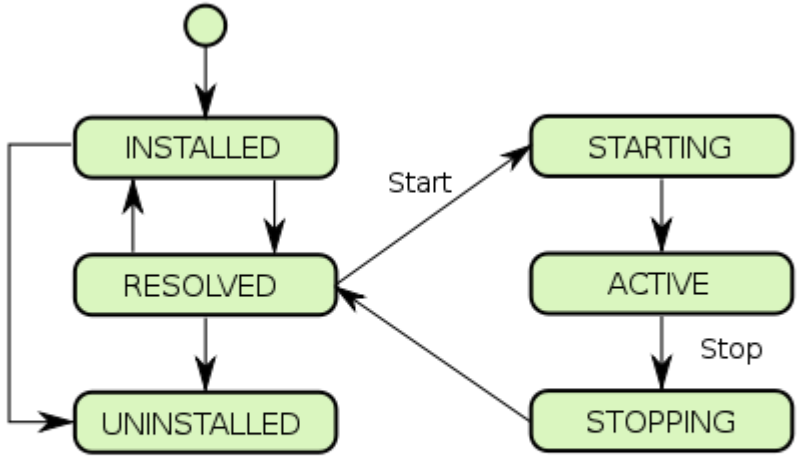
- Provides an architecture for developing composite, modular, event-driven applications.
- Nested views and layouts within regions.
- Easy, built-in, clean event handling mechanism to communicate with other views.

Server Side Technologies

OSGi

a module system and service platform for the Java programming language

- Bundles: A group of java classes and additional recources, which may have some dependencies to other bundles
- They can provide services for other bundles to use



OSGi

Projects using it

- Eclipse IDE
- Netbeans IDE
- GlassFish Application Server
- Jboss Application Server
- Weblogic Application Server
- WebSphere Application Server
- and many others..

OSGi

Implementations

- Knopflerfish (Open source)
- Apache Felix (Open source)
- Concierge OSGi (Open source)
- mBS (Commercial)
- Equinox OSGi (Open source)

- We use Apache Felix because it is open source, well documented, and easy to configure and get started.

Node.js

server side JavaScript

- Event-driven
- Asynchronous
- Scalable
- Lightweight

- Runs on Google's V8 JavaScript engine (also used by Google Chrome browser)

Node.js

socket.io

- a JavaScript library for realtime web applications.
- has two parts: a client side library that runs in the browser, and a server side library for node.js
- We are using it in the the Terminal/Console module of out Integrated Development Environment.

DEVCLOUD - Web Based Integrated Development Environment

Please sign in

Username

Password

Remember me

Sign in

Editor Terminal

Filename

Save file

```
1  #include "stdio.h"
2
3  int main()
4  {
5      printf("Hello World");
6
7  }
```

DEVCLOUD - Web Based Integrated Development Environment

Logged in as serbay Log out

Editor Terminal

References

- http://www.w3schools.com/html/html5_intro.asp
- http://backbonejs.org/
- http://marionettejs.com/
- http://en.wikipedia.org/wiki/OSGi
- http://en.wikipedia.org/wiki/Nodejs
- https://c9.io/
- https://cloud-ide.com/

OpenVZ

an operating system-level virtualization technology based on the Linux kernel

- A container is an isolated entity which performs and executes exactly like user in the system.
- OpenVZ is capable of creating multiple secure, isolated Linux containers on a single physical server.
- It uses containers instead of using hypervisors to provide virtualization.

OpenVZ

Alternatives

- chroot: just provides a partial file system isolation
- FreeBSD Jail: the most applicable alternative for OpenVZ with minor drawbacks
- LXC: LinuX Containers, similar to OpenVZ containers