Mozilla Addon Builder
Definition of the Package Building System

Piotr Zalewa

April 30, 2010

If in doubts, please take a look at the accompanied document:
`http://github.com/zalun/FlightDeck/raw/master/Docs/Addon%20Builder%20-%20Build%20System.pdf`.

1 Syntax

1.1 Objects

`x`, `y`, `z` — *represents* `[a..z]`
`m`, `n` — *represents* `[0..9]+`

`Ux` is the specific User (identified by *User:name*)

`Px` is the specific Package (identified by *Package:name*)
It should always be used within its `type` context as `Lx` — Library or `Ax` — Addon
Every Package has an associated PackageRevision[1] (identified by a triplet `Ux:Py.n` *User/Package/PackageRevision:revisionNumber*)

`Mx` is the Module (identified by `Ux:Py.n:Mz` *PackageRevision/Module:name*[2])

1.2 Object identification — revision numbers and HEAD

`Ux:Py.n` defines revision of the Package.
`Ua:La.1` — First revision of Library `La` saved by `Ua`.

`Ux:Py.n:Mz` defines the precise Module revision — a Module inside the PackageRevision.
`Ua:La.1:Ma` — Module `Ma` inside the first revision of Library `La` saved by `Ua`.

`Px` $\Longrightarrow$ `Uy:Px.n` is the HEAD revision of the Package
`La` $\Longrightarrow$ `Ua:La.1` — `La`'s HEAD points to the first revision of Library `La` saved by `Ua`.

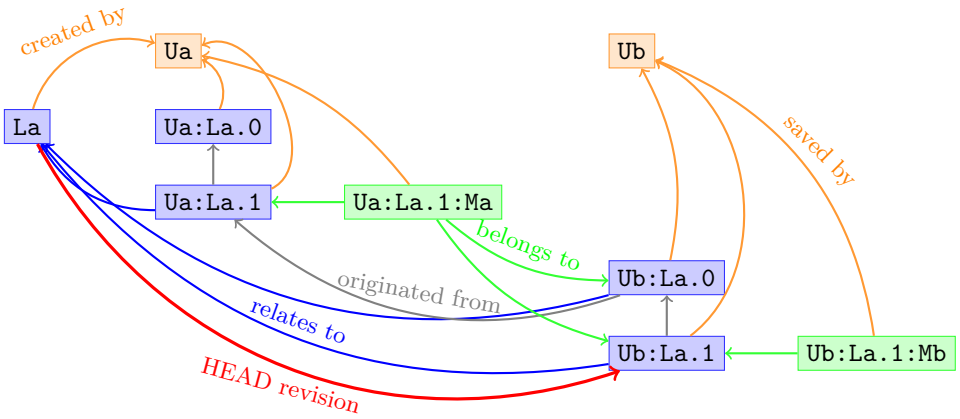
`Ux:Py.n` $\supset$ {`Ux:Py.m:Mz, ...`} Modules inside the Package revision.
`Ua:La.2` $\supset$ {`Ua:La.1:Ma, Ub:La.2:Mb`} — Second revision of Library `La` saved by `Ua` contains `Ma` saved by `Ua` in his `La`'s first revision and `Mb` saved by `Ub` in his second `La`'s revision.

[1] PackageRevision is not the same as Package version. The latter is just meta-data, a text field of PackageRevision object used only in exported `XPI`. It will no longer be used for data identification.

[2] Every data object is identified by a PackageRevision. The concept is similar to *git*'s commits. In essence, for every saved Module change, a new PackageRevision is created.

2 Relations between database objects

Graph of a sample database stage for the La ⟹ Ua:La.1 ⊃ {Ua:La.1:Ma, Ub:La.1:Mb}



3 Editing Library and its Modules

3.1 Starting point

All next scenarios start from the Ua:La.1 defined as below.

La ⟹ Ua:La.1 ⊃ {Ua:La.1:Ma}

Package La is created by User Ua.
La's HEAD is PackageRevision identified as Ua:La.1
It contains only one module - Ma
Following steps had to happen to achieve above status:

	Ua
Ua creates empty Library La	Ua:La.0 ⊃ {}
System sets La's HEAD	La ⟹ Ua:La.0
Ua adds new Milestone Ma to La	Ua:La.1 ⊃ {Ua:La.1:Ma}
Ua sets the HEAD	La ⟹ Ua.La.1

3.2 Scenario (1 Module, 2 Users, no dependencies)

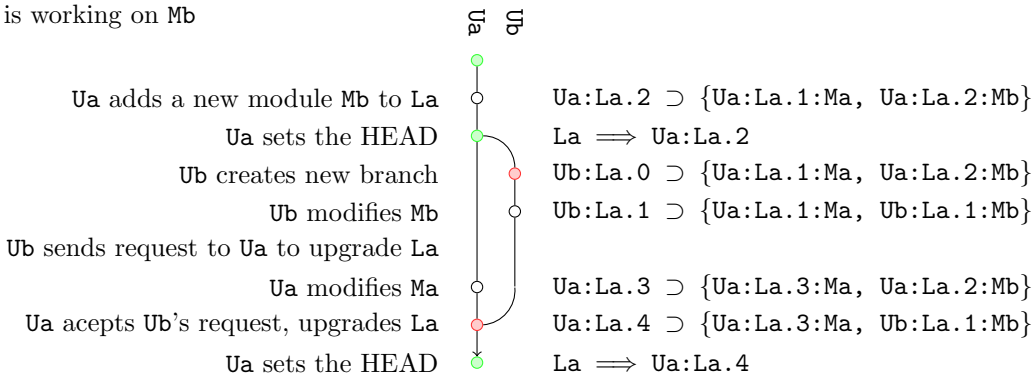
Ua and Ub are working on La
Ub modified one module

	Ua	Ub
Ub creates new branch		Ub:La.0 ⊃ {Ua:La.1:Ma}
Ub saved changes to Ma		Ub:La.1 ⊃ {Ub:La.1:Ma}
Ub sends *request* to La's creator to updade La's HEAD		
Ua accepts the request by setting the HEAD to Ub's version	La ⟹ Ub:La.1	

Result: La ⟹ Ub:La.1 ⊃ {Ub:La.1:Ma}

3.3 Scenario (2 Modules, 2 Users, no dependencies)

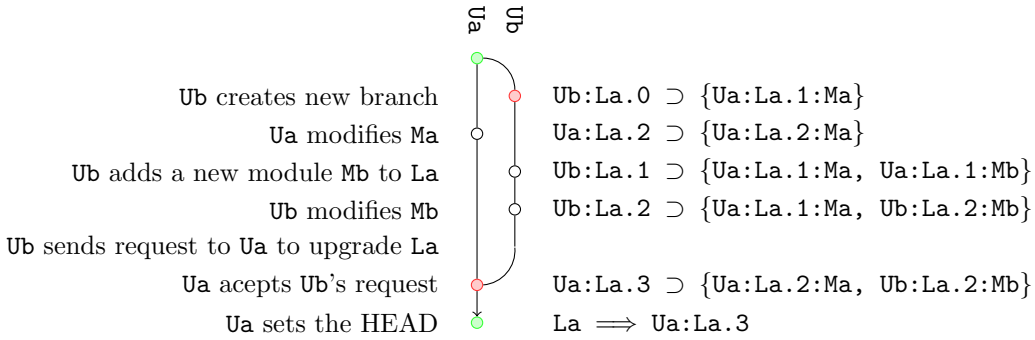
Ua and Ub are working on La
Ua created module Mb
Ub is working on Mb



Result: La ⟹ Ua:La.4 ⊃ {Ua:La.3:Ma, Ub:La.1:Mb}

3.4 Scenario (2 Modules, 2 Users, no dependencies)

Ua and Ub are working on La
Ub created module Mb



Result: La ⟹ Ua:La.3 ⊃ {Ua:La.2:Ma, Ub:La.2:Mb}

3.5 Scenario with conflict (2 Modules, 2 Users, no dependencies)

Ua and Ub are working on La
Ua created module Mb
Ua and Ub are working on Mb
Conflict arises...

1. Ua adds a new module Mb to La
   Ua:La.2 ⊃ {Ua:La.1:Ma, Ua:La.2:Mb}
2. Ua sets the HEAD
   La ⟹ Ua:La.2
3. Ub modifies Mb
   Ub:La.0 ⊃ {Ua:La.1:Ma, Ua:La.2:Mb} — automatic fork of La
   Ub:La.1 ⊃ {Ua:La.1:Ma, Ub:La.1:Mb}

4. `Ua` modifies `Mb`
   `Ua:La.3` $\supset$ {`Ua:La.1:Ma, Ua:La.2:Mb`}

5. **CONFLICT**
   At the time we've got two versions of La.Mb which came out from the same version

6. `Ua` sets the HEAD
   `La` $\supset$ `Ua:La.3`

7. `Ub` receives info that his source is behind the HEAD
   `Ub:La.1:Mb` (and `Ub:La.1`) is marked as *conflicted*
   `Ub` can't send the update request

8. `Ub` manually solves conflict by editing the `Mb` and removing the *conflict flag*
   `Ub:La.2` $\supset$ {`Ua:La.1, Ub:La.2:Mb`}

9. `Ub` sends request to `Ua` to upgrade `La` from `Ub:La.2`

10. `Ua` acepts `Ub`'s request
    `Ua:La.4` $\supset$ {`Ua:La.3:Ma, Ub:La.2:Mb`}

11. `Ua` sets the HEAD
    `La` $\Longrightarrow$ `Ua:La.4`

12. Result: `La` $\Longrightarrow$ `Ua:La.4` $\supset$ {`Ua:La.3:Ma, Ub:La.2:Mb`}

Draft/Ideas

update Library if Library HEAD has been changed something should tell the User that an update is possible. It should then (on request) change the versions of all Modules which are not in conflict with updating Library. In essence, if
`Ua:La.1` $\supset$ {`Ua:La.1:Ma, Ub:La.2:Mb`} is a Library to be updated and
`La` $\Longrightarrow$ `Uc:La.3` $\supset$ {`Ub:La.1:Ma, Uc:La.3:Mb, Uc:La.1:Mc`} is current HEAD, then
`Ub:La.2:Mb` should be updated to `Uc:La.3:Mb` and `Uc:La.1:Mc` should be added.
User should receive a notification that `Ua:La.1:Ma` is not in sync with HEAD.

forking Consider forcing users to create their copy of a Package before entering to edit mode (as in *github*), find a better name if needed ...

revision graphs should be created inside this documentation.
Consider using tikz `http://www.texample.net/tikz/examples/`

To be continued...