Eclipse Language PlugIn

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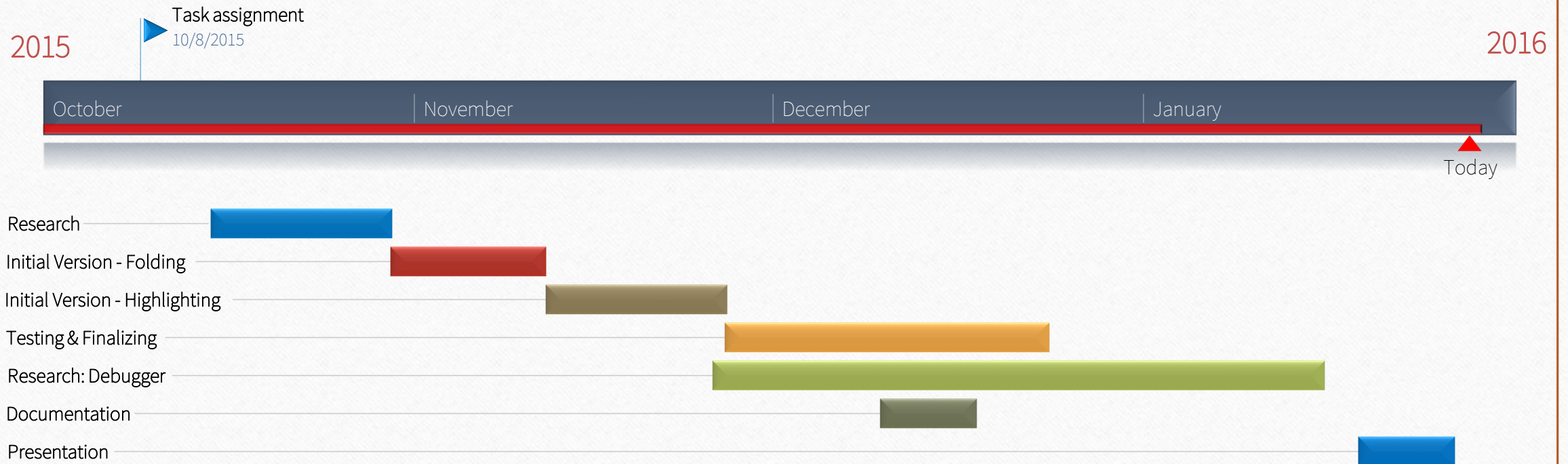Moritz Stumpfegger (1223517)

Project Task

- Create an Eclipse CDT PlugIn that enables the user to hide certain lines of code using regular expressions.

- Furthermore, the PlugIn is to support highlighting of source code.

- Finally, we were to research ways to modify the debugger such that it skips lines of source code that have previously been hidden.

- Input language: ℂ

WorkFlow

- We used GitHub as preferred VCS.

- We had meetings approximately every two weeks to discuss current issues.

WorkFlow

2015   2016

Task assignment
10/8/2015

October	November	December	January

Today

Research

Initial Version - Folding

Initial Version - Highlighting

Testing & Finalizing

Research: Debugger

Documentation

Presentation

Eclipse PlugIn Development

- Eclipse itself can be considered to be a base workplace which loads various plugIns.

- You can get started by creating an empty plugIn development project within Eclipse.

- PlugIns are *self-describing* (`MANIFEST.MF`) and *self-hosting* (`plugin.xml`).

Eclipse PlugIn Development

- *Self-describing*: The `MANIFEST.MF` file containts information about the plugIn, as well as dependencies and packages offered to other plugIns.

```
Manifest-Version: 1.0
Bundle-Name: C/C++ Regex Folding Plugin
Bundle-SymbolicName: <plugin-name>;singleton:=true
Bundle-Activator: <fully qualified name>
Require-Bundle: org.eclipse.ui,
org.eclipse.cdt.debug.ui;bundle-version="7.5.0"
org.eclipse.ui.editors;bundle-version="3.8.200"
Bundle-RequiredExecutionEnvironment: JavaSE-1.8
Bundle-ActivationPolicy: lazy
Bundle-Vendor: <our names>
Export-Package: <list of packages>
```

Eclipse PlugIn Development

- *Self-containing*: plugin.xml provides a list of **extension points**.

- Run the `plugin.xml` file as Eclipse Application to test your plugin.

```
<plugin>
...
<extension point = "org.eclipse.ui.editors">
    <editor
        class=<fully qualified name>
        id=<unique name>
        name="Regex C/C++ Editor">
    </editor>
</extension>
...
</plugin>
```

Folding/Highlighting Algorithm

- Create a map `M` for the content of the current editor such that `M[i]` contains the index of the first character in the `i`-th line.

- Feed the content of the editor to some Matcher object and retrieve the indexes of the matches.

- Use map `M` to look up in what lines of source code those matches occur.

Folding Source Code

- Problem: How do we get hold of the text of the current editor?

- Problem: How are we supposed to implement the methods of the `ICFoldingStructureProvider` interface?

- Problem: How to let user activate folding of code lines?

- Use `PreferenceStore` to save user-specified settings.

Highlighting Source Code

- Problem: Interference with syntax highlighting.

- Problem: Switch from folding to highlighting.

- Idea: Let user decide foreground/background colours.

Modifying the debugger

- Ideally the debugger can be modified such that certain lines of code are skipped.

- Unfortunately, no easy extension point in the `org.eclipse.cdt.debug` package to implement this behavior is available right now.

- Alternatives: Write debugger from scratch, copy&paste existing code, …

- How does the debugger work conceptually?

References

https://github.com/mfm92/RegexHider

http://www.eclipse.org/ecd/img/eclipse256.png

http://www.ibm.com/developerworks/library/os-eclipse-plugindev1/index.html

http://help.eclipse.org/juno/index.jsp?topic=%2Forg.eclipse.platform.doc.isv%2Freference%2Fextension-points%2Findex.html

https://de.wikipedia.org/wiki/Eclipse_%28IDE%29#Architektur

Any questions?