Eclipse Language PlugIn

Michael Ferdinand Moser (1123077)
Frederic Golser (1230316)
Moritz Stumpfegger (1223517)

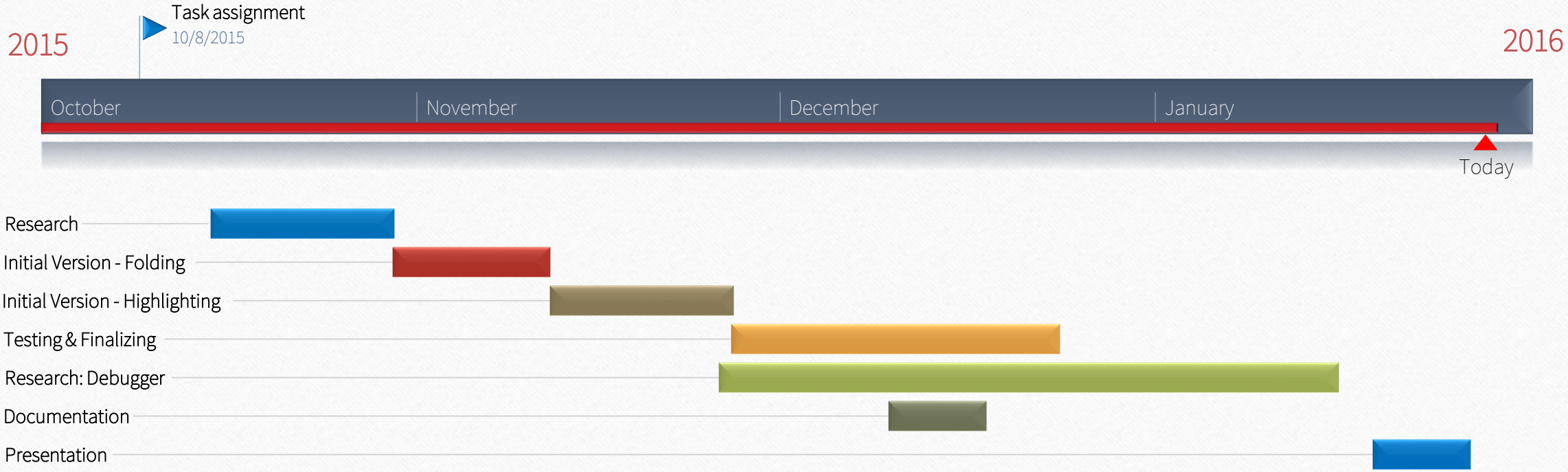
Project Task

- 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 to three weeks to discuss current issues.

WorkFlow


2015
Task assignment
10/8/2015
2016
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 contains 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 an 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

- Challenge: How do we get hold of the text of the current editor?
- Challenge: How are we supposed to implement the methods of the `ICFoldingStructureProvider` interface?
- Question: How to let user activate folding of code lines?
- Use `PreferenceStore` to save user-specified settings.

Highlighting Source Code

- Challenge: Interference with syntax highlighting.
- Challenge: 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?