Aspect Oriented Programming

Basic Idea

AOP Picture

source code   source code   aspect

aspect is a file of edit-like commands

Compiler

Weaver

executable

Compiler

executable
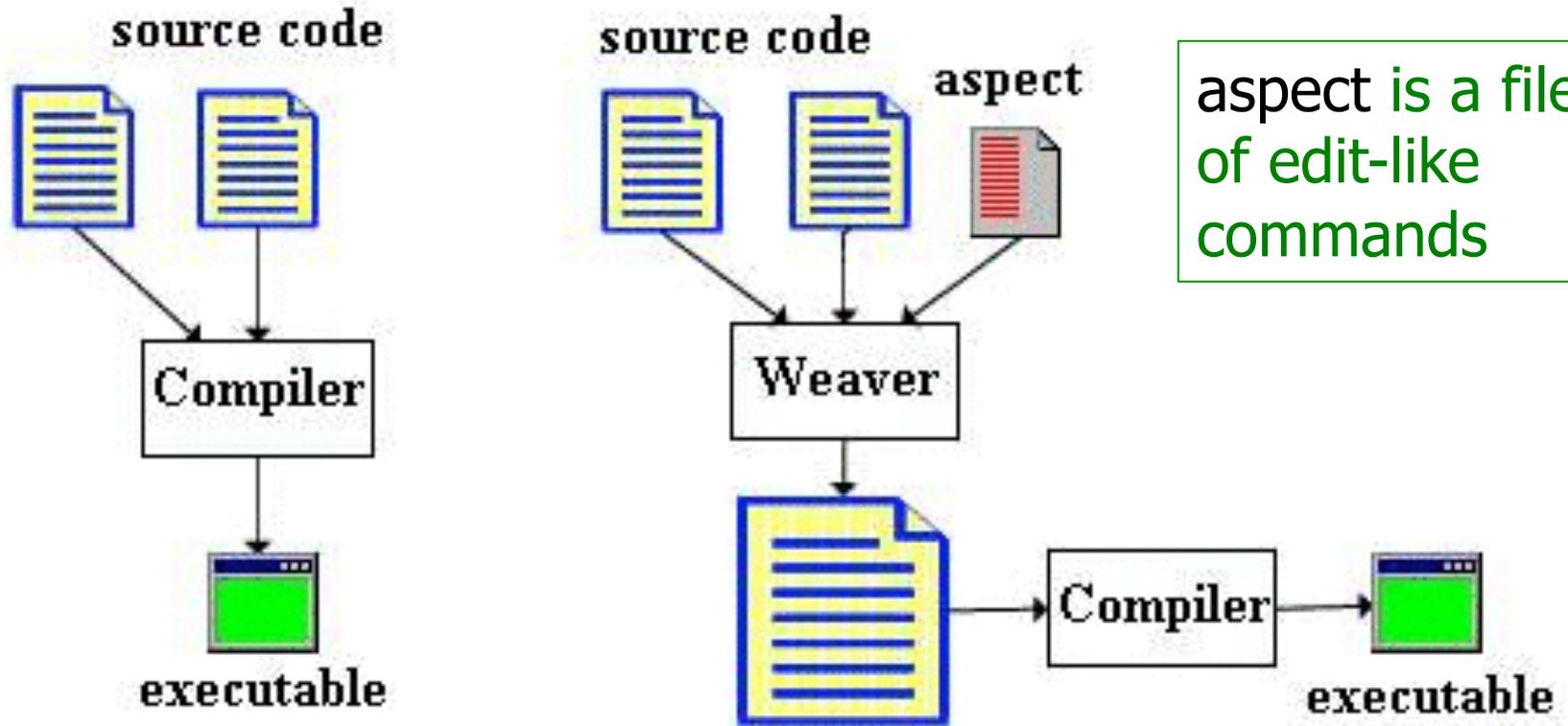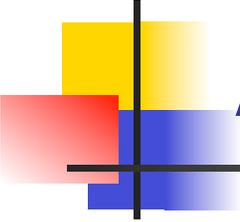
Aspect file

- Contains instructions for editing program text at the source level

  - **Sophisticated description of where and what to edit**

    - **Insert, delete, replace**

    - **New program text**

  - **Fancy extension of sed the Unix stream editor**

- Can have recursive structure

 - **Source text could be other Aspect files**
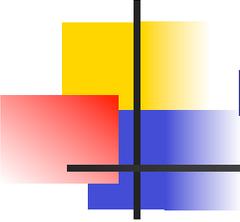
Benefits

- Original source is untouched
  - **Do not need to keep versions**
  - **Only need Aspect file**

- Can use tools to create base version
  - **Use Aspect files to customize**
  - **Problem with base version**
    - **Regenerate**
    - **Reapply Aspect**
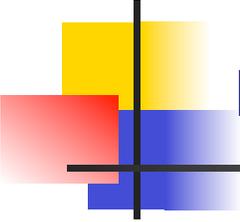
Benefits – 2

- Without Aspect

  - **Cannot use regeneration or original using a tool**

  - **Need to manually re-insert custom changes**
    - **Complex**
    - **Error prone**
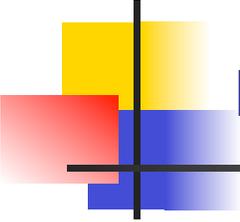
History

- AOP developed by George Kiczales (1984-1999)

  - **At least the commonly accepted start**

- Predecessors

  - **WEB system Donald Knuth late 1970's early 80's**

    - **Literate programming**

  - **Breakpoints Gunnar Gotshalks / Paul Bassett (1977)**

  - **CAP frames Paul Bassett (1983)**

    - **Best software reuse in the world during the 1990's**

  - **FlexOr frames Gunnar Gotshalks (1986)**