A Visual Debugger for Java in Eclipse

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Victor Milenkovic

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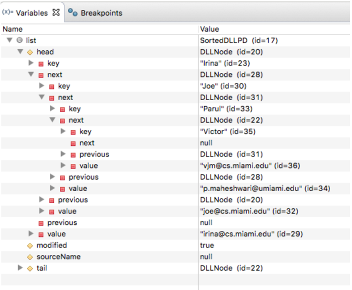
University of Miami

CSTA 2016 – San Diego

Problem

Teaching CS2 using Eclipse.



```
Name                          Value
▼ list                        SortedDLLPD  (id=17)
  ▼ head                      DLLNode  (id=20)
    ▶ key                     "Irina" (id=23)
    ▼ next                    DLLNode  (id=28)
      ▶ key                   "Joe" (id=30)
      ▼ next                  DLLNode  (id=31)
        ▶ key                 "Parul" (id=33)
        ▼ next                DLLNode  (id=22)
          ▶ key               "Victor" (id=35)
            next              null
          ▶ previous          DLLNode  (id=31)
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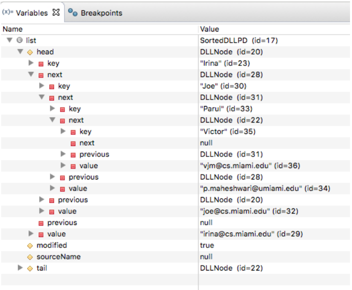

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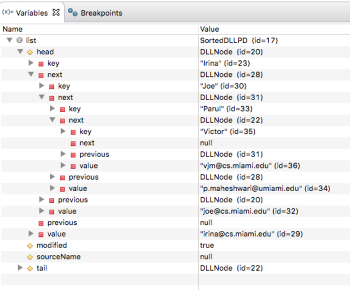

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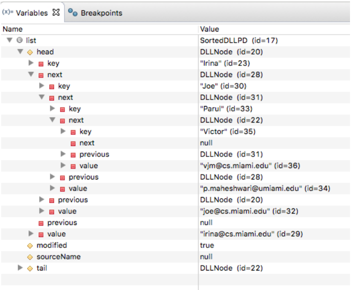

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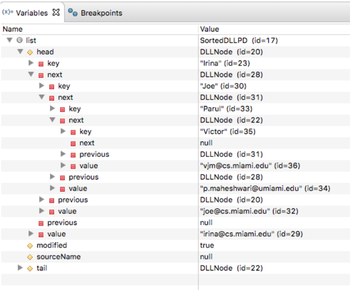

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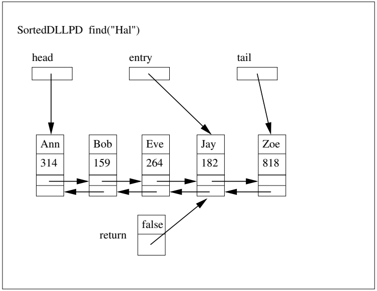
- Standard debugger mode in Eclipse.
- Hard for students to debug CS2 structures,
- such as linked lists.
- No visual analogy.

Half Solution

Extensive lesson slides.



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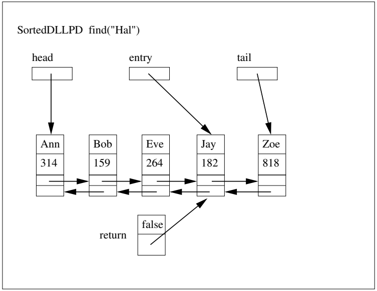

- Show steps of algorithm.

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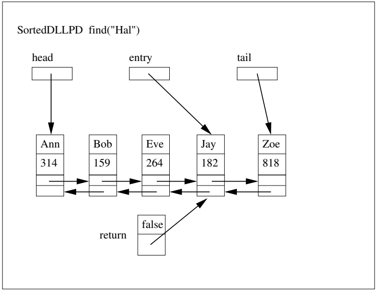

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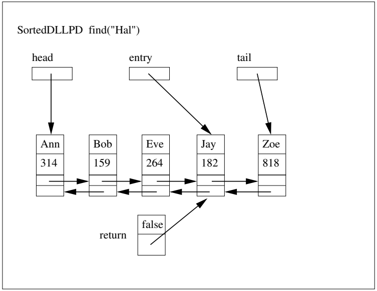

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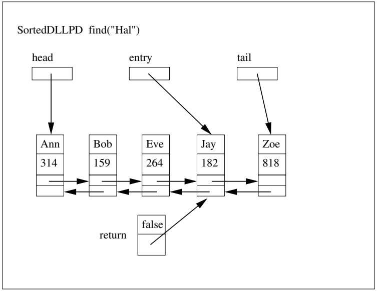

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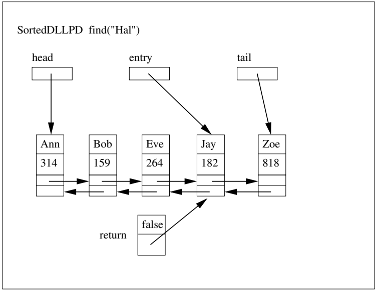

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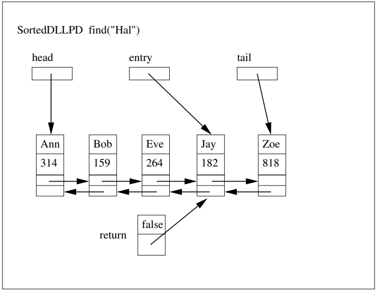

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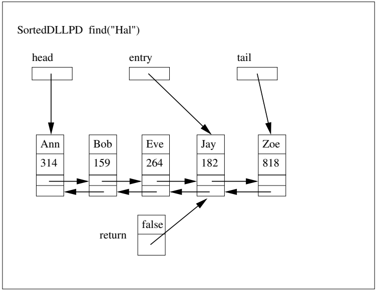
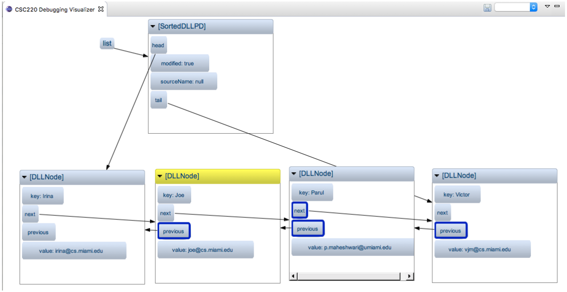


- Show steps of algorithm.
- Require considerable effort.
- Only for specific example.
- Perfect "canned" example
- doesn’t show possible bugs.
- No substitute for experience.
- Student cannot compare it with execution of assigned program.

Solution

Visual Debugger



CSC220 Debugging Visualizer

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tail

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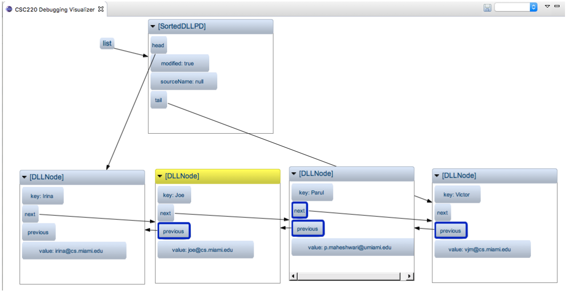

- Displays data structures visually.

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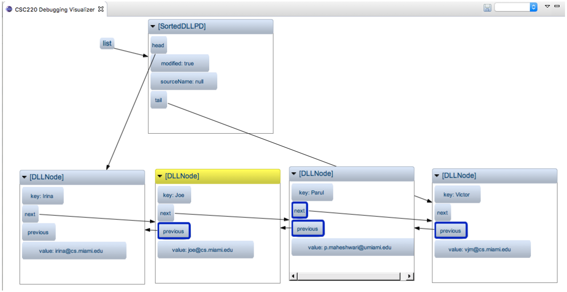

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- Uses diagrams similar to textbook and lesson.

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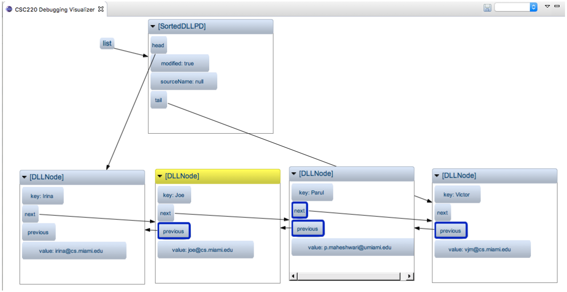

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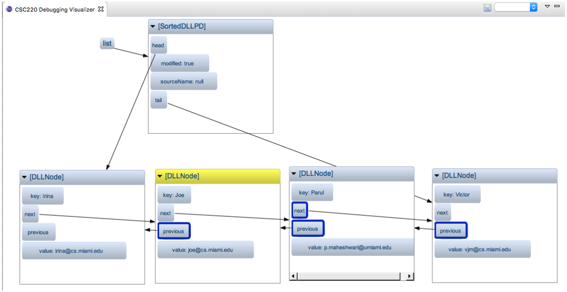

- Displays data structures visually.
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- Runs as Eclipse Plugin.
- Step by step visual update.

Acknowledgements and Link

Supported by Tides Foundation
(Google Education and University Relations Fund).

Click here to download Visual Debugger. Or cut and paste
`http://web.cs.miami.edu/home/jgmaster/plugin_install.txt`