

Engaging in Logical Code Reasoning with an Activity-Based Online Tool

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Typical Code Reasoning

- Involves running code on specific input values and studying outputs
- Provides limited understanding

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<https://www.cs.clemson.edu/resolve/>

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Motivational Video:

https://www.youtube.com/watch?v=ehlgP4hD_Ek&feature=youtu.be

Begin to Reason Tool:

<https://resolve.cs.clemson.edu/beginToReason/section1dry>

Reason with Components Tool:

<https://resolve.cs.clemson.edu/teaching>

Online Logical Reasoning

- Search Terms: Clemson RESOLVE
- Motivational Video
- Introduction to Symbolic Reasoning with BeginToReason Tool
- Reasoning with Activities
 - Introductory Activities
 - Advanced Activities—Design By Contract
 - Advanced Activities—Loop Invariants

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Finding the Tool

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Reasoning with Components:
<https://resolve.cs.clemson.edu/teaching>

Selecting the Tool

- Select tab Web IDE
 - Select BeginToReason OR
 - Select Reasoning with Components

Finding the Activities

- Select Reasoning with Components
 - Select Components Button
 - Select Programs in the Finder
 - Select Activity 101

Reasoning Basics

- A step by step description of reasoning activity 101

Reasoning Details

- Additional Details of Reasoning about Activity 101

Design-By-Contract

- An overview of reasoning activity 102

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Loop Invariant Activity

- An overview of a reasoning activity involving queue objects and loops

Publications

- ACM SIGCSE 2019 (Sat AM): Fowler, et al., Impact of Steps, Instruction, and Motivation on Learning Symbolic Reasoning Using an Online Tool
- ACM ITiCSE 2019: Cook, et al., Where Exactly Are the Difficulties in Reasoning Logically about Code? Experimentation with an Online System
- ACM ECSEE 2018: Kraemer, et al., An Activity-Based Undergraduate Software Engineering Course to Engage Students and Encourage Learning

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