

Information flow challenge

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<http://ifc-challenge.appspot.com/>

Topics

- Information flow challenge!
 - Type-based analysis for different language constructs.
 - Limited/flawed type systems.
 - Importance of soundness result.

Challenge

- Consists of a series of tasks to perform.
- At each stage, the task is to copy the contents of boolean variables:
h1, h2, h3, h4, h5, h6
to
l1, l2, l3, l4, l5, l6,
respectively, while satisfying the restrictions of each step.

Restrictions

- At each step, the restrictions are different.
Pay attention to:
 - What is the language in which programs can be written?
 - What is the type system that programs must satisfy?
 - How will the submitted program run?

In all cases:

- Syntax:
A variable is high if its name starts with the letter "h", otherwise it is low.
- Type system:
Expressions have the type “low”, unless they contain (or are) a variable expression where the variable name starts with the letter h.

Ready?

- <http://ifc-challenge.appspot.com/>
- **START!**

Conclusion

- One can devise type systems that enforce properties in languages with different expressivity.
- Different language constructs can encode information flows in different ways, some times quite subtly.
- The type system might appear correct, and not be so. A soundness proof will ensure it is, or reveal undetected bugs.