Daikon

Detecting invariants involves two steps:

1. Obtain one or more data trace files by running your program under the control of a front end (also known as an instrumenter or tracer) that records information about variable values. You can run your program over one or more inputs of your own choosing, such as regression tests or a typical user input session. You may choose to obtain trace data for only part of your program; this can avoid inundating you with output, and can also improve performance.
2. Run the Daikon invariant detector over the data trace files (see Running Daikon). This detects invariants in the recorded information. You can view the invariants textually, or process them with a variety of tools.

Install dependencies: 2.1.1, 2.1.2

https://plse.cs.washington.edu/daikon/download/doc/developer/Extending-Daikon.html#Compiling-Daikon

Install Daikon: 2.2

https://plse.cs.washington.edu/daikon/download/doc/daikon/Installing-Daikon.html#Installing-Daikon

Run example to verify your installation: 3.1.4

https://plse.cs.washington.edu/daikon/download/doc/daikon/Example-usage.html#Second-Java-example

Understanding the results: 3.1.3

https://plse.cs.washington.edu/daikon/download/doc/daikon/Example-usage.html#Understanding-the-invariants