Task 1

• Design and implement a static analysis that finds whether the values of all object fields and local variables (of an integer type) stay in a given range
  ▪ Value of any variable cannot exceed the upper bound and cannot fall below the lower bound
  ▪ The range will be defined by the user as a configuration parameter of the analysis
    • For the purpose of this homework, it can be explicitly defined using constants in the procedure main
  ▪ Consider only fields and variables declared in application classes
    • You can ignore those declared in libraries
  ▪ Hint: note that you can have multiple elements of a bit-vector associated with every local variable (e.g., each bit representing one predicate about the variable)

• Use the WALA library for implementation
Task 2

- Create some example programs to
  - Demonstrate your static analysis
  - Test its design and implementation
Task 3

• Test various configurations of your analysis
  ▪ For example, different numbers of bits dedicated to each variable or field

• Document your solution (analysis design, etc)

• Discuss precision-performance trade-offs
  ▪ All you identify during experiments
Organization

- Deadline: **19.5.2023**

- Submission
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