Project Proposal
Language-based Security
(TDA602/DIT101)

Group 11

- Himanshu Chuphal (guschuhi@student.gu.se)
- Raya Altarabulsi (rayyatar@gmail.com)

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1. Title

Fire Group : *Group 11*
Canvas Group - LBS_G02
Project Title - Analysis tools for race detection
Target Grade: 4 / G

2. Background

Data races are easy to cause and hard to debug. We can't detect all data races. Detection of feasible races relies on detection of apparent data races.. These issues can be prevented to an extent using static and dynamic race detector tools. Data race detection tools are either static or dynamic.Dynamic analysis cannot detect all the errors.

3. Project Goal

Track the program which are vulnerable to races conditions and understand the behaviour and analyse different concurrency bugs by experimenting with various ***static and dynamic*** race detector tools in multi threaded programs, As part of our initial research, some of the tools we will be focusing to benchmark are Race Detector & Healer for Java (using IBM ConTest) , FindBugs, Coverity, SonarQube, Checkmarx, ITS4, RATS, Flawfinder, Splint etc.The project scope will also include analyzing types of races caught and not caught by these tools and compare the different tools on false positives and negatives using concurrency bugs benchmark for different program scenarios.

4. Relevance to language-based security

Race detector tools for modern programming languages give an ability to identify application- and language-level security threats and analyze and fix application-level attacks as race conditions, buffer overruns, and code injections.

5. Overview and Schedule of the planned work

We have planned following schedule to meet the deadline of the project work in total available ~7 weeks in parallel to 3 lab assignments:

    a. Tools Understating and Manual Tests : 2-3 weeks.
    b. Code, Implementation and Review and comments - 2 week
    c. Benchmarking of tools and Project Report Draft - 1 week
    d. Project Report, Documentation and Presentation - 1 week