



Assignment of master's thesis

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Instructions

R is a programming language used commonly in statistics and data analysis. R runtime objects are internally complex, but runtime developers find it useful to inspect their internal state and how it changes during execution of programs. Existing inspection methods are incomplete and insufficient for advanced uses.

The goal of this thesis is to create a framework for visualizing R internals with specific emphasis on usability and completeness. The user should be able to load the framework dynamically, navigate through the contents of objects in a human-readable format, and have access to the object's memory layout down to the bit-level.

The student will:

- explore existing inspection tools and techniques for R and identify usability and completeness drawbacks,
- investigate the layout of R runtime objects in GNU R,
- design and implement a user-friendly, robust, and complete inspection framework,
- verify the tool by observing internals during execution of benchmark programs.

Master's thesis

**INTERNALS
INSPECTION TOOL FOR
THE R LANGUAGE
RUNTIME**

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May 4, 2022

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I'd like to thank my supervisor for his patience and understanding.

Declaration

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In Prague on May 4, 2022

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Abstrakt

Tento projekt se zaměřuje na vizualizaci vnitřního stavu interpreteru jazyka R.

Klíčová slova jazyk R, vnitřní stav interpreteru

Abstract

This project focuses on visualizing the internals of the R language's runtime.

Keywords R language, interpreter internals

Abbreviations

Introduction



Chapter 1

R language

..... Chapter 2

Runtime object system



Chapter 3

Related work

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Design / specification

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Implementation



Chapter 6

Evaluation



Chapter 7

Conclusion



Chapter 8

Future work

Contents of the attached medium

src	
├ thesis	L ^A T _E X source of this thesis
└ text	text of this work
├ thesis.pdf	text of this work in PDF format