FACULTY
OF INFORMATION
TECHNOLOGY
CTU IN PRAGUE

Assignment of master's thesis

Title:	x86-64 native backend for TinyC
Student:	Bc. Michal Vlasák
Supervisor:	Ing. Petr Máj
Study program:	Informatics
Branch / specialization:	System Programming
Department:	Department of Theoretical Computer Science
Validity:	until the end of summer semester 2023/2024

Instructions

Analyze the current implementation of TinyC frontend used in the NI-GEN course. Determine any necessary changes and minimal viable runtime support for TinyC to be executed directly on the x86-64 architecture. Implement a compiler backend from TinyC IR used in the course to native machine code that demonstrates the use of advanced techniques mentioned in NI-GEN course for tasks such as register allocation and instruction selection. Implement a runtime based on your design that would allow TinyC programs on x86-64 to use system resources such as memory and I/O.

Electronically approved by doc. Ing. Jan Janoušek, Ph.D. on 5 December 2022 in Prague.