

Master Thesis

**A Framework for Teaching Programming
with Gamification**

Short Title: Gamification Framework

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Programming skills are gaining increasing importance in today's world. However, learning to program is a difficult and tedious process. "Gamification of learning" is a promising educational approach that can help to learn programming in a simple and entertaining way.

The goal of this thesis is the development of a mobile level-based graphical game which imparts the basic knowledge and thinking model for programming. As part of this, a real programming language, such as C#, should be used as the teaching language. Students should write simple programs to solve playful tasks in a gaming context.

The teaching environment should be developed in a modular and extensible way to simplify the addition of new games. It should have at least the following features:

- Infrastructure for graphical representation, program editor, game controls, etc.
- Complete implementation of at least three sample games.
- A simple help system with instructions and task descriptions.
- Convenient input functions for entering code on a mobile platform.

The game should be platform-independent and run at least on Android and iOS. It should support all resolutions/aspect ratios of established smartphones and tablets.

The system should be implemented with the game engine Unity and C# as a scripting language.

The progress of the project should be regularly discussed with the advisor. A time schedule and a milestone plan must be set up within the first 3 weeks. It should be continuously refined and monitored to make sure that the thesis will be completed in time. The final version of the thesis must be submitted not later than August 31, 2018.

Advisor: a.Univ.-Prof. Dr. Günther Blaschek