CODE LAYOUT, READABILITY, REUSABILITY

- Abstract

Code readability has a considerable effect upon the life-cycle of software products. It is important that the code is maintainable, reusable and that it is easy for a programmer to get acquainted with unfamiliar code. Previous studies have been used to show correlations between code readability and code styling. Eye tracking technology has also been used in order to study the movements of the eye and the focus of a subject in a computer generated environment. By using a combination of Eye tracking technology and code styling features such as syntax highlighting, logical variable- and function names, code indentation and code commenting the correlations between code readability and code styling has been further addressed and examined. This thesis studies subjects that have participated in a series of experiments in which they have been given the assignments of examining code whilst their eye movements have been tracked using Eye tracking tools and software. The tracked data was assembled into heatmap-based images plotting movement of the eye on screen. The experiments showed that there is indeed correlations between how code styling is used and how the participants addressed the given assignments.

SAMMANFATTNING

- Kods l¨asbarhet har en betydande effekt p˚a en produkts livscykel. Det ¨ar viktigt att en kod ¨ar l¨att att underh˚alla, ˚ateranv¨anda och att det ¨ar smidigt f¨or en programmerare att bekanta sig med fr¨ammande kod. Tidigare studier har anv¨ants f¨or att visa korrelationer mellan kods l¨asbarhet och kodstilisering. Eye tracking-teknologi har ocks˚a anv¨ants f¨or att kunna studera ¨ogonr¨orelser och fokus hos personer i en datorgenererad milj¨o. Med hj¨alp av en kombination of Eye tracking-teknologi och kodstiliseringsverktyg s˚asom syntax highlighting, logiska variabel- och funktionsnamn, kodindrag samt kommenterad kod har korrelationen mellan kods l¨asbarhet och kodstilisering ytterligare kunnat angripas och studeras. Denna rapport studerar ett antal testpersoner som har deltagit i en serie av experiment i vilka de tillordnats problem som involverar tolkning av kod samtidigt som deras ¨ogonr¨orelser studerats med hj¨alp av Eye tracking-utrustning- och mjukvara.

INTRODUCTION

- Code readability can be defined as a way of determining how easily code can be comprehended by the reader and is closely related to the life-cycle of any software product [1]. It revolves around aspects such as code maintainability, reuse and situations in which a programmer familiar with a code passes it on to another, perhaps less familiar, programmer; a situation in which it is important that this transition is smooth and that the new person can resume work with the code as smoothly as possible

PROBLEM STATEMENT

- The aim of this report is to explain and identify the correlations between how well a code is written with regards to code formatting, syntax, etc. and how easily the code can be read and interpreted by a programmer. By gathering data and information using forms and eye-tracking technology, the objective is to reach a conclusion as well as make a clear statement about whether code becomes easier to read and interpret or not. Thus, this report aims to answer the following query

METHOD

- Tools The tools that will be used to gather and assemble the data used in this study will be discussed in this section. The tests will be performed on a computer running Windows 10. Tobii EyeX Tobii EyeX is a device used for eye tracking, mostly aimed at using alongside video games. It will be used to capture how the test subjects look at different code examples, as eye tracking has previously been used in modern psychology to determine patients ability to problem solve