

Event control action rules for Ampersand

Yuriy Toporovskyy (toporoy)

Yash Sapra (sapray)

Jaeden Guo (guoy34)

Supervised by: Dr. Wolfram Kahl

Department of Computing and Software

McMaster University

Ontario, Canada

April 17, 2016

Abstract

Ampersand Tarski is a tool used to produce functional software documents based on business process requirements. At times, logical discrepancies arise when system changes occur which violate the restrictions set forth by the user. When a system violation occurs, one of two things can happen: the change that is meant to take place is adjusted so it no longer violates the restrictions or the changes are discarded. The purpose of Event condition action rules for Ampersand (EFA) was to replace the exec-engine that is currently used to deal with violations; unlike the exec-engine, EFA is automated and provides proof of correctness embedded in the code, it able to type SQL statements and assure no "dead-ends" occur when queries are executed.

Contents

1	Introduction	3
---	--------------	---

1 Introduction

This document is meant as a guide for EFA that includes the motivations taken from a business perspective, the mathematical and software foundations that resulted in the logical flow of EFA's design, and the testing that took place to assure EFA's functionality and correctness.

Currently, Ampersand is readily accessible to the public through Github and it is equipped with the ability to assess logical discrepancies on sets of data based on user-specified restrictions. Logical discrepancies arise when system changes occur which violate the restrictions set forth by the user. When a system violation occurs, one of two things can happen: the change that is meant to take place is adjusted so it no longer violates the restrictions or the changes are discarded. Ampersand is used to manipulate data and generate prototypes, although there is a debugger, certain errors still slip through. When the system rules are changed by the user, all data which are inconsistent with the new system must be eliminated or rehabilitated so it can be returned back into the system. Data inconsistencies are persistent bugs that can distort the product that Ampersand seeks to provide.

These data inconsistencies are corrected through ECA rules which use process algebra (PA) to correct or discard data using violations. EFA is used to translate these ECA rules, execute SQL queries to correct violations and safeguards the database from illegal transactions.

Ampersand

Objectives

Document Guide