國 立 交 通 大 學

網路工程研究所

**碩 士 論 文**

軟體除錯與符號執行整合互動

Interacting Software Debugging with Symbolic Execution

研 究 生：陳威伯

指導教授：黃世昆 教授

**中 華 民 國 106 年 5 月**

軟 體 除 錯 與 符 號 執 行 整 合 互 動

Interacting Software Debugging with Symbolic Execution

研 究 生：陳威伯 Student：Wei-Bo Chen

指導教授：黃世昆 Advisor：Shih-Kun Huang

國 立 交 通 大 學

網 路 工 程 研 究 所

碩 士 論 文

A Thesis

Submitted to Institute of Network Engineering

College of Computer Science

National Chiao Tung University

in partial Fulfillment of the Requirements

for the Degree of

Master

in

Computer Science

May 2017

Hsinchu, Taiwan, Republic of China

中華民國 106 年 5 月

軟體除錯與符號執行整合互動

研究生：陳威伯 指導教授：黃世昆教授

國立交通大學網路工程研究所碩士班

摘要

這是摘要

**Interacting Software Debugging with Symbolic Execution**

Student: Wei-Bo Chen

Advisor: Dr. Shih-Kun Huang

Institute of Network and Engineering

National Chiao Tung University

Abstract

This is abstract page.

致謝

List of Contents

內容

[摘要 I](#_Toc485385338)

[Abstract II](#_Toc485385339)

[致謝 III](#_Toc485385340)

[List of Contents IV](#_Toc485385341)

[List of Figures V](#_Toc485385342)

[List of Tables VI](#_Toc485385343)

[1. Introduction 1](#_Toc485385344)

[2. Background 1](#_Toc485385345)

[2.1 Qira 1](#_Toc485385346)

[2.2 Symbolic execution 1](#_Toc485385347)

[2.3 Ponce 1](#_Toc485385348)

[3. Design 2](#_Toc485385349)

[3.1 Overview 2](#_Toc485385350)

[3.2 Structure 2](#_Toc485385351)

[3.3 Internal 2](#_Toc485385352)

[3.4 Commands 2](#_Toc485385353)

[4. Evaluation 2](#_Toc485385354)

[4.1 Crackme hash 2](#_Toc485385355)

[4.2 Crackme xor 3](#_Toc485385356)

[5. Related work 3](#_Toc485385357)

[5.1 Triton 3](#_Toc485385358)

[5.2 Ponce 3](#_Toc485385359)

[5.3 Peda 3](#_Toc485385360)

[6. Conclusion 3](#_Toc485385361)

[7. Future work 4](#_Toc485385362)

[8. References 4](#_Toc485385363)

List of Figures

[Figure 1: qira structure 1](#_Toc485310933)

[Figure 2: SMT solver 3](#_Toc485310934)

List of Tables

[Table 1: Commands 2](#_Toc485218427)

1. Introduction

Introduction content

1. Background

Background content

* 1. Qira

Qira content

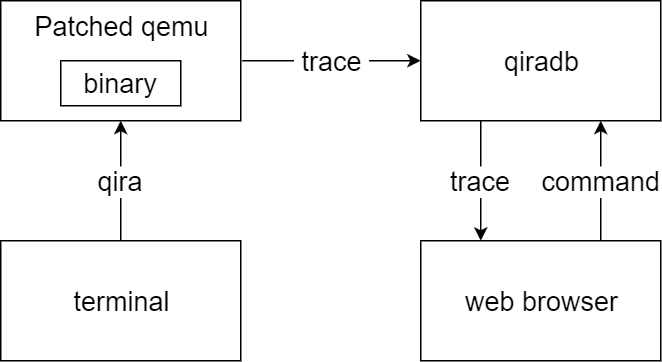


Figure 1: qira structure

* 1. Symbolic execution

Symbolic execution content

* 1. Ponce

Ponce content

1. Design

Design content

* 1. Overview

Overview content

* 1. Structure

Structure content

* 1. Internal

Internal content

* 1. Commands

Commands content

Table 1: Commands

|  |  |  |
| --- | --- | --- |
| Commands | Parameter | Emphasis |
| symbolize | argv | Automatically symbolize argv[0] |
| memory [address] [size] | Symbolize memory from address to address+size |
| target | address | Set target address |
| triton | None | Run symbolic execution |

1. Evaluation

Evaluation content

* 1. Crackme hash

Crackme hash content

* 1. Crackme xor

Crackme xor content

1. Related work

Related work content

* 1. Triton

Triton content

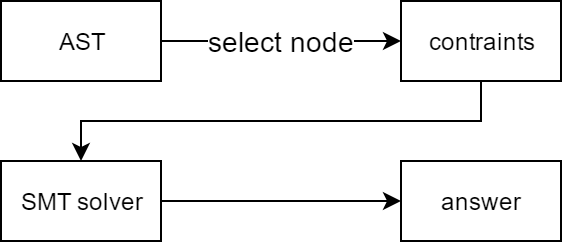


Figure 2: SMT solver

* 1. Ponce

Ponce content

* 1. Peda

Peda content

1. Conclusion

Conclusion content

1. Future work

Future work

1. References

Reference list