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This document describes how to extend ESC/Java2. It describes the high-level architecture of the system and how to extend it through a series of case studies.

This is edition \$Revision\$.

This document is a work in progress. Suggestions and input are always welcome.

# Extending ESC/Java2

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Edition \$Revision\$, November 2004

This document describes how to extend ESC/Java2 version 2.0a8 and later.

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# Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>2</b>
<b>2</b>	<b>ESC/Java2 Architecture .....</b>	<b>3</b>
<b>3</b>	<b>The ESC/Java2 AST .....</b>	<b>4</b>
<b>4</b>	<b>Extending the ESC/Java2 Lexer .....</b>	<b>5</b>
<b>5</b>	<b>Extending the ESC/Java2 Parser .....</b>	<b>6</b>
5.1	The Java Parser .....	6
5.2	The Java Modeling Language Parser .....	6
<b>6</b>	<b>Extending the ESC/Java2 Type Checker .....</b>	<b>7</b>
<b>7</b>	<b>Extending the VC Generation Calculus .....</b>	<b>8</b>
7.1	The ESC/Java2 Weakest Precondition Calculus .....	8
<b>8</b>	<b>Extending the ESC/Java2 Logics .....</b>	<b>9</b>
<b>9</b>	<b>The Theorem Prover Interface .....</b>	<b>10</b>
<b>10</b>	<b>Testing Extensions .....</b>	<b>11</b>
<b>Appendix A</b>	<b>Copying .....</b>	<b>12</b>
<b>Index .....</b>		<b>13</b>

This document describes how to extend ESC/Java2. It describes the high-level architecture of the system and how to extend it through a series of case studies.

# 1 Introduction

This document describes how to extend ESC/Java2. It describes the high-level architecture of the system and how to extend it through a series of case studies.

The case studies discussed were chosen because they: (a) focused on each independent aspects of the architecture, (b) were relatively small and self-contained examples, and (c) they were additions that we made to the original SRC ESC/Java system, thus writing them up in this manner was straightforward.

## **2 ESC/Java2 Architecture**

## **3 The ESC/Java2 AST**

## **4 Extending the ESC/Java2 Lexer**



## **5 Extending the ESC/Java2 Parser**

### **5.1 The Java Parser**

### **5.2 The Java Modeling Language Parser**

## **6 Extending the ESC/Java2 Type Checker**

## **7 Extending the VC Generation Calculus**

### **7.1 The ESC/Java2 Weakest Precondition Calculus**

## **8 Extending the ESC/Java2 Logics**

## 9 The Theorem Prover Interface

## 10 Testing Extensions

## Appendix A Copying

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# Index

## C

Copying ..... 12

## E

ESC/Java2 Architecture..... 3  
Extending the ESC/Java2 Lexer ..... 5  
Extending the ESC/Java2 Logics ..... 9  
Extending the ESC/Java2 Parser ..... 6  
Extending the ESC/Java2 Type Checker ..... 7

Extending the VC Generation Calculus..... 8

## I

Introduction..... 2

## T

Testing Extensions..... 11  
The ESC/Java2 AST ..... 4  
The Theorem Prover Interface..... 10