CONTENTS

1. INTRODUCTION 1

1.1. General 1

1.2. Related work 3

2. RECURSIVE PROCEDURES 5

3. THE μ-CALCULUS 16

3.1. Language 16

3.2. Interpretation 20

3.3. Axioms and rules 21

3.4. Justification 23

3.5. First applications 28

4. EXAMPLES 32

4.1. While statements 32

4.2. A while statement example from Dijkstra 38

4.3. A while statement example from Cooper 41

4.4. Reduction of flow charts to while statements 45

4.5. McCarthy's 91-function 48

5. REGULAR TERMS AND THEIR NORMAL FORM 59

6. COMPLETENESS PROOF 80

6.1. Outline of the proof 80

6.2. Normal assertions 82

6.3. Complexity of normal assertions 88

6.4. Auxiliary lemmas 91

6.5. Case analysis 95

7. CONCLUSIONS 104

BIBLIOGRAPHY 106