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# Progression Review Report

Formalizing Higher-Order Containers

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### **Abstract**

Giving a short overview of the work in your project.[1]

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# Chapter 1

## Introduction

### 1.1 Background and Motivation

The concept of types is one of the most important features in most modern programming languages. It is introduced to classify variables and functions, enabling more meaningful and readable codes as well as ensuring type correctness. Types such as *boolean*, *natural number*, *list*, *binary tree*, etc. are massively used in everyday programming.

TODO

### 1.2 Aims and Objectives

TODO

- bla bla
- bla bla

### 1.3 Progress to Date

TODO : progress and achievements during this stage, training courses, seminars and presentations.

## 1.4 Overview of the Report

- Chapter 2 - Literature Review: reviews the related literature, and further motivates our project
- Chapter 3 - Conducted Research: covers background knowledge, topics studied and questions. We introduce type theory, category theory, containers, etc.
- Chapter 4 - Future Work Plan: TODO

## Chapter 2

# Research Outcomes

### 2.1 Higher-order Containers

#### 2.1.1 Higher-order Functoriality

#### 2.1.2 Syntax and Semantics

#### 2.1.3 Algebraic Structure

#### 2.1.4 Simply-Typed Lambda Calculus

## Chapter 3

# Future Work Plan

This is future work plan.

## Chapter 4

# Conclusions

This is conclusions.



## Chapter 5

# Appendix

This is appendix.

# Bibliography

- [1] ABBOTT, M., ALTENKIRCH, T., AND GHANI, N. Containers: Constructing strictly positive types. *Theoretical Computer Science* 342, 1 (2005), 3–27. Applied Semantics: Selected Topics.