

Semantics SV1

Theo Wang

January 31, 2026

1 Basics

In this section, some questions are intentionally vague. Please list your assumptions when answering them.

1. Create a calculator language which can handle integer addition, subtraction, multiplication and division. Specify its syntax.
2. Specify an operational semantics and a type system.
3. Is your system type safe? If not, how can you make it type safe?
4. (Optional) Implement your operational semantics and your type system with your favourite **functional** language.

2 Induction

1. Do sections 1, 2 and 3 of the induction worksheet. For exercise 11 (iv), you need only consider the rules (assign1), (assign2) and (if3).

3 Exam questions

This set of work was partly adapted from David Berry's supervision questions.

1. 2013P6Q9
2. 2015P6Q9