Project Proposal
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Project name: blueberry

Idea 1.

Implementing operational semantics with the user can define Hoare logic assertions within the language (Pre–condition, Post–condition, loop invariants).
The system can verify the language satisfy the pre–condition and post–conditions. I plan to have **Assign**, **while**, **if**, **Seq**, **Assert**, **Skip**, and **Invariant** commands. I will define these commands' small–step semantics and the Hoare logic system in mathematical formal definition in my report.
Users can write programs with these commands and verify the program satisfy the pre and post–conditions before running the program.

Idea 2.

Implementing a dependent type system. The type system can verify(type check) a term satisfies its dependent type.

I plan to add Inductive type, dependent function type, sum type and product type. If there is still time, I will also add proposition type and make it a proof assistant and implement a goal printer that gives information to users on what needs to be proven and what is known now. Again, I will define these types as a type system in formal ways with horizontal lines.