

PA4.1: Bonus Assignment

Implement the following optimizations to reduce the number of registers:

- 1) (3 points) **Variables, constants, accumulators:** Avoid unnecessarily storing local variables and constants in registers and use accumulator registers.
- 2) (7 points) **Reusing registers:** Use the live registers stack technique to reuse registers.
- 3) (10 points) **Weighted register allocation:** Apply the *Sethi-Ullman algorithm* to expressions with commutative operators on sub-trees with no side-effects to find the optimal traversal order.