IR Specification (Updated 10/14/21)

Stmt = Block(stmts_ = [Stmt]) | Store(buf_ = Buf, indices = [Expr], value_ = Expr, mask_ = Expr) | Allocate(buf_ = Buf) | Free(buf_ = Buf) | PlacementAllocate(buf_ = Buf, buf_to_reuse_ = Buf) | Let(var_ = Var, val_ = Expr) | Cond(condition_ = Expr, true_stmt_ = Block, false_stmt_ = Block) | For(var_ = Var, start_ = Expr, stop_ = Expr, body_ = Block, loopOptions = LoopOptions) | AtomicAdd(buf_ = Buf, indices = [Expr], value_ = Expr) | SyncThreads() | ExternalCall(buf_ = Buf, buf_args_ = [Buf], args_ = [Expr])

Expr = Var() | Buf(base_handle_ = Var, dims = [Expr], qscale_ = Expr, qzero_ = Expr) | Term(variables_ = [Expr], scalar_ = Expr) | Polynomial(variables_ = [Term], scalar_ = Expr) | MaxTerm(variables_ = [Term], scalar_ = Expr) | MinTerm(variables_ = [Term], scalar_ = Expr) | Cast(src_value_ = Expr) | BitCast(src_value_ = Expr) | BinaryOpNode(lhs_ = Expr, rhs_ = Expr) | ImmInt/ImmFloat/etc.() | Ramp(base_ = Expr, stride_ = Expr) | Load(buf_ = Buf, indices = [Expr], mask_ = Expr) | Broadcast(value_ = Expr, lanes_ = int) | IfThenElse(condition_ = Expr, true_ = Expr, false_ = Expr) | Intrinsics(op_type_ = {kSin, kPow, kExp, ...}, params_ = [Expr]) | CompareSelect(lhs_ = Expr, rhs_ = Expr, ret_val1_ = Expr, ret_val2_ = Expr, compare_op_ = {kEQ, kGT, kGE, ...}, bias_ = {kUnbiased, kLikely, kUnlikely}) | ReduceOp(body_ = Expr, reduce_args_ = [Var], reducer = Reducer)