$$P ::= (P\ P\ P\ ...)$$
$$|\ ;$$
$$|\ var$$
$$|\ (var = P)$$
$$|\ (\text{while } P\ P)$$
$$|\ (P\ binop\ P)$$
$$|\ (\text{if } P \text{ then } P \text{ else } P)$$
$$|\ (unop\ P)$$
$$|\ (\text{let } Name = P \text{ in } P)$$
$$|\ v$$

$$E ::= (unop\ E)$$
$$|\ (E\ binop\ P)$$
$$|\ (v\ strictbinop\ E)$$
$$|\ (E\ P\ P\ ...)$$
$$|\ (\text{if } E \text{ then } P \text{ else } P)$$
$$|\ (var = E)$$
$$|\ (\text{let } Name = E \text{ in } P)$$
$$|\ []$$

$$Ev ::= (unop\ [])$$
$$|\ ([]\ binop\ P)$$
$$|\ (v\ strictbinop\ [])$$
$$|\ ([]\ P\ P\ ...)$$
$$|\ (\text{if } [] \text{ then } P \text{ else } P)$$
$$|\ (var = [])$$

$$var ::= Name$$
$$|\ r$$

$$v ::= \text{nil} \mid bool \mid int32 \mid str \mid union$$

$$t ::= \text{Nil} \mid \text{Bool} \mid \text{Int32} \mid \text{String} \mid \text{Union}$$

$$bool ::= \text{true} \mid \text{false}$$

$$int32 ::= integer$$

$$str ::= string$$

$$union ::= (t\ ...)$$

$$binop ::= shortbinop \mid strictbinop$$

$$strictbinop ::= + \mid - \mid * \mid / \mid \verb|^| \mid \%$$
$$\mid < \mid <= \mid > \mid >= \mid ==$$

$$shortbinop ::= \text{and} \mid \text{or}$$

$$unop ::= - \mid \text{not}$$

$$r ::= (\text{ref } natural)$$

$$rp ::= (r\ v)$$

$$\sigma ::= (rp\ ...)$$