

EPS (Event-Passing Style) Conversion Sample

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1 Conversion

1.1 Source Contracts

$$S ::= \dots \quad (\text{statement}) \quad (1)$$

$$m ::= \text{modifier}(\bar{x})\{\text{require}(r_1); \dots; \text{require}(r_n); _;\} \quad (\text{modifier}) \quad (2)$$

$$c ::= \{f(\bar{x}) m_1, \dots, m_n\{S\} \mid f \in F_C\} \quad (\text{contract}) \quad (3)$$

1.2 StateMachines

$$s \in S_C \quad (\text{state}) \quad (4)$$

$$c \in C \quad (\text{contract instance name}) \quad (5)$$

$$f \in F_C \quad (\text{contract method}) \quad (6)$$

$$t \in T ::= \{(s_1, c.f, s_2) \mid c \in C, s_i \in S_C, f \in F_C\} \quad (\text{transition}) \quad (7)$$

$$M \in \mathcal{M} ::= (C, \{S_C\}, \{F_C\}, T) \quad (\text{statemachine}) \quad (8)$$

1.3 Converted Contracts

c and c' are contract instance name (or contract ID).

$$\llbracket c \rrbracket_{c'} = \bigcup \{ \llbracket f(\bar{x}) m_1, \dots, m_n\{S\} \rrbracket \mid f \in F_C \} \quad (9)$$

$$\llbracket m \rrbracket_{c'} = m(\bar{x}) \text{ returns } (bool) \{ \text{return } r_1 \wedge \dots \wedge r_n \} \quad (10)$$

$$\llbracket f(\bar{x}) m_1, \dots, m_n\{S\} \rrbracket = f(\bar{x}) \{ \text{if } !m_1 \wedge \dots \wedge m_n \text{ return } f_end(\bar{x}) \} \quad (11)$$