

An Event-B Specification of Card
Creation Date: 21Dec2012 @ 05:34:18 PM

CONTEXT Card

CONSTANTS

SetID The set id of cards.

Value The set value of cards.

Suit The set suit of cards.

getSuit Get the suit of a card.

getValue Get the value of a card.

AXIOMS

SetID_D : $SetID = 1 \dots 52$

Each pack of cards has 52 cards,
so the id of card is from 1 to 52

Value_D : $Value = 1 \dots 13$

The value of cards is from 1 to 13.
They represent the card from Ace, two, three....10, Jack, Queen, King

Suit_D : $Suit = 1 \dots 4$

The suite of cards is from 1 to 4:
1-Heart,
2-Diamond
3-Club
4-Spade

getSuit_D : $getSuit \in SetID \mapsto Suit$

Get the suit of a card.

getSuit_F1 : $\forall x \cdot x \in SetID \wedge x \geq 1 \wedge x \leq 13 \Rightarrow getSuit(x) = 1$

If a card has id from 1 to 13, the card is a heart,
then the suite of the card is 1.

getSuit_F2 : $\forall x \cdot x \in SetID \wedge x \geq 14 \wedge x \leq 26 \Rightarrow getSuit(x) = 2$

If a card has id from 14 to 26, the card is a diamond,
then the suite of the card is 2.

getSuit_F3 : $\forall x \cdot x \in SetID \wedge x \geq 27 \wedge x \leq 39 \Rightarrow getSuit(x) = 3$

If a card has id is from 27 to 39, the card is a club,
then the suite of the card is 3.

getSuit_F4 : $\forall x \cdot x \in SetID \wedge x \geq 40 \wedge x \leq 52 \Rightarrow getSuit(x) = 4$

If a card has id is from 40 to 52, the card is a spade,
then the suite of the card is 4.

getValue_D : $getValue \in SetID \mapsto Value$

Get the value of a card.

getValue_F1 : $\forall x \cdot x \in SetID \wedge x \bmod 13 \neq 0 \Rightarrow getValue(x) = x \bmod 13$

If the id of card can not divided by 13,
then the value of the card equal to id mode 13.

getValue_F2 : $\forall x \cdot x \in SetID \wedge x \bmod 13 = 0 \Rightarrow getValue(x) = 13$

If the id of card can divided by 13,
then the value of card is 13 (the card is a KING).

END