

MACHINE

BV16_DEFINITION

SEES

BIT_DEFINITION,
BIT_VECTOR_DEFINITION,
BYTE_DEFINITION

DEFINITIONS

BV16_WIDTH == 16

CONSTANTS

BV16_INDX,
REAL_BV16_INDX,
BV16_ZERO,
BV16,
bv16_byte,
byte_bv16,
bv16_bit_get

PROPERTIES

$BV16_INDX = 1 \dots (BV16_WIDTH)$
 $\wedge \quad REAL_BV16_INDX = 0 \dots (BV16_WIDTH-1)$
 $\wedge \quad BV16 = \{ bt \mid bt \in BIT_VECTOR \wedge bv_size(bt)=BV16_WIDTH \}$
 $\wedge \quad BV16_ZERO = BV16_INDX \times \{0\}$

 $\wedge \quad bv16_byte \in BV16 \rightarrow BYTE \times BYTE$
 $\wedge \quad bv16_byte = \lambda (bv).(bv \in BV16 \mid (\{ 0 \mapsto bv(8), 1 \mapsto bv(9), 2 \mapsto bv(10), 3 \mapsto bv(11), 4 \mapsto bv(12), 5 \mapsto bv(13), 6 \mapsto bv(14), 7 \mapsto bv(15) \}$
 $\quad \quad \quad , \{ 0 \mapsto bv(0), 1 \mapsto bv(1), 2 \mapsto bv(2), 3 \mapsto bv(3), 4 \mapsto bv(4), 5 \mapsto bv(5), 6 \mapsto bv(6), 7 \mapsto bv(7) \}))$

 $\wedge \quad byte_bv16 = bv16_byte^{-1}$

 $\wedge \quad bv16_bit_get: (BYTE \times BV16_INDX) \rightarrow BIT$
 $\wedge \quad byte_bit_get = \lambda (bt, ind).(bt \in BYTE \wedge ind \in REAL_BYTE_INDEX \mid bt(ind+1))$

ASSERTIONS

$BV16_ZERO \in BV16$
 $\wedge \quad BV16 \subseteq BIT_VECTOR$
 $\wedge \quad BV16_ZERO \in BIT_VECTOR$

END