FUNCTION\_BLOCK STACK\_INT

VAR\_INPUT PUSH, POP: BOOL R\_EDGE; (\* Basic stack operations \*)

R1 : BOOL ; (\* Over-riding reset \*)

IN : INT ; (\* Input to be pushed \*)

N : INT ; (\* Maximum depth after reset \*)

END\_VAR

VAR\_OUTPUT EMPTY : BOOL := 1 ; (\* Stack empty \*)

OFLO : BOOL := 0 ; (\* Stack overflow \*)

OUT : INT := 0 ; (\* Top of stack data \*)

END\_VAR

VAR STK : ARRAY[0..127] OF INT; (\* Internal stack \*)

NI : INT :=128 ; (\* Storage for N upon reset \*)

PTR : INT := -1 ; (\* Stack pointer \*)

END\_VAR

(\* Function Block body \*)

IF R1 THEN

OFLO := 0; EMPTY := 1; PTR := -1;

NI := LIMIT (MN:=1,IN:=N,MX:=128); OUT := 0;

ELSIF POP & NOT EMPTY THEN

OFLO := 0; PTR := PTR-1; EMPTY := PTR < 0;

IF EMPTY THEN OUT := 0;

ELSE OUT := STK[PTR];

END\_IF ;

ELSIF PUSH & NOT OFLO THEN

EMPTY := 0; PTR := PTR+1; OFLO := (PTR = NI);

IF NOT OFLO THEN OUT := IN ; STK[PTR] := IN;

ELSE OUT := 0;

END\_IF ;

END\_IF ;

END\_FUNCTION\_BLOCK