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/* PROCEDURE FOR SEARCHING: */
/* BEGINS AT BORDER CELL KX,KY AND PROBES IN DIRECTION */
/* KW. IF ENTRY THERE THEN FOLLOWS PATH, AND RETURNS */
/* '1'B IF COMES OUT SOMEWHERE ELSE. */
/* STORES L ELEMENTS OF PATH IN XPOS, YPOS */

FIND: PROCEDURE (KX, KY, KW) RETURNS (BIT(1));

/**** CONSTANTS ****/
DECLARE (DX(0:3) INITIAL(-1,0,1,0), DY(0:3) INITIAL(0,-1,0,1))
        STATIC FIXED BINARY;

/**** STORAGE ****/
DECLARE (X, Y, W) FIXED BINARY;

IF MAZE(KX,KY) = '0'B | MAZE(KX+DX(KW),KY+DY(KW)) = '0'B
THEN RETURN ('0'B);

/**** EXPLORE ****/
XPOS(1) = KX; YPOS(1) = KY;
XPOS(2),X = KX+DX(KW); YPOS(2),Y = KY+DY(KW);
W = KW; L = 2;

DO WHILE (X>1 & X<M & Y>1 & Y<N);
    W = MOD(W+3,4); /* TURN RIGHT */

    DO WHILE (MAZE(X+DX(W),Y+DY(W)) = '0'B);
        W = MOD(W+1,4); /* TURN LEFT UNTIL OUT */
    END;

    L = L+1;
    XPOS(L),X = X+DX(W); YPOS(L),Y = Y+DY(W);

    DO J = L-2 TO 1 BY -1; /* TEST FOR KNOT */
        IF X = XPOS(J) & Y = YPOS(J) THEN
            IF J = 1 THEN RETURN ('0'B);
        ELSE DO;
            L = J; GOTO EXIT;
        END;
    END;

EXIT:
END;

RETURN ('1'B); /* REACHED BORDER */
END FIND;

END EX510;

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