**THE CURSOR PROBLEM**

**The CURSOR PROBLEM involves MOVING A CURSOR through a SQUARE GRID. The SQUARE GRID has N ROWS and N COLUMNS CONSISTING of CELLS. Thus the TOTAL NUMBER of CELLS in the GRID is N \* N. MOST CELLS are MARKED with '\*'. A cell which is marked with '\*' is defined as a NOPRMAL CELL. However, a SMALL NUMBER of the CELLS in VARIOUS COLUMNS of the GRID are MARKED with the letter 'P'. A 'P' indicates that the CELL is a PEG.**

**In the INITIAL STATE of the problem, a CURSOR OCCUPIES the LEFTMOST CELL in the LAST ROW of the GRID. The LOCATION of the CURSOR CHANGES as it MOVES ACROSS the GRID. Initially, the TOTAL COST T of the CURSOR is set to 0. However, as the CURSOR moves ACROSS the GRID its TOTAL COST INCREASES. The OBJECTIVE of the PROBLEM is that the CURSOR MUST REACH the FIRST ROW of the GRID with a COST that is QUITE LOW. In order to REACH the FIRST ROW of the GRID, the CURSOR must STEP THROUGH PEGS. A move to a new PEG involves SWITCHING the CURRENT LOCATION of the CURSOR to the LOCATION of the PEG.**

**RULES OF THE GAME**

**The RULES for a MOVE are listed below:**

**1. The CURSOR is NOT PERMITTED to move to a CELL that is BELOW or to the LEFT of the CURRENT LOCATION of the CURSOR. This means that LEFT CROSSINGS and DOWNWARD CROSSINGS over CELLS are NOT PERMITTED.**

**2. Normally, the CURSOR CAN move to a CELL ONLY if the CELL is a PEG. However there is an EXCEPTION to this RULE in case of a SHORT MOVE. Description of the short move would follow.**

**3. The CURSOR cannot SKIP OVER a PEG in UPWARD CROSSINGS during a move. However, PEGS may be**

**SKIPPED in RIGHT CROSSINGS, during a move.**

**4: The CURSOR can also make SHORT moves. Suppose there is NO REMAINING PEG ABOVE the CURSOR in the CURRENT COLUMN of the CURSOR. In SUCH a CASE, the CURSOR can MOVE to the ADJACENT CELL that is ABOVE the CURSOR. Such a MOVE is CALLED a SHORT MOVE.**

**MOVE COSTS**

**When the CURSOR moves to a NEW PEG, a value V is added to its TOTAL COST T of the CURSOR. If, in a MOVE, the number of CELLS CROSSED toward the RIGHT is R and the number of CELLS CROSSED UPWARD is Q, the NEW TOTAL COST is computed as:**

**V = Q + R**

**T = T + V**

**If the CURSOR makes a SHORT move the value 2 is ADDED to its TOTAL COST.**

**T = T + 2**

**This means that, in a NORMAL MOVE, each CROSSING costs 1. But, in a SHORT MOVE, the single CROSSING costs 2. Thus, a SEQUENCE of SHORT MOVES involving K CROSSINGS would COST TWICE as much as a NORMAL MOVE that involves K CROSSINGS.**