

IF YOU LIKE BRAIN TEASERS, THEN YOU'RE IN FOR SOME FUN!  
THE OBJECT OF THIS PUZZLE IS TO END UP WITH A  $3 \times 3$  MATRIX THAT HAS 1's  
IN ALL POSITIONS EXCEPT THE CENTER WHICH WILL BE 0.

THE POSITIONS ON THE BOARD ARE REFERRED TO AS ROW, COLUMN.  
FOR EXAMPLE, THE UPPER RIGHT HAND CORNER IS 1, 3.

HERE ARE THE RULES:

YOU MAY CHANGE ANY 1 TO A 0. YOU'RE NOT ALLOWED TO CHANGE  
A 0 TO A 1.

WHEN YOU MOVE TO CHANGE A 1, THERE ARE "SIDE" EFFECTS.

MOVING IN A CORNER ~

DRAW A  $2 \times 2$  BOX CONTAINING THE CORNER. THEN EACH  
POSITION IN THE BOX CHANGES STATE.

MOVING IN THE CENTER OF AN EDGE

EACH POSITION ALONG THAT EDGE CHANGES STATE.

MOVING IN THE CENTER POSITION.

EACH POSITION IN A '+' (PLUS SIGN) CHANGES STATE.

TRY THE GAME A FEW TIMES AND SEE WHAT HAPPENS ON THE BOARD.  
THE NEW BOARD WILL BE PRINTED AFTER EACH MOVE.

HINT (CHUCKLE): IT IS POSSIBLE TO REACH THE GOAL FROM EVERY POSITION  
(EXCEPT ALL 0's) WITHIN 11 MOVES, IF YOU CAN FIND THE RIGHT MOVES.

HERE WE GO ... THE BOARD IS

```
0 1 0
1 0 1
0 0 0
```

YOUR MOVE? 2, 3

```
0 1 1
1 0 0
0 0 1
```

YOUR MOVE? 3, 3

```
0 1 1
1 1 1
0 1 0
```

YOUR MOVE? 2, 1

```
1 1 1
0 1 1
1 1 0
```

YOUR MOVE? 2, 2

```
1 0 1
1 0 0
1 0 0
```

YOUR MOVE? 3, 1

```
1 0 1
0 1 0
0 1 0
```

YOUR MOVE? 3, 2

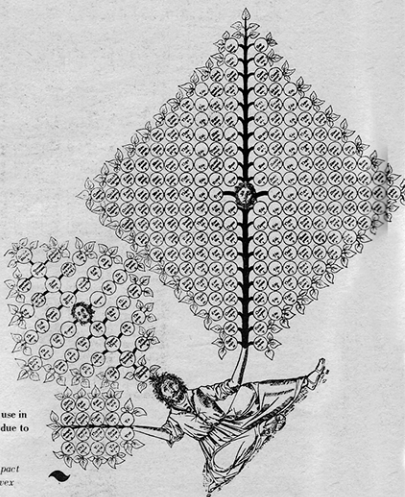
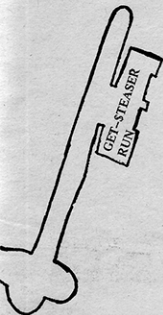
```
1 0 1
0 1 0
1 0 1
```

YOUR MOVE? 2, 2

```
1 1 1
1 0 1
1 1 1
```

One theorem we did NOT use in  
analyzing TEASER is one due to  
Krein and Milman:

**Theorem:** Let  $K$  be a compact  
convex set in a locally convex  
topological vector space  $X$ .  
Then  $K$  is the closed convex  
hull of its extreme points.



# A COMPLETE ANALYSIS of TEASER

THIS DIAGRAM CONTAINS  
EACH OF THE 102 POSSIBLE  
POSITIONS (EXCLUDING  
ROTATIONS & REFLECTIONS).

