On the Subject of Fifteen

Somebody ate the sixteenth.

The Fifteen module displays on its front surface a grid in a 4×4 arrangement with 15 tiles numbered 1 to 15, and an empty space. The module can be disarmed by sliding tiles from their current position into the empty space until the complete arrangement matches a goal arrangement to be determined as outlined on the following page (Page 2).

In addition to the tiles labeled 1-15, the empty space (which does not contain a numbered tile) contains a number shown in green coloration. This number shows the maximum number of moves that are permitted to be made to disarm the Fifteen module. As a tile is moved into the empty space, this number decrements (is reduced by 1). Running out of moves before the tiles are in the correct positions according to the goal arrangement obtained from the instructions on the next page (Page 2) will result in a strike; furthermore, the tiles on the module will revert to their original arrangement and the module expects all of the correct moves to be made again.

A tile can be made to slide into the empty space by tapping the tile you wish to move. Only tiles that are orthogonally adjacent to the empty space (directly neighboring either above, below, to the left or right, but not diagonally) can be moved. Tapping any other tile will result in a strike; however, unlike the situation outlined in the previous paragraph, their arrangement does not revert.

To find out what the desired goal arrangement is, use the instructions on the following page (Page 2).

Instructions

- Create a list with the numbers 1-16 in order. This will be called the Initial Order.
- Create an empty 4×4 grid.
- Create another list with numbers in order as described below. This will be called the Placement Order:
    - First serial number character converted from base 36. Add or subtract 16 until in range of 1-16.
    - Second serial number character converted from base 36. Add or subtract 15 until in range of 1-15.
    - Fourth serial number character converted using A1Z26. Add or subtract 14 until in range of 1-14.
    - Fifth serial number character converted using A1Z26. Add or subtract 13 until in range of 1-13.
    - Starting month of the bomb. This is already in the range of 1-12.
    - Starting day of the bomb (within the month). Add or subtract 11 until in range of 1-11.
    - Third serial number character. Add or subtract 10 until in range of 1-10.
    - Hours of the starting time of the bomb (24-hour system). Add or subtract 9 until in range of 1-9.
    - Sixth serial number character. Add or subtract 8 until in range of 1-8.
    - Number of indicators. Add or subtract 7 until in range of 1-7.
    - Number of batteries. Add or subtract 6 until in range of 1-6.
    - Number of ports. Add or subtract 5 until in range of 1-5.
    - Number of port plates. Add or subtract 4 until in range of 1-4.
    - Starting bomb timer in minutes. Add or subtract 3 until in range of 1-3.
    - Number of lit indicators. Add or subtract 2 until in range of 1-2.
- Fill the 4×4 grid in reading order as follows:
    - Place the nth Initial Order number, where n is the first Placement Order number. The number 16 represents the empty space.
    - Remove that number from the Initial Order and the first number from the Placement Order.
    - Repeat this until the 4×4 grid is filled.
- Disarm the module by moving the tiles in such a way that they match this grid.