The Logo language, which is popular among young computer users, made the concept of **turtle graphics** famous. Imagine a mechanical turtle that walks around the room under the control of a MATLAB program. The turtle holds a pen in one of two positions, up or down. When the pen is down, the turtle traces out shapes as it moves; when the pen is up, the turtle moves about freely without writing anything. In this problem, you'll simulate the operation of the turtle and create a computerized sketchpad as well.

Use a 20-by-20 array floor that's initialized to zeros. Assume that commands are stored in a vector of integers. Keep track of the current position of the turtle at all times and of whether the pen is currently up or down. Assume that the turtle always starts at position (0, 0) of the floor, with its pen up. The set of turtle commands your program must process are as in the below table.

Command	Meaning
1	Pen up
2	Pen down
3	Turn right
4	Turn left
5, n	Move forward n positions
6	Print the array
9	End of data

For example, suppose that the turtle is somewhere near the center of the floor. The following "commands" would draw and print a 12-by-12 square, then leave the pen in the up position:

2, 5, 12, 3, 5, 12, 3, 5, 12, 3, 5, 12, 1, 6, 9

The output produced:

As the turtle moves with the pen down, set the appropriate elements of array floor to 1s. When the 6 command (print) is given, display an asterisk or some other character of your choosing wherever there's a 1 in the array. Wherever there's a zero, display a blank. Write a MATLAB program to implement the turtle- graphics capabilities discussed here. Write several turtle-graphics programs to draw interesting shapes. Add other commands to increase the power of your turtle-graphics language.

More requirements:

- Validate the position of the turtle before making the move, so that the turtle will not cross the boundary.
- Use functions in building the structure of the program
- The turtle movement commands are specified in the commands window and passed as a parameter.