

### **Build a Turing Machine simulator.**

A TM has a potentially infinite tape in both directions. It starts reading cell 0 of the tape in its start state. Some finite segment of the tape contains symbols from some fixed finite alphabet that contains a special symbol.

The machine reads the symbol at the current read position and determines its current state. It then consults its program. Based on the program it writes (or not) some symbol from the alphabet on the tape, moves the tape head left, right, or not at all, and changes to another state.

If the machine ever moves into a final state it is said to have produced the current contents of the tape. If the machine has no program statement for the current situation it halts in error.