


```

Display:NORMAL
c i o m n      1
s n u v s      c i o m n      c i o m n      c i o m n      0
1 0 0 R 1      s n u v s      s n u v s      s n u v s
1 0 0 R 2
2 0 1 L 0
1 1 1 R 2

```

...AND UTMADD (Adding 4+3) [Initial State]

```

-30      -20      -10      0      10      20      30
000000000000000000000000M111011110Y000X0000001x0010101x010i010x0110111x1000000Y
          ^
Input:UTMADD.INP      1
Locate      Copy Item      write dir      Simulate      0
1 Y Y R 2      ? ? R 6      13 M B R 15      ? ? L 18
0 A L 1      7 0 A L 8      ? ? L 13      19 A 1 L 21
1 B L 1      1 B L 9      14 M A R 15      B 1 R 20
? ? L 1      ? ? R 7      ? ? L 14      ? ? L 19
2 X X R 7      8 Y Y R 11      15 A 0 R 15      20 0 M R 22
A 0 R 3      ? ? L 8      B 1 R 15      1 M R 23
B 1 R 4      9 Y Y R 10      X X R 16      ? ? R 20
? ? R 2      ? ? L 9      ? ? R 15      21 0 M R 22
3 0 A L 5      10 0 B R 12      16 0 0 L 17      1 M R 23
1 B R 6      1 B R 12      1 1 L 17      ? ? L 21
? ? R 3      X X L 13      ? ? R 16      22 S A L 1
4 0 A R 6      ? ? R 10      17 A 0 L 17      ? ? R 22
1 B L 5      11 0 A R 12      B 1 L 17      23 S B L 1
? ? R 4      1 A R 12      0 S L 18      ? ? R 23
5 Y Y R 2      X X L 14      1 S L 19
? ? L 5      ? ? R 11      ? ? L 17
6 X X L 1      12 X X R 7      18 A 0 L 21
Y Y R 0      ? ? R 12      B 0 R 20

```

1.) THE FIRST POINT TO TAKE NOTE OF IS THE CODING FOR THE UTM IS IN BINARY (HENCE, IN TWO DECIMALS, 0 = 00, 1=01, 2=10, 3=11) SO FOR INSTANCE, SINCE IN TM*, ADD.TM IS A 2-STATE MACHINE, YOU WOULD THINK HALT STATE IN THE UTM WOULD SHOULD BE CODED AS 3 = 11. (RECALL THE REMARK IN THE HELPFIELD THAT THE UTM WILL STOP BY DEFAULT AT A STATE SPECIFIED AS ONE MORE THAN THE HIGHEST STATE OF THE TM.) HOWEVER, IN UTM-ESE, STATE 1 IS LABELED = 0 ['00' IN BINARY], STATE 2 IS LABELED =1['01' IN BINARY], SO THE HALT STATE GETS THE LABEL =2 (WHICH IS '10' IN 2 DIGIT BINARY)

2.) THE NEXT POINT TO TAKE NOTE OF IS HOW THE ORDER OF "OUT MOV NST" IN THE TM* PROGRAM IS REARRANGED IN THE UTM CODING: "NST OUT MOV."

SO THE FILE ADD.TM :

```

c i o m n
s n u v s
1 0 0 R 1
1 0 0 R 2

```


