bit positions
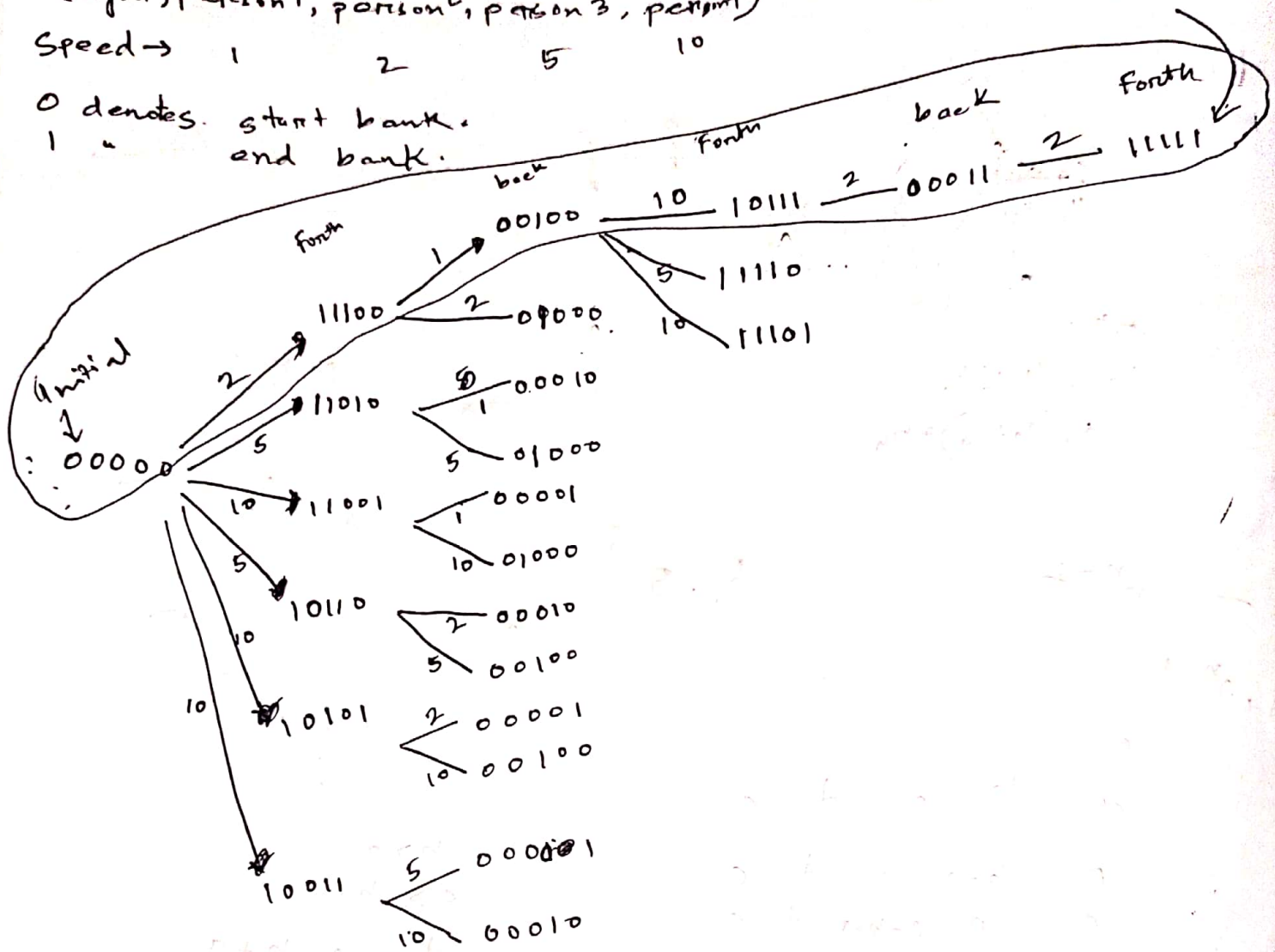
(light, person1, person2, person3, person4)

Speed →   1   2   5   10

0 denotes start bank.

1 " end bank.

Initial
↓
00000

Accept

Forth

back

Forth
10111 — 2 → 00011 — 2 → 11111

00100 — 10 →

back
5 → 11110
10 → 11101

Forth
11100 — 2 → 01000

2 → 11010 —
0 → 0.0010
1
5 → 01000

5 →
10 → 11001 —
1 → 00001
10 → 01000

5 →
10 → 10110 —
2 → 00010
5 → 00100

10 → 10101 —
2 → 00001
10 → 00100

10011 —
5 → 00001
10 → 00010

It is possible.

(cost and transitions)

Not all states are given. Transitions that were not shown, can be pruned logically.

Shortest path is shown.

1 and 2 go with light. (2 min)

1 gets back with light (1 min)

5 and 10 go with light (10 min)

2 gets back with light (2 min)

1 and 2 go go with light (2 min)

         Total = 17 min