附录:

电梯运行过程详解(LOOK 算法)

输入:

1	楼层最小值: 1
20	楼层最大值: 20
<3,UP>	电梯外: 3 楼向上请求
<5>	电梯内: 去 5 楼
<6,DOWN>	电梯外: 6 楼向下请求
<7>	电梯内: 去7楼
<3>	电梯内: 去 3 楼
end	输入结束标志

输出:

Current Floor: 1 Direction: UP Current Floor: 2 Direction: UP Current Floor: 3 Direction: UP Open Door # Floor 3 Close Door Current Floor: 4 Direction: UP Open Door # Floor 5 Close Door Current Floor: 5 Direction: UP Open Door # Floor 5 Close Door Current Floor: 6 Direction: UP Open Door # Floor 7 Current Floor: 7 Direction: UP Open Door # Floor 7 Current Floor: 6 Direction: UP Open Door # Floor 7 Current Floor: 6 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Open Door # Floor: 5 Direction: DOWN Open Door # Floor: 5 Direction: DOWN Open Door # Floor: 3 Direction: DOWN Open Door # Floor: 3 Direction: DOWN Open Door # Floor: 3 Direction: DOWN Open Door # Floor 3 Close Door # Dim # Eloor: 3 Direction: DOWN Open Door # Floor: 4 Direction: DOWN Open Door # Floor: 3 Direction: DOWN Open Door # Floor: 3 Direction: DOWN Open Door: # Floor: 4 Direction: DOWN Open Door: # Floor: 3 Direction: DOWN Open Door: # Floor: 4 Direction: DOWN Open Door: # Floor: 4 Direction: DOWN Open Door: # Floor: 5 Direction: DOWN Open	输出:	
Current Floor: 3 Direction: UP Open Door # Floor 3 Close Door Current Floor: 4 Direction: UP Open Door # Floor 5 Current Floor: 5 Direction: UP Open Door # Floor 5 Close Door Current Floor: 6 Direction: UP Open Door # Floor 7 Close Door Current Floor: 7 Direction: UP Open Door # Floor 7 Close Door Current Floor: 6 Direction: DOWN Open Door # Floor 6 Current Floor: 6 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Open Door # Floor: 4 Direction: DOWN Open Door # Floor: 3 Direction: DOWN Open Door # Floor 3 当前楼层: 3, 方向: 向上 当前楼层: 6, 方向: 向下 当前楼层: 6, 方向: 向下 当前楼层: 6, 方向: 向下 当前楼层: 4, 方向: 向下	Current Floor: 1 Direction: UP	当前楼层: 1,方向: 向上
Open Door # Floor 3 Close Door Current Floor: 4 Direction: UP Current Floor: 5 Direction: UP Open Door # Floor 5 Close Door Current Floor: 6 Direction: UP Open Door # Floor 7 Close Door Current Floor: 7 Direction: UP Open Door # Floor 7 Close Door Current Floor: 6 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 6 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Open Door # Floor 5 Direction: DOWN Open Door # Floor 6 Current Floor: 4 Direction: DOWN Open Door # Floor 3 当前楼层: 3, 方向: 向下 当前楼层: 3, 方向: 向下 当前楼层: 3, 方向: 向下	Current Floor: 2 Direction: UP	当前楼层: 2, 方向: 向上
Close Door Current Floor: 4 Direction: UP Current Floor: 5 Direction: UP Open Door # Floor 5 Close Door Current Floor: 6 Direction: UP Open Door # Floor 7 Current Floor: 7 Direction: UP Open Door # Floor 7 Close Door Current Floor: 6 Direction: UP Open Door # Floor 7 Close Door Current Floor: 6 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Open Door # Floor: 5 Direction: DOWN Open Door # Floor: 4 Direction: DOWN Open Door # Floor: 3	Current Floor: 3 Direction: UP	当前楼层: 3,方向:向上
Current Floor: 4 Direction: UP Current Floor: 5 Direction: UP Open Door # Floor 5 Close Door Current Floor: 6 Direction: UP Open Door # Floor 7 Close Door Current Floor: 7 Direction: UP Open Door # Floor 7 Close Door Current Floor: 6 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Open Door # Floor: 5 Direction: DOWN Current Floor: 4 Direction: DOWN Open Door # Floor: 3 Direction: DOWN Open Door # Floor 3 Shitter: 4, 方向: 向上 Shitter: 5, 方向: 向下 Shitter: 5, 方向: 向上 Shitter: 5, 方向: 向	Open Door # Floor 3	当前楼层: 3, 开门
Current Floor: 5 Direction: UP Open Door # Floor 5 Close Door Current Floor: 6 Direction: UP Open Door # Floor 7 Close Door Current Floor: 7 Direction: UP Open Door # Floor 7 Close Door Current Floor: 6 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Current Floor: 4 Direction: DOWN Open Door # Floor 3 Show in the state of the state o	Close Door	关门
Open Door # Floor 5 Close Door Current Floor: 6 Direction: UP Current Floor: 7 Direction: UP Open Door # Floor 7 Close Door Current Floor: 6 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Current Floor: 5 Direction: DOWN Current Floor: 4 Direction: DOWN Current Floor: 3 Direction: DOWN Open Door # Floor 3 当前楼层: 5, 开门 当前楼层: 7, 开门 当前楼层: 6, 方向: 向下 当前楼层: 6, 开门 当前楼层: 6, 开门 当前楼层: 5, 方向: 向下 当前楼层: 3, 方向: 向下	Current Floor: 4 Direction: UP	当前楼层: 4, 方向: 向上
Close Door Current Floor: 6 Direction: UP Sin楼层: 6,方向: 向上 Sin楼层: 7,方向: 向上 Sin楼层: 7,方向: 向上 Sin楼层: 7,方向: 向上 Sin楼层: 7,开门 Close Door Current Floor: 6 Direction: DOWN Sin楼层: 6,方向: 向下 Sin楼层: 6,方向: 向下 Sin楼层: 6,方向: 向下 Sin楼层: 6,开门 Close Door Sin楼层: 6,开门	Current Floor: 5 Direction: UP	当前楼层: 5,方向:向上
Current Floor: 6 Direction: UP Current Floor: 7 Direction: UP Open Door # Floor 7 Close Door Current Floor: 6 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Current Floor: 4 Direction: DOWN Open Door # Floor 3 DOWN Shittles: 6, 方向: 向上 当前楼层: 7, 方向: 向上 当前楼层: 6, 方向: 向下 当前楼层: 6, 方向: 向下 当前楼层: 6, 开门 关门 当前楼层: 6, 开门 学门 当前楼层: 3, 方向: 向下 当前楼层: 3, 方向: 向下 当前楼层: 3, 方向: 向下	Open Door # Floor 5	当前楼层: 5, 开门
Current Floor: 7 Direction: UP Open Door # Floor 7 Close Door Current Floor: 6 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Current Floor: 4 Direction: DOWN Current Floor: 3 Direction: DOWN Open Door # Floor 3 当前楼层: 7, 方向: 向下 当前楼层: 6, 方向: 向下 当前楼层: 6, 开门 关门 当前楼层: 5, 方向: 向下 当前楼层: 4, 方向: 向下 当前楼层: 3, 方向: 向下	Close Door	关门
Open Door # Floor 7 Close Door Current Floor: 6 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Ourrent Floor: 4 Direction: DOWN Current Floor: 3 Direction: DOWN Open Door # Floor 3 当前楼层: 7, 开门 关门 当前楼层: 6, 方向: 向下 当前楼层: 5, 方向: 向下 当前楼层: 4, 方向: 向下	Current Floor: 6 Direction: UP	当前楼层: 6,方向: 向上
Close Door Current Floor: 6 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Ourrent Floor: 4 Direction: DOWN Current Floor: 3 Direction: DOWN Open Door # Floor 3	Current Floor: 7 Direction: UP	当前楼层: 7, 方向: 向上
Current Floor: 6 Direction: DOWN Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Current Floor: 4 Direction: DOWN Current Floor: 3 Direction: DOWN Open Door # Floor 3 当前楼层: 6, 方向: 向下 当前楼层: 5, 方向: 向下 当前楼层: 4, 方向: 向下 当前楼层: 3, 方向: 向下 当前楼层: 3, 方向: 向下	Open Door # Floor 7	当前楼层 : 7 ,开门
Open Door # Floor 6 Close Door Current Floor: 5 Direction: DOWN Current Floor: 4 Direction: DOWN Current Floor: 3 Direction: DOWN Open Door # Floor 3 当前楼层: 6, 开门 关门 当前楼层: 5, 方向: 向下 当前楼层: 4, 方向: 向下 当前楼层: 3, 方向: 向下 当前楼层: 3, 开门	Close Door	关门
Close Door Current Floor: 5 Direction: DOWN Current Floor: 4 Direction: DOWN Current Floor: 3 Direction: DOWN Open Door # Floor 3	Current Floor: 6 Direction: DOWN	当前楼层: 6,方向:向下
Current Floor: 5 Direction: DOWN当前楼层: 5,方向: 向下Current Floor: 4 Direction: DOWN当前楼层: 4,方向: 向下Current Floor: 3 Direction: DOWN当前楼层: 3,方向: 向下Open Door # Floor 3当前楼层: 3,开门	Open Door # Floor 6	当前楼层: 6, 开门
Current Floor: 4 Direction: DOWN当前楼层: 4,方向: 向下Current Floor: 3 Direction: DOWN当前楼层: 3,方向: 向下Open Door # Floor 3当前楼当前楼层: 3,开门	Close Door	关门
Current Floor: 3 Direction: DOWN当前楼层: 3,方向: 向下Open Door # Floor 3当前楼当前楼层: 3,开门	Current Floor: 5 Direction: DOWN	当前楼层: 5, 方向: 向下
Open Door # Floor 3 当前楼当前楼层: 3,开门	Current Floor: 4 Direction: DOWN	当前楼层: 4,方向:向下
	Current Floor: 3 Direction: DOWN	当前楼层: 3,方向:向下
Close Door 关门	Open Door # Floor 3	当前楼当前楼层: 3, 开门
	Close Door	美门

按照题目说明,乘客请求为一次性输入,乘客请求分为电梯内和电梯外两个队列,分别为: 电梯内:

InnerQueue	<5> <7> <3>
电梯外:	
OuterQueue	<3,UP> <6,DOWN>

电梯运行过程如下:

- 1. 电梯默认值停留在 1 层,状态为 Stopped (停止),方向为 IDLE (无方向)
- 2. 程序开始运行,检测 IQ(InnerQueue)和 OQ(OutQueue)两个队列排在最前面的请求,如果任意不为空,则代表有乘客请求,应该运行,检测结果为队列不为空,开始运行

- 3. 首先判断运行方向, 离电梯当前层(1层)最近的为 OQ 内的第一个元素的请求楼层 3,3>1,则向上然后电梯开始向上运行,状态为 Moving (移动),方向为 UP (向上),输出:"当前楼层:1,方向:向上",
- 4. 运行到第 2 层,判断该楼层是否应该停下来处理请求,判断后应继续移动(请求是 3),输出"当前楼层: 2,方向:向上"
- 5. 运行到第3层,判断该楼层是否应该停下来处理请求,判断后应停止处理请求(请求是
- 3, 当前楼层是 3), 状态变为 Stopped, 输出 "Open Door # Floor 3 回车 Close Door", 此时将 IQ 和 OQ 两个队列中的队头的 3 层请求全部出队(删除)
- 6. 关门后电梯状态为"Stopped",继续检测两个队列的队头请求,分别是<5>和<6,DOWN>,取同向且离得近的请求,即<5>,得出电梯运行方向应维持 UP
- 7. 继续向上运行,运行到第 4 层,判断该楼层是否应该停下来处理请求,判断后应继续移动(请求是 5),输出"当前楼层: 4,方向:向上"
- 8. 继续向上运行,运行到第 5 层,判断该楼层是否应该停下来处理请求,判断后应处理请求(请求是 5,且方向为 UP,与电梯同向),状态变为 Stopped,输出"Open Door # Floor 5 回车 Close Door",此时将 IQ 和 OQ 两个队列中的队头的 5 层请求全部出队(删除)
- 9. 关门后电梯状态为"Stopped",继续检测两个队列的队头请求,分别是<7>和<6,DOWN>,取同向且离得近的请求,即<7>,得出电梯运行方向应维持 UP
- **10**. 继续向上运行,运行到第 6 层,判断该楼层是否应该停下来处理请求,判断后应继续移动(请求是 **7**),输出"当前楼层: 6,方向:向上"
- 11. 继续向上运行,运行到第7层,判断该楼层是否应该停下来处理请求,判断后应处理请求(请求是7,且方向为UP,与电梯同向),状态变为Stopped,输出"Open Door # Floor 7 回车Close Door",此时将IQ和OQ两个队列中的队头的7层请求全部出队(删除)
- 12. 关门后电梯状态为"Stopped",继续检测两个队列的队头请求,分别是<3>和<6,DOWN>,取同向且离得近的请求,结果为空,此时可判定当前电梯向上方向的请求已经全部处理完毕,此时方向应转向,即从 UP 到 DOWN,此时取同向离得最近的请求,即<6,DOWN>,得出电梯运行方向应向下
- 13. 继续向下运行,运行到第 6 层,判断该楼层是否应该停下来处理请求,判断后应处理请求(请求是 6,且方向为 DOWN,与电梯同向),状态变为 Stopped,输出 "Open Door # Floor 6 回车 Close Door",此时将 IQ 和 OQ 两个队列中的队头的 6 层请求全部出队(删除)
- 14. 关门后电梯状态为"Stopped",继续检测两个队列的队头请求,只剩下是<3>,取同向且离得近的请求,即<3>,得出电梯运行方向应维持 DOWN
- **15**. 运行到第 5 层,判断该楼层是否应该停下来处理请求,判断后应继续移动(请求是 3),输出"当前楼层:5,方向:向下"
- 16. 运行到第 4 层,判断该楼层是否应该停下来处理请求,判断后应继续移动(请求是 3),输出"当前楼层:5,方向:向下"
- 17. 运行到第 3 层,判断该楼层是否应该停下来处理请求,判断后应处理请求(请求是 3),状态变为 Stopped,输出"Open Door # Floor 3 回车 Close Door",此时将 IQ 和 OQ 两个队列中的队头的 3 层请求全部出队(删除)
- 18. 关门后电梯状态为"Stopped",继续检测两个队列的队头请求,结果为空,此时电梯运行结束,状态为"Stopped",方向变为"IDEL",电梯停留在 3 层