

Name:
Teacher:
Class:
Date:

Logic Gate Applications - Practice Problems Set 3
逻辑门运用-练习题3:

1. A small company wants to have an automatic light system installed for the front door of their office building to make the premises safer for their employees. They have the following specification in mind: A light outside the front door that will turn on automatically when it is both dark outside and someone is standing on the doormat.

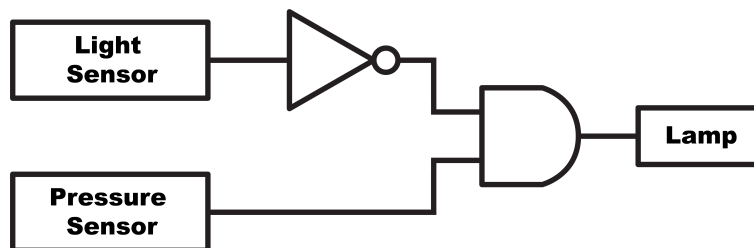
某小型公司希望在办公楼的前门安装自动照明系统，以使员工的办公场所更安全。具体要求如下：当外面很黑有人站在门垫上时，前门外面的灯会自动打开。

NOTE 1: A pressure sensor und there mat changes from **OFF (0)** to **ON (1)** when someone stands on the doormat.

注1: 当有人站在门垫上时，压力传感器从OFF (0) 变为ON (1) 。

NOTE 2: The light sensor is **ON (1)** when it is out out and **OFF (0)** when it is dark.

注2: 天黑时当光线传感器处于断开和断开 (0) 状态时，光线传感器接通 (1) 。

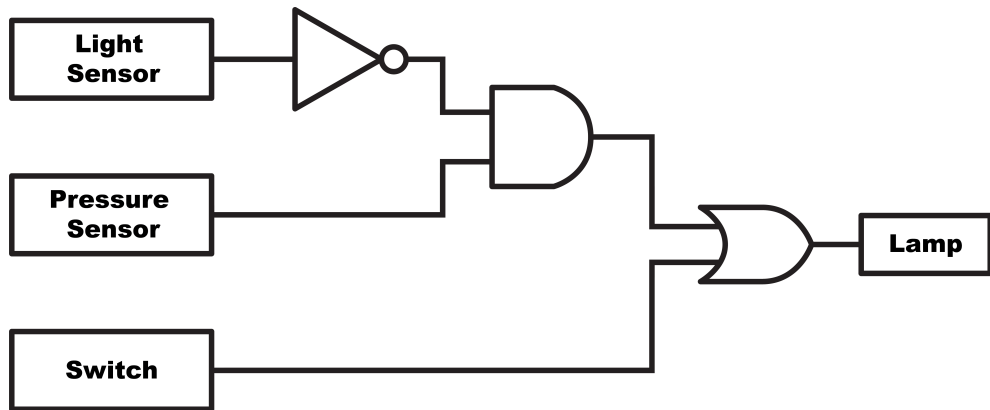


- a) When the system was first installed, light from the lamp could shine on the light sensor. What would happen when someone stood on the doormat when it was dark in this situation?
当系统首次安装时，灯发出的光可能会照射到光传感器上。在这种情况下，天黑的时候，如果有人站在门垫上会发生什么？

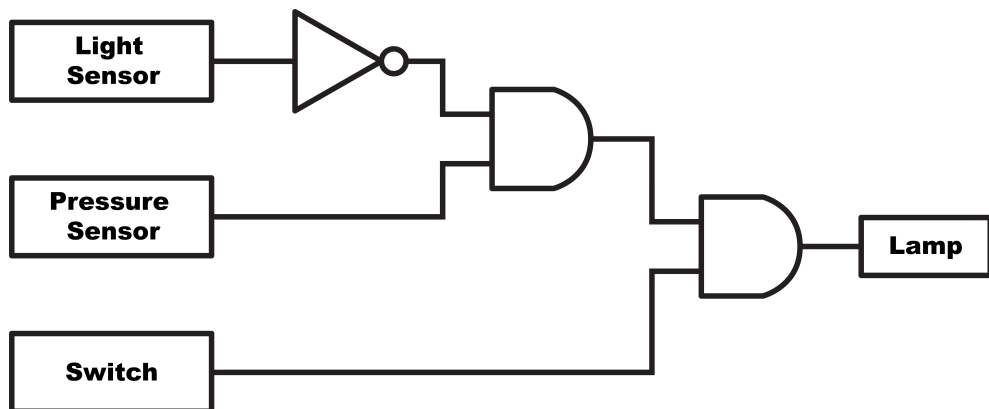
- i. Explanation解释:

- ii. What (simple) change(s) need to be made for this circuit to work properly?
要使此电路正常工作，需要进行哪些（简单）更改？

- b) The diagrams below show two different ways of modifying this circuit by adding a switch. Each solution will produce a circuit that operates slightly differently.
 下图显示了通过添加开关修改此电路的两种不同方式。每种解决方案都会产生一个运行方式略有不同的电路。



- i. *Explain what the switch does in this circuit.*
 解释开关在此电路中的作用。



- ii. *Explain what the switch does in this circuit.*
 解释开关在此电路中的作用。
