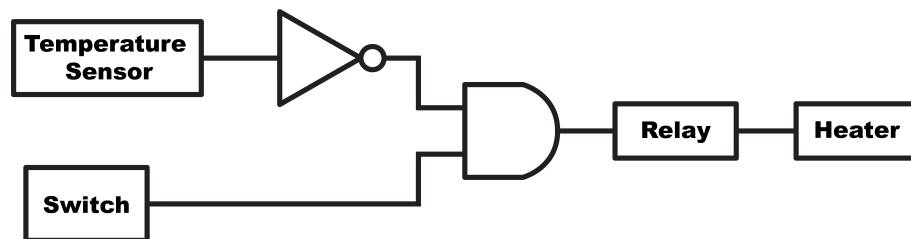Name:

Teacher:

Class:

Date:

Logic Gate Applications - Practice Problems Set 1
**逻辑门运用-练习题1:**

An engineer has designed the following two circuits and has chosen to show them as block diagrams during a presentation. The block diagrams show the basics about how the circuits will operate, but they do not show the actual structure of the circuit, its base components, or how the individual components would connect to each other.

一位工程师设计了以下两个电路，并选择以方框图的形式演示。方框图显示了有关电路如何运行的基本信息，但没有显示电路的实际结构、基本组件或各个组件是如何相互连接的。

1. The main purpose of the first circuit that has been designed is to switch on a heater when the temperature drops below a certain level.
   第一个电路的主要目的是在温度降至一定水平以下时打开加热器。

   a) Name the two types of logic gates that are using in this circuit.
      写出此电路中使用的两种逻辑门。

      i. _____

      ii. _____

   b) Redesign the logic circuit so that the heater will only come on at night.
      重新设计电路使加热器仅在夜间启动。
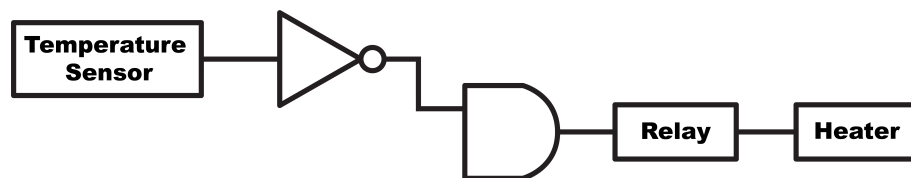
   c) The marketing devision of the company wants to come up with practical uses for either circuit design. Provide one real-world application for this circuit.
      该公司的市场部门希望为两种电路设计提供实际用途。为该电路提供一个现实生活中的运用。

      _____

      _____

      _____

2. The second circuit that has been designed is composed of three main sections that have been labeled **X,Y & Z**.
第二个电路由标记为X、Y和Z的三个主要部分组成。

Part X　　　　　　Part Y　　　　　　　Part Z

| Heat Sensor | Light Sensor | Relay — Heater |
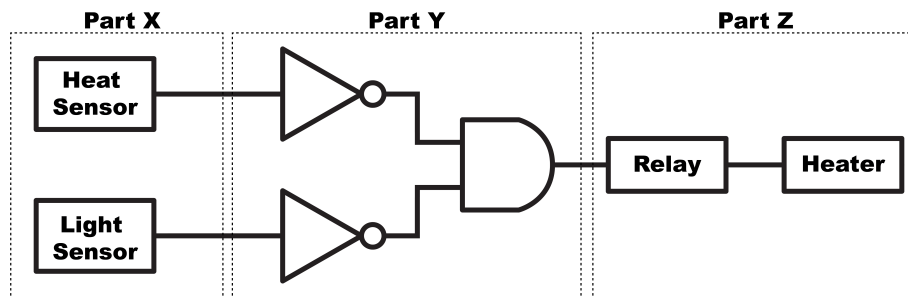
a) During the presentation one of the individuals in the audience asks the engineer to give an example of a device or electrical component that could be use as a:
在演示过程中，一位观众要求工程师给出一个可以用作以下用途的例子：

    i.　Heat sensor热传感器: _____

    ii.　Light sensor光传感器: _____

b) Another individual asks the engineer which part of the circuit (**X, Y**, or **Z)** are:
另一位观众询问工程师电路的哪个部分（X、Y或Z）是：

    i.　The output devices输出设备? _____

    ii.　The input devices输入设备? _____

    iii.　The processor处理器? _____

c) The heat sensor is **ON** when it is hot and **OFF** when it is cold. The light sensor is **ON** when it is light and **OFF** when it is dark.
热传感器在热时打开，在冷时关闭。光线传感器亮时亮，暗时关。

    i.　Explain what happens in each part of the circuit when it is **both** dark and cold.
解释在黑暗和寒冷的环境中，电路的每个部分都会发生什么。

      _____
      _____
      _____
      _____

    ii.　Think of at least one real-world application (use) for this circuit.
写出至少一个用于此电路的实际应用。

      _____
      _____
      _____
      _____
      _____