DLD Project Proposal

Instructor Name:

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Group Members:

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Project Title:

Smart room lights with pin code system

Objective:

The objective of this project is to make a room with some features that exhibit smartness through technology. Two features that will be included are:

- To enter the room, the person will enter the pin, which will be checked by pin code system.
- The lights of the room can be turned on and off by clapping once. Moreover, the lights brightness will also be adjusted with the environment automatically.

Description:

The pin code system is implemented using the XOR gates and the universal nor gate. The XOR gates are used as comparators to compare the input and the lock key, if the entered key is correct a green led is turned on, otherwise the alarm system is activated. Then the system to turn on or off lights by clap is implemented (optional). It also senses the light of environment through LDR and sets the light of room accordingly. This project covers the basics of

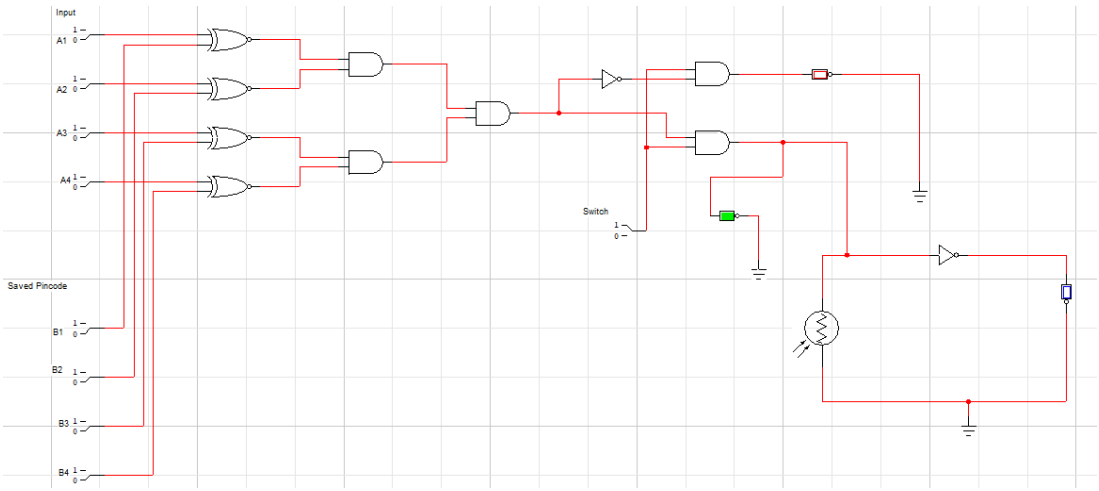
digital logic, logic gates, implementation of combinational circuits and comparators.

Components Used:

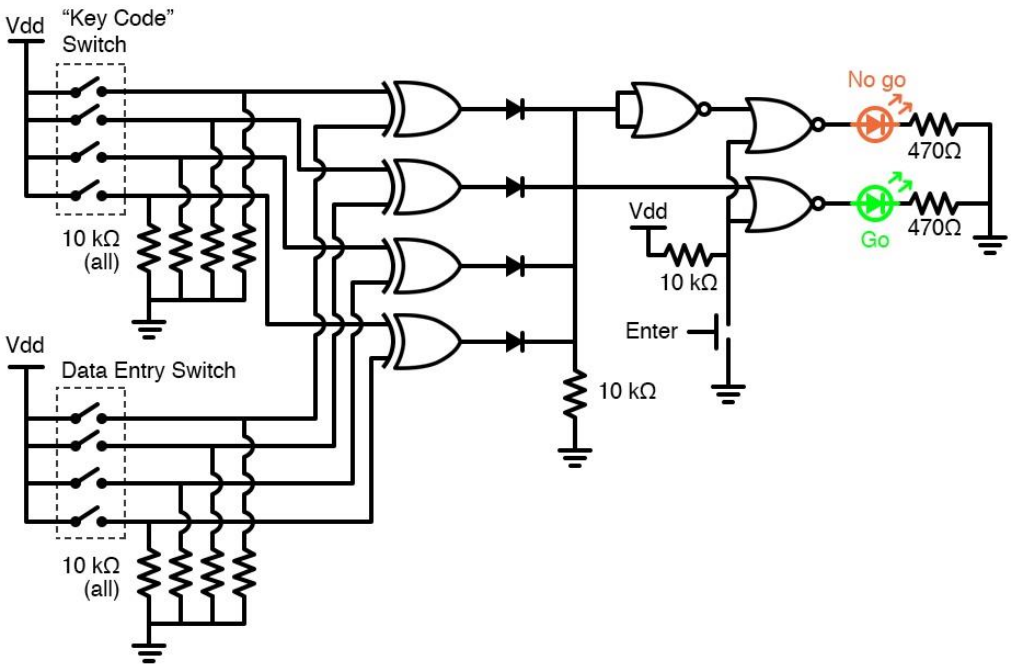
Component	Qty
XOR Gate IC 7486/XNOR Gate IC 4077	1
AND Gate IC 7408	2
NOR Gate IC 7403/NOT Gate IC 7404	1
Diode	4
DIP Switch	2
Push Switch	1
LED	4
10 kOhm Resistor	12
470 Ohm Resistor	2
Jumper Wires	50
Breadboard	2
Vero Board	2
Battery	2
Soldering Iron	1
Soldering Wire	1
DC MIC	1
100nF Capacitor	2
BC547 Transistor	2
CD4017 Decade Counter IC	1
270k Resistor	1
220 Ohm Resistor	1
5V SPDT Relay	1
1N4007 Diode	1

Note: More components may be used according to the implementation.

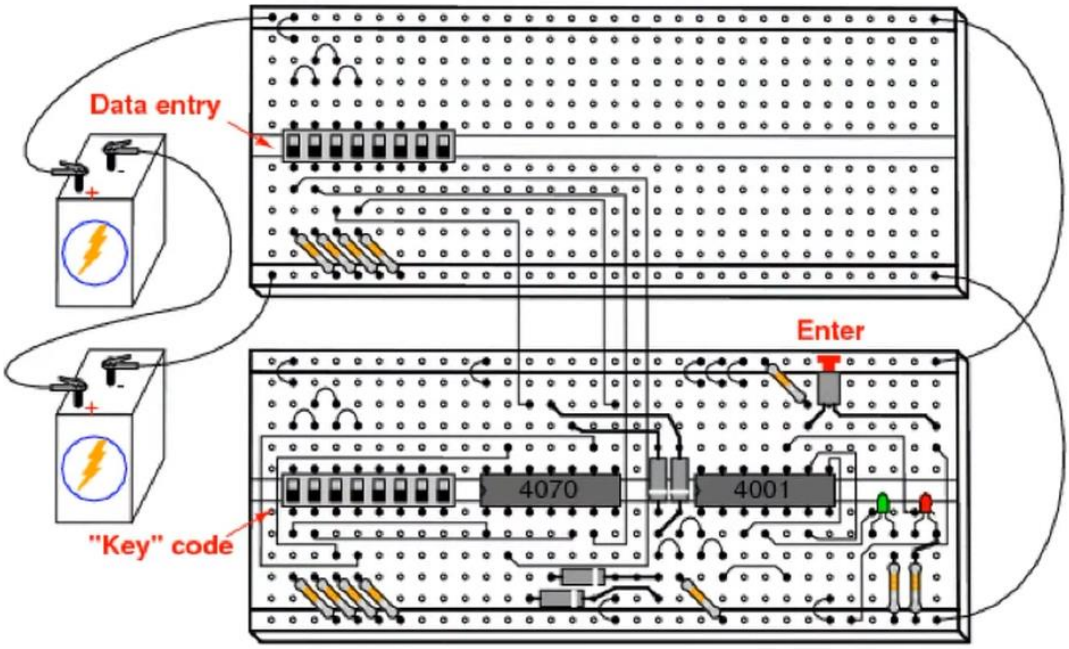
Circuit Diagrams:



Pin Code System:

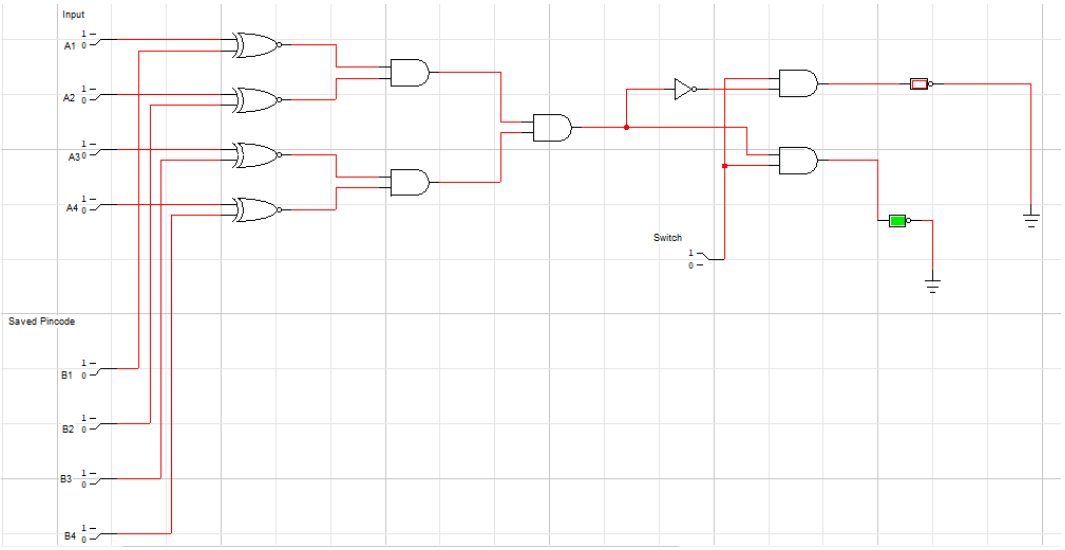


Implementation:



Alternate Circuit:

If above circuit doesn't works, then we will use alternative circuit shown below which has been tested on LogicWorks:



Clap Switch Circuit: