

## Slot Machine Design

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Type: Design Problem  
Student Time: Two weeks  
Location: Laboratory

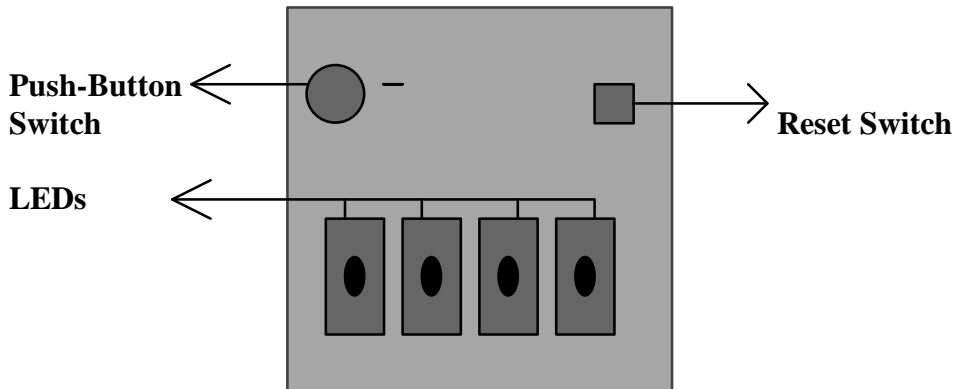
### Summary

This design project could be used in second digital course. The purpose of this project is to introduce some aspect of design such as creativity. Most students are familiar with slot machine. They know how this machine operates. The circuit uses an orange and green LEDs to represent ● (orange) and ● (apple) in the front panel. In this home-made version of slot machine, player will deposit a quarter (press a push button switch) and machine will pick randomly a 4-bit number. Player will win according a preset role.

### ABET Descriptors

Engr Sci Content: 1st or 3rd year of electronic engineering  
Type: Components  
Elements: Analysis, construction, testing  
Features: Design methodology, creativity,  
Constraints: Economics, limited materials, size.  
Effort: Team

### Slot Machine Design



**Problem Statement:** Designing a slot machine or a game machine is fun and motivates students. The home made slot machine is inexpensive and simple. It is up to the professor and students to decide whether or not to use a random number generator. Here is how a slot machine works:

When you push the “Push-Button” switch, it will pick a random number between 0000 (equivalent to decimal number “0”) to 1111 (equivalent to decimal number “15”). Based on the picked number it will turn on the right LEDs. Two different color of LEDs should be selected to represent the “apples” or “oranges”. The game can be set as follow:

Player pushes the button and will win \$5.00, \$3.00, or \$1.00 if :

- \* There is an apple only in second place from right of the front panel (an even prime number) then s/he will win \$5.00.
- \* There are only two oranges in first and second place either in right or left of the front panel, then s/he will win \$3.00.
- \* There are all oranges or apples in the front panel, then s/he will win \$1.00.

## **Slot Machine Design**

### **Engineering Notes**

- \* This is a project that introduce design, creativity, and statistics to students.
- \* This project can be generalized to other gambling machine.
- \* Students will learn how to design and build an economy compact, packet size, gambling or game machine.
- \* Students will learn how to transfer a mathematical problem (in this case statistics) to a digital electronic circuit.

### **Project Deliverables**

Written detailed report should have:

- \* Original idea.
- \* Design methodology.
- \* Analysis and component selection.
- \* Specification of components.
- \* Schematics.
- \* Operation of slot machine.
- \* A brief discussion of cost and reliability of design.

### **Discussion/Follow on activities**

Once the projects are done, each group has to go to other groups for comparison and critique. At the end, each group will explain how they can improve their design.