Activity No. 1

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* Research =

Research on the simulation of electrical switches in gun control systems focused on validating user age and license numbers highlights the importance of secure, reliable, and tamper-proof activation mechanisms. Studies emphasize that integrating digital authentication directly with the switch requires advanced simulation to model electrical, logical, and environmental interactions. Simulation tools such as SPICE and embedded systems modeling enable detailed analysis of switch response times, error handling, and resistance to environmental stresses like vibration, temperature fluctuations, and electromagnetic interference. Research further demonstrates that iterative simulation helps optimize switch reliability, minimize false activations, and ensure that the weapon operates only under valid user credentials, thereby significantly enhancing firearm safety and compliance with legal regulations. Overall, simulation-driven design in this context is critical for developing smart weapon systems that prevent unauthorized use while maintaining operational readiness under varied conditions.

Reffered link =

1. **IEEE Xplore Digital Library**  
   Access peer-reviewed papers on electrical switch modeling, embedded systems, and defense electronics.  
   👉 <https://ieeexplore.ieee.org/>

* Analyze =

The idea is to create a gun that only works when the user’s age and license number are verified using an electrical switch system. This means the gun will not fire unless the person using it is legally allowed to do so. To make this possible, the gun will have a small digital system that checks the user’s age and license before activating the firing mechanism through an electrical switch. This system must be very reliable and secure so that it cannot be tricked or fail in tough conditions like shocks, vibrations, or bad weather. Simulation tools help test how the switch and the verification process work under different situations, making sure the gun only fires when it should. This technology will improve safety, reduce illegal gun use, and make sure only authorized people can use the weapon, which is very important for defense and law enforcement.

* Ideate=

### **1. Problem Statement**

Unauthorized use of firearms poses serious safety and legal risks. Current guns lack a built-in mechanism to verify the user’s age and license before firing. This creates a need for a secure and reliable system that allows a gun to fire **only** when the user is legally authorized, by validating their age and license number before activating the firing mechanism.

1. Algorithm:

Step 1. Start

Step2.verification of age & licence

Step3. If age verified switch on else age did’nt verified switch remains off

Step4. Result

Step5.End

* **Build:**

**// Online C compiler to run C program online**

**#include <stdio.h>**

**void main(){**

**int GUN\_OPERATOR ;**

**printf("enter GUN\_OPERATOR age (between 21 to 80):");**

**scanf("%d",&GUN\_OPERATOR);**

**printf("you have entered %d GUN\_OPERATOR age\n"**

**,GUN\_OPERATOR);**

**if(GUN\_OPERATOR <21){**

**printf("Turn off gun switch");**

**}**

**else{**

**printf("Turn on gun switch");**

**}**

**}**

* Testing:

1.If age is below than 21 years gun remains off

2.Age is greater than 21 years gun onn.

* Implementation: