SMART KEY

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ABSTRACT

The SMART-KEY device revolutionizes motorcycle operation, offering multiple convenient options for control. This advanced device, consisting of an ESP8266 and two relay channel models, is specifically designed to operate motorcycles. The SMART-KEY allows users to control their motorcycles through various methods, including manual control, a dedicated smartphone application, voice assistants like Google and Alexa, smartwatches, and even via WhatsApp messages.To activate the SMART-KEY, users can send commands such as "key on" and "key off" through WhatsApp messages. Additionally, the smartphone application designed for the SMART-KEY features on and off buttons, allowing users to control the device with a simple tap. Voice assistants such as Google Assistant and Alexa can also be utilized to control the SMART-KEY, providing voice-activated convenience. Furthermore, smartwatches can serve as another means of controlling the device, offering a compact and wearable solution.The SMART-KEY device is securely placed within the motorcycle, ensuring its non-hackable nature. It operates through a secure Wi-Fi connection, providing an unlimited range of operation. Users can choose from various control options, including the smartphone application, WhatsApp, manual controls, smartwatches, and voice assistants. The dedicated mobile application acts as a gateway to access and control the vehicle, allowing users to personalize their motorcycle settings and tailor their experience according to their preferences.With its encrypted design, the SMART-KEY device guarantees enhanced security for the motorcycle. It is considered an embedded system, incorporating advanced technology to enable seamless and secure motorcycle control. By offering a wide range of control options and prioritizing security, the SMART-KEY enhances the overall motorcycle ownership experience.

Introduction:

The SMART-KEY device represents a groundbreaking innovation that revolutionizes the operation of motorcycles, providing users with a multitude of convenient control options. Specifically engineered for motorcycles, this advanced device combines the ESP8266 microcontroller with two relay channel models to deliver unparalleled functionality. By harnessing the power of manual control, a dedicated smartphone application, voice assistants such as Google and Alexa, smartwatches, and even WhatsApp messages, the SMART-KEY empowers riders to interact with their motorcycles in unprecedented ways.

Literature Survey:

The development of the SMART-KEY device builds upon prior research and advancements in the field of motorcycle technology. The concept of keyless entry systems, initially pioneered by Siemens and Mercedes-Benz in the mid-1990s for automobiles, served as inspiration for motorcycle enthusiasts seeking a similar solution for their two-wheelers. This led to the emergence of the SMART-KEY, a versatile device

capable of enhancing convenience and security in motorcycle operation.In recent years, the integration of smartphones into everyday life has spurred the evolution of motorcycle control systems. The SMART-KEY leverages this trend by offering a dedicated smartphone application that allows users to effortlessly control their motorcycles with a simple tap on the screen. Moreover, the integration of voice assistants, such as Google Assistant and Alexa, provides users with hands-free and voice-activated control options, further enhancing the convenience and accessibility of the SMART-KEY.The adoption of smartwatches as a control interface for motorcycles has also gained prominence. By leveraging the capabilities of smartwatches, riders can easily interact with the SMART-KEY device in a compact and wearable manner, adding to the overall user experience.The security aspect of the SMART-KEY is a key focus of research and development. With its non-hackable nature and robust encryption technology, the SMART-KEY ensures that motorcycle owners can trust in the security of their prized possessions. By operating through a secure Wi-Fi connection, the device offers an unlimited range of operation, freeing riders from the constraints of proximity and enabling seamless control regardless of their location.Overall, the SMART-KEY represents an embedded system that combines advanced technologies to deliver a comprehensive and secure motorcycle control solution. By offering a diverse range of control options and prioritizing security, the SMART-KEY significantly enhances the overall motorcycle ownership experience, providing riders with unprecedented convenience, flexibility, and peace of mind.

System architecture
The system architecture for the SMART-KEY device involves the integration of various components and technologies to enable seamless motorcycle control. Here is a high-level overview of the system architecture:

User Interfaces:
Manual Control: The SMART-KEY device incorporates physical buttons or switches that allow users to manually control the motorcycle's operation.
Smartphone Application: A dedicated mobile application serves as the primary interface for users to interact with the SMART-KEY. It provides a graphical user interface (GUI) with intuitive controls, allowing users to send commands and customize settings.
Voice Assistants: Integration with voice assistants, such as Google Assistant and Alexa, enables users to control the SMART-KEY through voice commands, offering hands-free operation.
Smartwatch: The SMART-KEY can also be paired with a compatible smartwatch, providing users with a compact and wearable control interface.

Communication:
ESP8266 Microcontroller: The ESP8266 acts as the core component of the SMART-KEY device, facilitating wireless communication between the user interfaces and the motorcycle's control system.
Wi-Fi Connectivity: The ESP8266 connects to a Wi-Fi network, enabling communication between the SMART-KEY and other devices, such as smartphones or voice assistants.
WhatsApp Integration: The SMART-KEY device utilizes WhatsApp messaging as a means of control. Users can send specific commands, such as "key on" or "key off," via WhatsApp messages to activate or deactivate the motorcycle.

Control and Actuation:

Relay Channel Models: The SMART-KEY incorporates two relay channel models to interface with the motorcycle's ignition system. These relays enable the device to control the on/off state of the motorcycle's engine or other electrical components.

Embedded System: The SMART-KEY is designed as an embedded system, combining hardware and software to enable seamless integration with the motorcycle's existing control system. It utilizes the ESP8266 microcontroller to process commands and trigger the appropriate relay actions.

Security:

Encryption: The SMART-KEY device employs advanced encryption technology to ensure secure communication between the user interfaces and the motorcycle. This encryption prevents unauthorized access and enhances the overall security of the system.

Power Supply:

Power Source: The SMART-KEY device is powered either by the motorcycle's electrical system or through a separate power source, depending on the design and installation requirements.

By integrating these components and technologies, the SMART-KEY device provides users with a versatile and secure means of controlling their motorcycles through multiple interfaces, offering enhanced convenience and control options.

WORKING

This SMART-KEY device working principle is quit similar to the remote control of car keys . To operate this marquee smart key we are using firebase database add mit app inventor application to make customise api for Smart Key . In this my key ESP8226 add two channel relay model is used to operate scooty . For this smart key we have separate application that application name is called Smartkey in that application two buttons are available one button for turn on Scooty add one more button for finding a scooty . First button Toggle button on and off when we press on the data will go to firebase database from there it will come to nodemcu . In Nodemcu having GPI0 pins D0 and D1. D0 pin is to turn on Scooty . D1 pin is to find scooty it means that if we lost Scotty it will indicate . When data come from firebase database it goes to nodemcu . In nodemcu D0 pin will become high . Later the data go back for firebase database cloud . This is the working principle of Smart Key . By the same way using Whatsapp Smartkey is operated . Like when we send message key on in Whatsapp it goes to ThingESP . From there it goes to nodeMCU D0 will be high . Again from nodemcu to ThingESP Cloud from cloud to Whatsapp reply like "key turn on" . when D0 will be high the relay will pass the current in the circuit so it can be used like a switch then scooty will turn on by this way. When it become active low the scooty will turn off and the relay stop flowing current

RESULT :
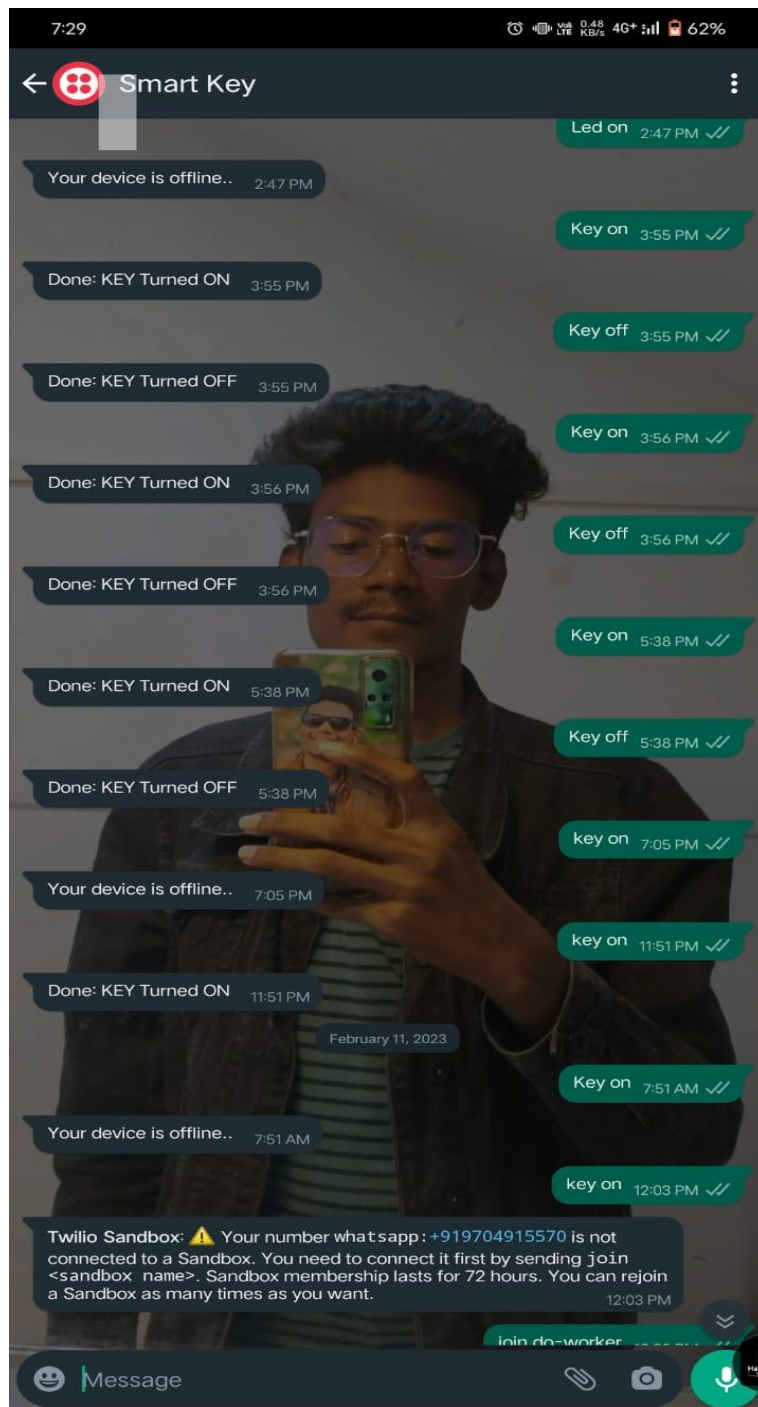HARDWAE IMPLEMENTATION

Design by Alwyn
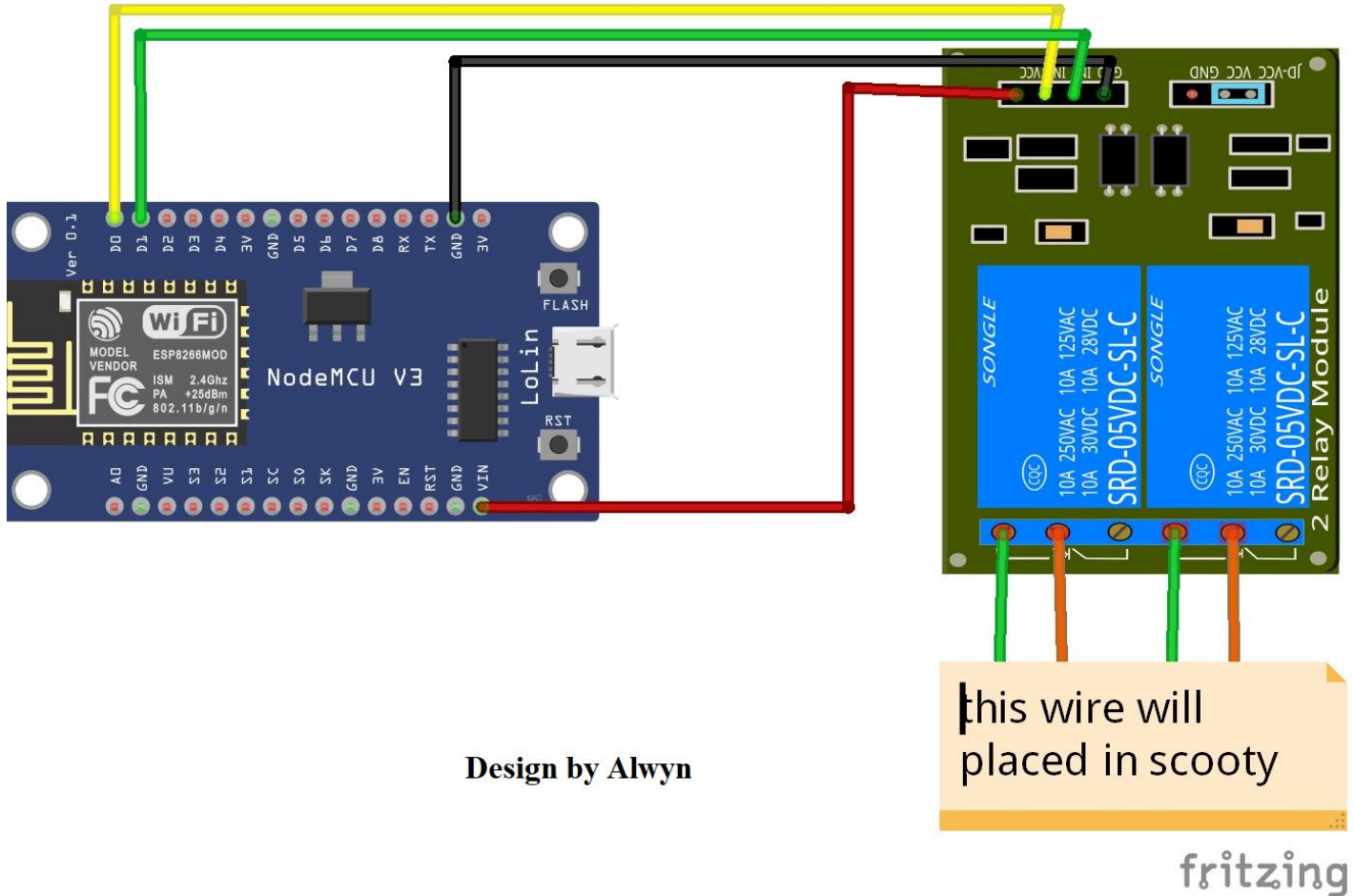
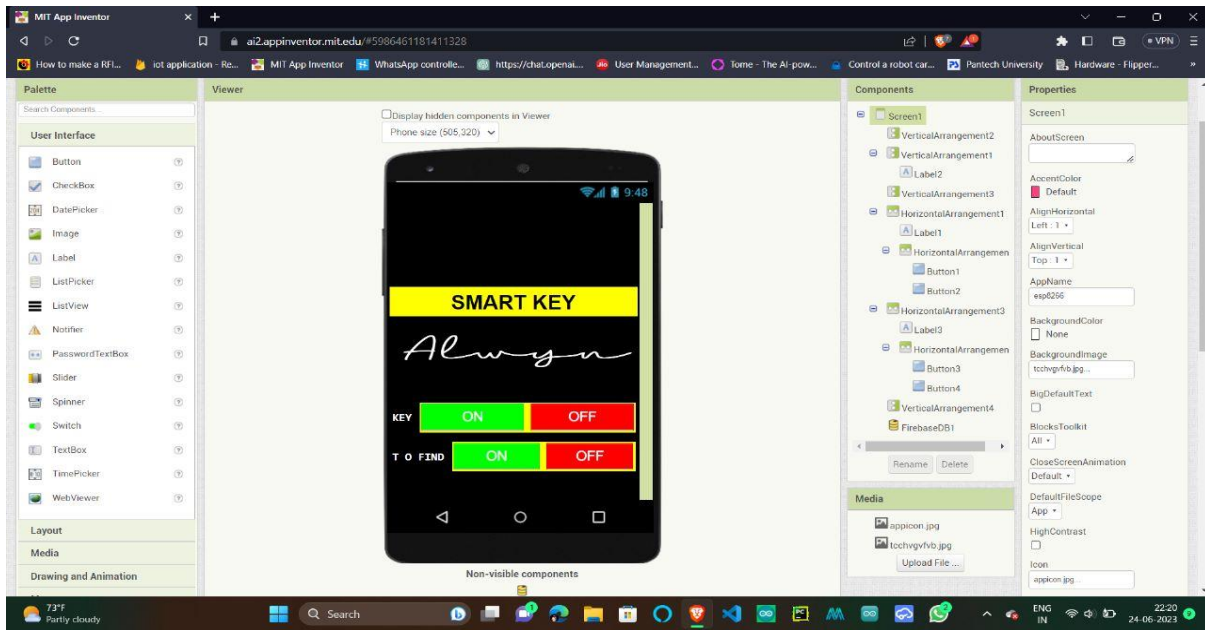CUSTOMIZED APPLICATION FOR SMART-KEY SCOOTY WHEN IT IS IN "ON"

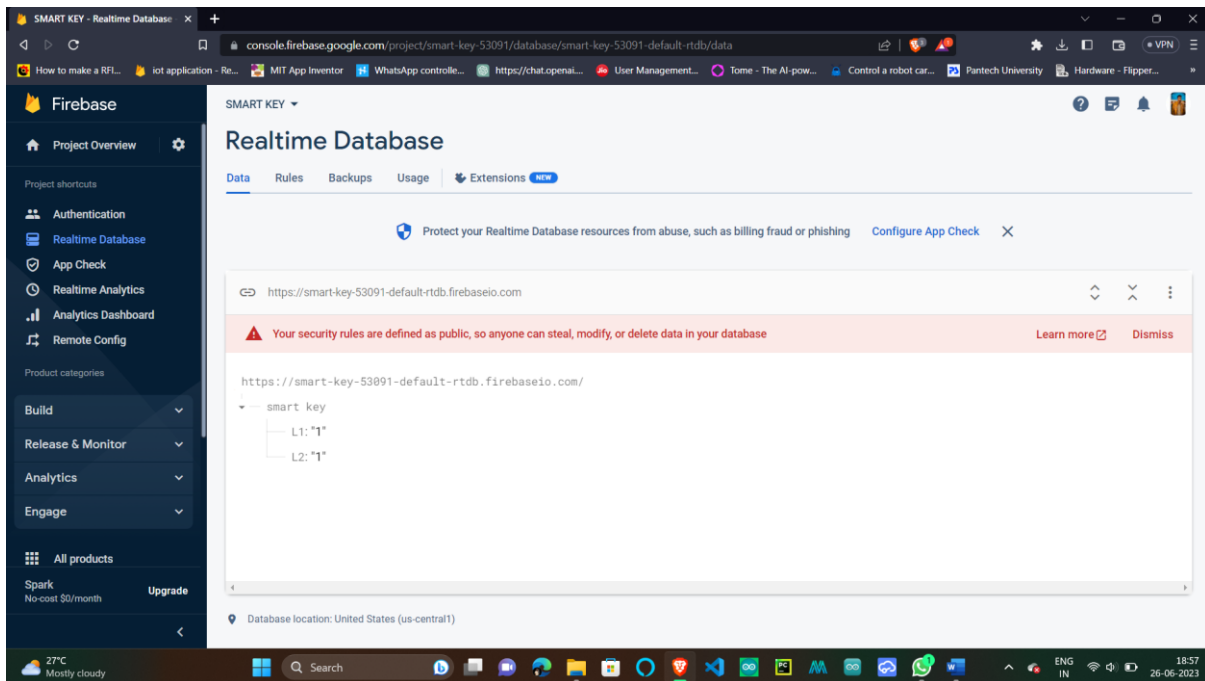CUSTOMIZED APPLICATION FOR OPERATING SCOOTY WHEN IT IS "OFF"

A TYPICAL EXAMPLE OF OPERATION USING WHATSAPP:
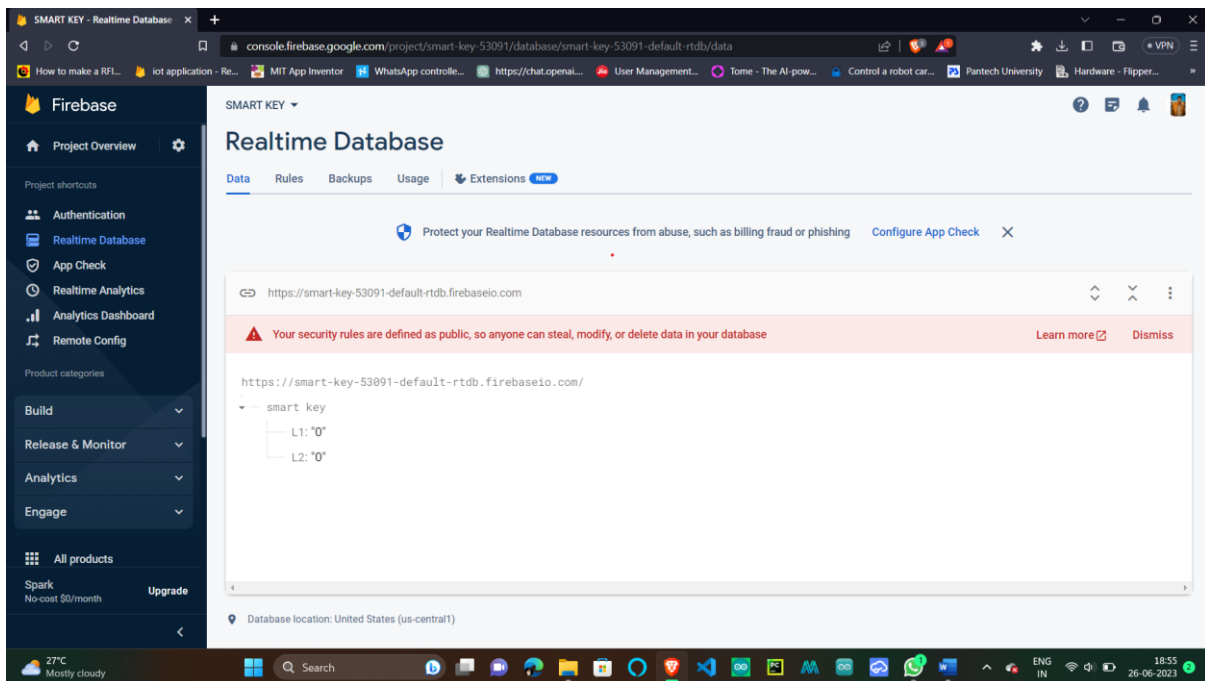
THIS IS HOW I MADE SMART-KEY DESIGN

Firebase database cloud to store the data (when it is in on)

Firebase database to store data in cloud (this when it is in off)

Conclusion:

In conclusion, the SMART-KEY device revolutionizes the operation of motorcycles by offering a wide range of convenient control options. With its combination of the ESP8266 microcontroller and two relay channel models, this device provides users with the ability to control their motorcycles manually, through a dedicated smartphone application, voice assistants, smartwatches, and even via WhatsApp messages. The SMART-KEY ensures enhanced security, non-hackability, and seamless integration within the motorcycle's system. It operates through a secure Wi-Fi connection, allowing for unlimited range operation and personalized settings through the dedicated mobile application. With its encrypted design and embedded system technology, the SMART-KEY enhances the overall motorcycle ownership experience, prioritizing convenience and security.

References:

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