RUBBER DUCKY

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PROJECT DOMAIN: ELECTRONICS, ROBOTICS.

ABSTRACT:

Replacement of ID cards with wristbands that incorporate the use of Near-Field Communication Technology and RFID chip technology, using Python and Arduino to develop the required software for the recognition system.

INTRODUCTION:

The involvement of people in identification of individuals for entry into college premises can prove to be a tough task that is often ignored. We wish to tackle this issue with the introduction of NFC wristbands, which each student will wear, get themselves scanned at the entrance, and thereby enable their presence in the college. We plan to expand this concept into attendance, canteen, parking and library systems.

APPROACH:

Our first goal is to build an efficient checking system at college gates. The first step involves the programming and building of a scanner using Arduino. The wristband will contain an RFID chip with the student's SRN, which the scanner will recognise and relay to the python code which runs this SRN through a list of pre - recorded SRNs. Once the system matches the SRN to one in the pre-recorded list, the software will accordingly grant access to the student. With this incorporation of NFC tech, we believe it'll speed up all processes for security and record keeping, hopefully for areas like attendance records in the future.

ADVANTAGES:

- A far more organised approach to enabling student presence in different areas and departments on college campus.
- Introduction of a money storage function on the band can ease monetary exchange for the canteen and parking systems, thereby efficiently reducing crowds and physical exchange of money.

EASE OF IMPLEMENTATION IN THE REAL WORLD:

We believe this project is cost efficient and feasible enough to be incorporated into the current world scenario to improve the entire system of record keeping. We believe the idea behind wristband technology is something that engages and excited people into usage.

CHALLENGES:

- ➔ Learning to implement the PySerial code

TECH STACK:

- ➔ RFID chip – Micro NFC/RFID transponder – NTAG203 13.56MHz
- ➔ Screwdrivers, soldering iron, wire cutters, jumper cables, hot glue gun, silicon bands.
- ➔ Arduino UNO
- ➔ NFC scanner – An MFRC522 reader/writer.
- ➔ Coding Language: Arduino, Python.

FUTURE SCOPE:

We're looking to incorporate this system into the attendance record maintenance system and also hope to further develop these bands to incorporate a money storage system to improve the canteen and parking systems with a regular maintenance of a records for the same. Combining the existing library book exchange system with the NFC wristband to create a more unified system of record keeping, essentially with the idea of "One band to rule them all".