# ADVANCED PYTHON PROGRAMMING
## IoT Write-up

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## Smart Laundry Basket

Laundry is one of those daily tasks that can be time-consuming and frustrating. Sorting through darks and whites, reading tiny wash labels, and worrying about colors bleeding can take much longer than one may expect. The Smart Laundry Basket makes the job of doing your laundry easy by utilizing simple technology to make laundry smarter and more organized.

Using RFID scanners and color sensors, the basket automatically identifies the item type, color, and fabric type when an item is dropped into the basket. It is able to separate clothes into darks, whites, and delicates, in addition to being able to recognize items that may bleed, preventing accidental staining or damage to the fabric. When the basket is full, it simply notifies you when it's time to do laundry.

It will read the wash care instructions sewn onto clothing labels and know the best temperature, cycle type, and drying method for each garment. Before cada wash, it gives you a simple summary like:

"You have 5 T-shirts, 7 underwears, and 3 pairs of jeans, this load consists of 4 dark and 2 white items; suggested – cold water, gentle cycle, and mild detergent for cotton fabrics.

The laundry basket even suggests the correct type of detergent for every fabric –for example, liquid detergent for delicates, enzyme-based detergent for sportswear, or eco-friendly detergent for sustainable materials.

The basket can connect to your smartphone or washing machine through Wi-Fi or Bluetooth, automatically sending the ideal wash settings for the load. By combining convenience, fabric care, and sustainability, the Smart Laundry Basket turns a routine household task into something smarter, easier, and far more efficient.

## Components Used

- Microcontroller: ESP8266 / Arduino Uno

- RFID Module: For fabric type identification

- Color Sensor (TCS3200): For color detection

- Wi-Fi Module: For cloud connectivity

- Mobile Application: For user interface and notifications

## Working Principle

1. The user places clothes into the basket.

2. The RFID and color sensors capture the item's information.

3. The microcontroller processes the data and uploads it to the cloud.

4. The mobile app categorizes the clothes and provides alerts or wash recommendations.

5. Users receive notifications about when to wash or how to sort clothes efficiently.

## Special Needs Accessibility Adaptations

The Smart Laundry Basket can be adjusted to accommodate people with hearing or vision impairments in order to make it inclusive:

For Users Who Are Visually Impaired:To announce the type, colour, and washing instructions of the clothing, the mobile app can integrate smart speakers (like Alexa or Google Assistant) or provide voice feedback. Furthermore, a vibration motor on the basket might notify users when the basket is full or show successful detection.

For Users Who Are Deaf or Mute:The system can display alerts, washing suggestions, and sorting status using LED indicators with various colours or blinking patterns. In order to ensure complete usability without sound, notifications can also be sent via smart bracelets that vibrate or visual alerts on mobile apps.

These enhancements ensure that the Smart Laundry Basket is accessible to everyone, promoting inclusivity in smart home design.

LINK FOR GITHUB:

https://github.com/riya-123-tech/python

I'm writing to apologise for a few late submissions to GitHub. I have participated in Team Kshatriya's workshop activities, which take place from 9 PM to 1 AM, as the Finance Head and hence it was sometimes challenging to turn in my work by the 10 PM deadline because of this schedule.

I appreciate your understanding.

Regards,

Riya Parikh