

Idea/Approach Details

Ministry Category : Department of Post, Ministry of State(IC) of Communications

Problem Statement : Mechanisation of parcel sorting at parcel processing centers

Problem Code : #DOP7

Team Leader Name :Shivam Gupta

College Code : 1-1343950

IDEA/SOLUTION PROTOTYPE

- The problem of mechanisation of parcel sorting can be solved by generating the dynamic barcode/Qrcode and providing pincode based primary sorting and hybrid secondary sorting to generate a IOT based put to light solution.
- Initially each parcel will given a dynamic Qrcode/barcode which is mapped to details of parcel stored in database ex.priority(if any),pincode,full destination class of parcel etc.
- Then primary level sorting will take place on the basis of large parameters like pin code ,weight to classify the large chunks of parcels into small groups for secondary level sorting.
- Now , in secondary sorting deeper parameters as full destination of parcel will be used for faster result Hybrid Sorting Algorithm will be used.
- In secondary sorting by scanning barcode/Qrcode of a parcel and fetching its mapped details of destination and for that destination we have particular bag /cartoon having bag_id.
- That bag_id corresponding to each parcel will be fetched from database and this id will work as input for IOT(using Arduino) based hardware system that will glow LED corresponding to that id and the parcel can be placed into that bag directly.
- For priority based parcels other data structures as Priority Queue can be used in addition which have complexities only range of $\log n$.

TECHNOLOGY STACK

SOFTWARE

Database: Mysql (for having mapped details and bags information).

Php (framework) for backend (i.e. code generation,database management)

HARDWARE

IOT using ARDUINO(cross platform,less cost) , Barcode/Qrcode scanner (already available at parcel hub) , LED's for final visual response.

USE CASE

Issue of barcode/Qrcode by mapping all details of parcel with database

Primary sorting based on pincode,weight will divide parcels in various small groups

Different Small groups after primary sort

Secondary sorting will be applied on each group which can map each parcel to a bag_id

Finally that bag_id will be used to glow corresponding bag led to place the parcel

STOPPERS /DEPENDENCIES

Requirement for various external hardware is required.
For high performance algorithm may become complex