

COVID Resource Management System

Requirements Document

Our application will be a management system that will let hospitals add information about the availability of Beds, Oxygen Cylinders, Oxygen Concentrators, Vaccines, Ventilators and Oximeters available.

Hospitals can also add more specific information about available resources - like the number of beds that have attached oxygen cylinders, the capacity of each oxygen cylinder available and whether the cylinder is portable, the Oxygen Flow, Concentration capacity of available Oxygen Concentrators, the type of vaccines that are available (Covaxin/Covishield, First/Second Dose), the type of pressure ventilation and tidal volume of ventilators available, SPO2 range and SPO2 accuracy of the available oximeters.

The information added by the hospitals will be made available for the users of the application. In order to claim a resource that is available, users can call a phone number provided by the hospital.

Additionally, there will be a dashboard to view the number of patients admitted due to COVID, number of active cases, the average age of patients, and number of people discharged by that hospital on that day.

Classes

Nouns in the Requirements Document:

- Management system
- Hospitals
- Beds
- Oxygen cylinders
- Oxygen concentrators
- Vaccines
- Ventilators
- Oximeters
- Users
- Resource
- Phone number
- Dashboard
- Patients

- COVID
- People

After removing irrelevant and redundant nouns,

- Hospital
- Beds
- Oxygen cylinders
- Oxygen concentrators
- Vaccines
- Ventilators
- Oximeters

Attributes

Hospital	Number of patients admitted Number of active cases Average age No of discharged people Beds Oxygen cylinders Oxygen concentrators Vaccines Ventilators Oximeters Contact Number Name Address
Beds	Have or do not have attached oxygen cylinders
Oxygen cylinders	Capacity Portability
Oxygen concentrators	O2 flow Concentration capacity
Vaccines	Dose

	Company
Ventilators	pressure ventilation tidal volume
Oximeters	SPO2 range SPO2 accuracy

Operations

Hospital	getNumberOfPatients(int HospitalId, int age) setNumberOfPatients(int HospitalId, int age) setNumberOfActiveCases(int HospitalId, int age) getNumberOfActiveCases(int HospitalId, int age) setNumberOfActiveCases(int HospitalId, int age) setAvgAgeById(int HospitalId, int age) getAvgAgeById(int HospitalId) setDischargedPeopleById(int HospitalId, int count) getDischargedPeopleById(int HospitalId) setBedCountById(int HospitalId, int count) getBedCountById(int HospitalId) setBedDetailsById(int HospitalId, int deviceId, Cylinder newCylinder) getBedDetailsById(int HospitalId, int deviceId) setCylinderCountById(int HospitalId, int count) getCylinderCountById(int HospitalId) setCylinderDetailsById(int HospitalId, int deviceId, Cylinder newCylinder) getCylinderDetailsById(int HospitalId, int deviceId)
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	setConcentratorCountById(int HospitalId, int count) getConcentratorCountById(int HospitalId) setConcentratorDetailsById(int HospitalId, int deviceId, Concentrator newConcentrator) getConcentratorDetailsById(int HospitalId, int deviceId) setVaccineCountById(int HospitalId, int count) getVaccineCountById(int HospitalId) setVaccineDetailsById(int HospitalId, int deviceId, Vaccine newVaccine) getVaccineDetailsById(int HospitalId, int deviceId) setVentilatorCountById(int HospitalId, int count) getVentilatorCountById(int HospitalId) setVentilatorDetailsById(int HospitalId, int deviceId, Ventilator newVentilator) getVentilatorDetailsById(int HospitalId, int deviceId) setOximeterCountById(int HospitalId, int count) getOximeterCountById(int HospitalId) setOximeterDetailsById(int HospitalId, int deviceId, Oximeter newOximeter) getOximeterDetailsById(int HospitalId, int deviceId) setContactNumber(int number) getContactNumber() setNameById(int HospitalId, String hospitalName) getNameById(int HospitalId) setAddressById(int HospitalId, String Address) getAddressById(int HospitalId) getHospitalMetaById(int HospitalId)
Beds	setCylinderFlag(bool cylinder) getCylinderFlag()

Oxygen cylinders	setCapacity(int n) getCapacity() setPortability() getPortability()
Oxygen concentrators	setO2flow(int n) getO2flow() setConcentrationCapacity(int n) getConcentrationCapacity()
Vaccines	setDose(int dose) getDose() setCompany(String company) getCompany()
Ventilators	setPressureVentilation(int n) getPressureVentilation() setTidalVolume(int n) getTidalVolume()
Oximeters	setSPO2Range(int n) getSPO2Range() setSPO2Accuracy(int n) getSPO2Accuracy()

Technical Stack

Swing: We are currently considering using Swing to create a GUI for our system since it seems to be beginner-friendly.

MongoDB: If we have the time, we would like to integrate our application with a no-SQL database called “MongoDB.”

Git: We are planning to use Git for version control, since we think it will be useful for us in the future.