

CluniacChain: Blockchain and ML based Healthcare System

Appendix

Information Stored In Blockchain

Table 1. Patient

Variable Type	Variable	Description
String	ID	A unique string (192-bit UUID)
Asset	Medical Record	Structure Defined in Asset
Asset	Personal Details	Structure Defined in Asset

Table 2. Doctor

Variable Type	Variable	Description
String	ID	A unique string (192-bit UUID)
Asset	Public Profile	Structure Defined in Asset

Table 3. Hospital Representative

Variable Type	Variable	Description
String	ID	A unique string (192-bit UUID)
Asset	Public Profile	Structure Defined in Asset

Table 4. Hospital

Variable Type	Variable	Description
String	Hospital_ID	A unique string (192-bit UUID)
Asset	Hospital Table	Structure Defined in Asset

Table 5. Cluster

Variable Type	Variable	Description
String	Cluster_ID	A unique string (192-bit UUID)
Asset	Cluster Table	Structure Defined in Asset
Asset	Permissions Table	Structure Defined in Asset
Composite	Global Cluster Connector	Structure Defined in Composition.

Information Stored in Assets

Table 6. Patient's Personal Details

Variable Type	Variable	Description
String	ID	A unique string (192-bit UUID)
String	Blood Group	Patient's Blood Group
Int	Date of Birth	Unix timestamp of DOB
String	Mail Id	Patient's Mail id
String	First Name	Patient's First Name
String	Last Name	Patient's Last Name
Composite	Address	Structure Defined in Composition

Table 7. Patient's Health Record

Variable Type	Variable	Description
String	ID	A unique string (192-bit UUID)
Collection	Author	Collection of Doctors who contributed to the health Record.
Multi-Dimensional Array	Permissions	Attribute Keys Set issued by attribute issuing authority.
String	Signature	Signature generated after hashing the Ciphertexts and then concatenating the hash with the private key of the patient.
Float	Version	Increments the file version every time it is updated.
Collection	Medical_Record_Pointer	List of Pointers pointing to the Medical records.

(Indexing used for mapping Medical records with the Author Variable)

Table 8. Doctors Public Profile

Variable Type	Variable	Description
String	ID	A unique string (192-bit UUID)
String	First Name	Doctor's First Name
String	Last Name	Doctor's Last Name
String	Email Address	Doctor's Email Id
Int	Mobile Number	Doctor's Mobile Number
Int	DOB	Unix timestamp of DOB
Composite	Address	Structure Defined in Composition
String	Identification Id	Doctor's Medical registration number.
Collection	Qualifications	Collection of Doctor's Qualifications.
String	Image-Url	Path of the image of the doctor stored in our server.
Collection	Hospital List	Collection of hospitals he/she works in

Table 9. Hospital Representative's Public Profile

Variable Type	Variable	Description
String	Id	A unique string (192-bit UUID)
String	First Name	Hospital Representative's First name
String	Last Name	Hospital Representative's Last name
String	Email Address	Hospital Representative's Email Id
Int	Mobile Number	Hospital Representative's Mobile Number
Int	DOB	Unix timestamp of DOB
String	Image-Url	Path of the image stored in our server.
String	Hospital Assigned	Hospital He/She works in

Table 10. Hospital Table

Variable Type	Variable	Description
String	Id	A unique string (192-bit UUID)
String	Hospital Name	Name of the Hospital
Integer	Reputation	Reputation of the Hospital
Collection	Location	Latitude and Longitude
Collection	Doctor IDs	Collection of doctor ID's working in the Hospital
Integer	Penalty	Penalty score to decide the reputation of the hospital.
Integer	Capacity	Capacity of the hospital
Integer	Fatalities	Count of the total number of fatalities corresponding to the hospital
Integer	Recovery Rate	Recovery rate of the hospital
Integer	Average Cost of Treatment	Average cost of treatment in the hospital
Collection	Specialization	Collection of specializations the hospital have

Table 11. Cluster Table

Variable Type	Variable	Description
String	Id	A unique string (192-bit UUID)
Integer	Number of Hospitals	Keeps the count of the total number of hospitals in a particular cluster after clustering is done.
Collection	Hospital_List_Final	This is a collection of all the hospitals which are present in the current cluster.
Collection	Hospital_List_New	This is a collection of all the hospitals added after clustering.
Collection	Hospital_List_Removed	This is a collection of all the hospitals removed after clustering.

Table 12. Permissions Table

Variable Type	Variable	Description
String	Id	A unique string (192-bit UUID)
String	Signature (ζ)	Storing the signature to get the Hashed value back
Collection	Attribute Keys	Collection of the permissions given to the hospital
String	Patient ID	Unique Patient ID
String	Hospital ID	Unique Hospital ID

Information Stored in Composition

Table 13. Address

Variable Type	Variable	Description
String	Id	A unique string (192-bit UUID)
String	House Number	House Number
String	Street	Street Details
String	City	City Name/Details

String	Country	Country Name
String	Zip Code	Zip Code

Table 14. Global Cluster Connector

Variable Type	Variable	Description
String	Id	A unique string (192-bit UUID)
Collection	Connection_Information	Contains all the connection information related to a particular cluster