1. Identify the primary key in the current schema.

If we consider the above schema to be already in 1st normal form then,

[Admit Id, Lab Id, Lab Timestamp, Physician Id, Visit Timestamp] will form the primary key.

1. Enumerate all the functional dependencies.

Patient Id, Lab Id, Lab Timestamp Lab Results, Lab Charge

Patient Id, Physician Id, Visit Timestamp Visit Notes, Visit charge

Physician Id Physician name, Physician Specialty

Admit Id Patient Id, Bed Id, Admit timestamp, Discharge Timestamp, Hospital Charge

Patient Id Patient name, Patient Address

Lab Id Lab Test Name

1. Normalize Schema to at least BCNF

PATIENT

|  |  |  |
| --- | --- | --- |
| **Patient Id** | Patient name | Patient Address |

PATIENT\_ADMIT

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Admit Id** | Patient\_id | Bed Id | Admit Timestamp | Discharge Timestamp | Hospital Charge |

LAB

|  |  |
| --- | --- |
| **Lab Id** | Lab Test Name |

PATIENT\_LAB

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Patient Id** | **Lab Id** | **Lab Timestamp** | Lab Results | Lab Charge |

PHYSICIAN

|  |  |  |
| --- | --- | --- |
| **Physician Id** | Physician name | Physical Specialty |

PHYSICIAN\_VISIT

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Patient Id** | **Physician Id** | **Visit Timestamp** | Visit Notes | Visit Charge |

Note: In 3rd question, Primary Key is indicated by Bold Underline font.