Time of first scan

Time

Date

Mode of transportation

Entrance of first scan

Status (valid/invalid)

quantity

Purchased through

App ID

App store name

time

Transaction ID

Official Louvre museum app

Barcode

Type

Scanned at

Ticket

Purchased through

Transaction

Payment method

Wing name

Purchased through

Hired through

City

country

Name of financial institution

Scan ID

Scanning event

First name

Abbreviated name

Time

To hire

Wing issued

Expiry date

Country card was issued

Wing returned

Card number

Bank branch

Return time

To access

Rent time

Expiry month

Account name

Specialist exhibition reservation

Expiry year

Slot time

Reservation ID

Audio guide machine

Heard through

Date

Time

Specialist exhibition

To enter

Time retired from use

Audio guide ID

Max number of people

Opening date

Closing date

Serial number

Exhibit name

Time brought into service

Language

Audio guide recording

VisitorModeOfTransp... ▼
- 🔑 ModeOfTransportationID INT
- Barcode VARCHAR(255)
- ◇ ModeOfTransportation ENUM(...)

Indexes ▶

Transaction ▼
- 🔑 Transaction ID INT
- ◇ Type ENUM(...)
- ◇ PaymentMethod ENUM(...)
- ◇ Time DATETIME
- ◇ Quantity INT
- ◇ NameOfFinancialInstitution VARCHAR(255)
- ◇ AbbreviatedName VARCHAR(255)
- ◇ CountryCardIssued VARCHAR(255)
- ◇ BankBranch VARCHAR(255)
- ◇ AccountName VARCHAR(255)
- ◇ CardNumber INT
- ◇ ExpiryMonth INT
- ◇ ExpiryYear INT
- ◇ FirstName VARCHAR(255)
- ◇ Country VARCHAR(255)
- ◇ City VARCHAR(255)

Indexes ▶

SpecialistExhibitionReservation ▼
- 🔑 ReservationID INT
- ExhibitName VARCHAR(255)
- ◇ SlotTime DATETIME
- ◆ ScanID INT

Indexes ▶

ScanningEvent ▼
- 🔑 ScanID INT
- Barcode INT
- ◇ WingName ENUM(...)
- ◇ Time DATETIME

Indexes ▶

stores

Scanned at

Purchased through

Ticket ▼
- 🔑 Barcode VARCHAR(255)
- ◇ Status ENUM(...)
- ◇ DateTimeOfFirstScan DATETIME
- ◇ EntranceOfFirstScan ENUM(...)
- ◆ TransactinID INT

Indexes ▶

OfficialLouvreMuseumApp ▼
- 🔑 AppID INT
- ◇ StoreName ENUM(...)
- ◆ TransactionID INT

Indexes ▶

Purchased Through

to access

To hire

ScanningEvent_ToBorrow_AudioGuideMachine ▼
- SerialNumber VARCHAR(255)
- ScanID INT
- ◇ RentTime DATETIME
- ◇ ReturnTime DATETIME
- ◇ WingIssued ENUM(...)
- ◇ WingReturned ENUM(...)

Indexes ▶

Hired through

To enter

SpecialistExhibition ▼
- 🔑 ExhibitName VARCHAR(255)
- ◇ OpeningDate DATETIME
- ◇ ClosingDate DATETIME
- ◇ MaxNumberOfPeople INT

Indexes ▶

To hire

AudioGuideMachine_has_Transaction ▼
- TransactionID INT
- SerialNumber VARCHAR(255)

Indexes ▶

OfficialLouvreMuseumApp_has_AudioGuideRecording ▼
- AppID INT
- AudioGuideID INT

Indexes ▶

To listen to

To listen to

AudioGuideMachine ▼
- 🔑 SerialNumber VARCHAR(255)
- ◇ TimeBroughtIntoService DATETIME
- ◇ TimeRetiredFromUse DATETIME

Indexes ▶

Hired through

AudioGuideRecording ▼
- 🔑 AudioGuideID INT
- ◇ Language ENUM(...)

Indexes ▶

To listen to

AudioGuideMachine_has_AudioGuideRecording ▼
- SerialNumber VARCHAR(255)
- AudioGuideID INT

Indexes ▶

To listen to

ASSUMPTIONS:

1. People can buy tickets and not come.

2. To address the business' needs of counting the number of unused tickets for large group bookings, we can count the number of tickets that have invalid as its status without a date and time of first scan, that have transactions of quantity 30 and over for tickets.

3. A ticket can only be paid for in one transaction and we do not allow multiple transactions to purchase a single ticket.

4. In a single transaction, we can borrow many audio guide machines, and this is possible with scanning of one ticket.

5. We can calculate how long each audio guide was used from rent and return time attributes.

6. Only one Official Louvre Museum App can be purchased by a single transaction and the app cannot be purchased by multiple transactions.

7. We can have many different types of audio guide recordings, depending on factors like compatibility to either the app or the audio guide machine, the version and the narrator. Hence not all audio guide recordings are in either machine or app (partial participation) and each can have many types of audio guide recordings. (might allow for choice between male and female voice, etc.)

8. The specialist exhibition is located inside Hall Napoleon which is located inside one of the 3 wings so borrowing of audio guides would be done at the wings.

9. We can count the number of people admitted, spaces booked and spaces remaining for the specialist exhibition by counting the number of entries for the specialist exhibition reservation entity.

10. Assume that the slots for all specialist exhibition exhibits are 15 minutes long so don't need to store this value.

11. We can only make a reservation for one person for one specialist exhibition per reservation made. Cannot make reservation for more than one specialist exhibition at one time.

12. We can only access a reservation for a single specialist exhibition for a single person through scanning of one ticket. Cannot confirm reservations for families.

13. We need the extra attribute time in the transaction entity to meet the business' needs to know how many tickets were purchased using each payment method in the current financial year.

14. Serial numbers and barcodes have numbers and alphabets mixed but other IDs are numbers alone.

15. A visitor can have multiple modes of travel per visit.