Bicycle Rental Points

José Pablo Alvarado

¿How do we want clients use our service?

Regular physical activity

- little trips
- long trips

Transportation

- to school (at least near school)
- to job (at least near job)
- to meetings (with friends, family, etc)

¿What we don't want client do with our service?

- Steal and sell bicycle
- Steal parts of bicycle and sell them
- Rent the already rented bicycle
- Travel outside allowed region
- Modify bicycle in any way
- Damage bicycle or live being
- Pay membership and forget to make use of it

¿What limits/constrains our service will have?

- Clients can make use of only 1 bicycle at a time
- Clients need to have an active membership
- Clients can travel inside allowed region only
- Each Rent points have 10 park slots

¿What information we need to keep track of?

- Bicycle exact location (excluded from this exercise)
- Bicycle current user
- Bicycle current location (rent point)
- Client membership status
- Client personal info
- Client usage information
- How many available park slots a rent point has
- Rent points address

Entities and attributes information

Clients

- names : no special characters allowed
- last name : no special characters allowed
- email : must be valid email
- address : must be valid address
- phone number : must be valid phone number
- membership id : must be unique number
- membership status : can be only one of these values: Active, Suspended, Banned, Inactive

Bicycle

- id : number between 0 - 500
- current user : (client's membership id)
- current location : (rent point id)

Rent points

- id : number between 0 – 70
- address : must be valid address
- empty park slots : number between 0 - 10

Rent events (stores information about usage)

- id : number (each time a client uses a bicycle creates an rent event)
- client : client's membership id
- start point : rent point id
- end point : rent point id
- start time : date and time when client takes bicycle
- end time : date and time when client parks bicycle

Entities and attributes Database values

Clients

- names : VARCHAR(50) (Not Null)
- last_name : VARCHAR(30) (Not Null)
- email : VARCHAR(50) (Not Null)
- address : VARCHAR(200) (Not Null)
- phone : VARCHAR(20) (Not Null)
- membership_id : INT(6) (Not Null) (PK)
- membership_status : VARCHAR(9) (Not Null)

Bicycles

- id : INT(3) (PK) (Not Null)
- client_id : INT(6) (FK)
- rent_point_id : INT(2) (FK)

Rent_points

- id : INT(2) (PK) (Not Null)
- address : VARCHAR(200) (Not Null)
- empty_park_slots : INT(2) (Not Null)

Rent_events

- id : INT(6) (PK) (Not Null)
- client_id : INT(6) (FK) (Not Null)
- start_point : INT(2) (FK) (Not Null)
- end_point : INT(2) (FK)
- start_time : DATETIME (Not Null)
- end_time : DATETIME

Relations summary

- a ***rent event*** must have 1 client only and a ***client*** can have many rent events or 0 rent events

- a ***rent event*** must have 1 bicycle only and a ***bicycle*** can appear in many different rent events or not appear in any rent event

- a ***rent event*** must have only 1 start point and only 1 end point, start and end point can be the same, end point and end time are registered when client parks bicycle

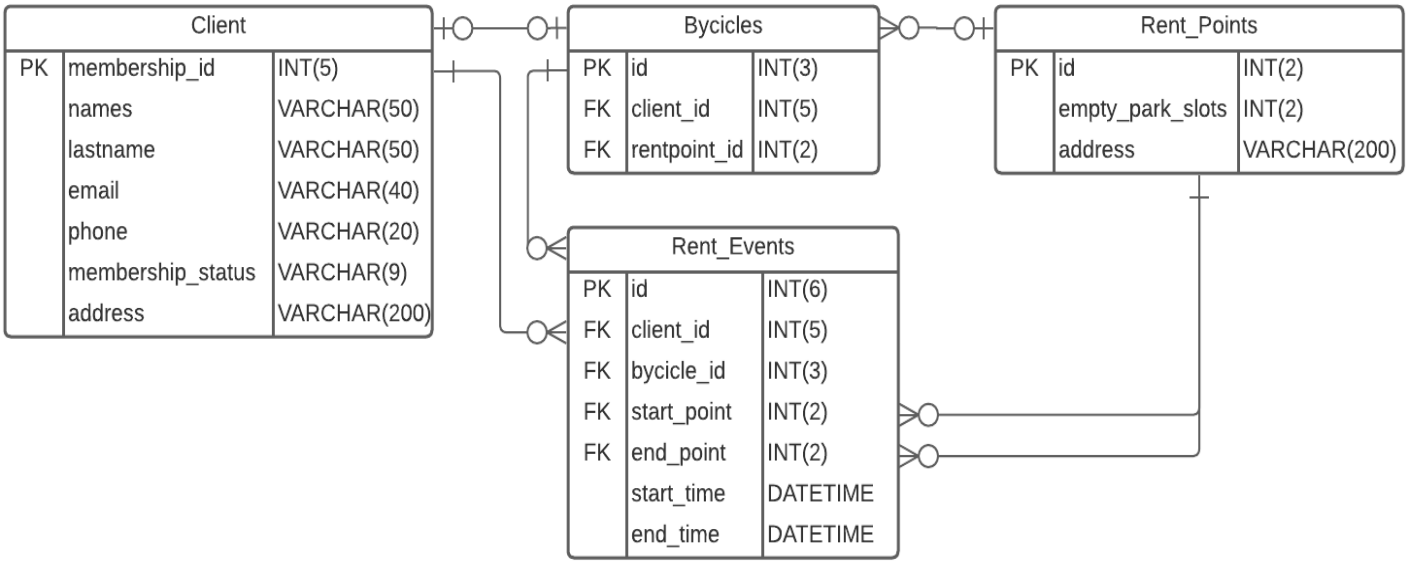
- ***rent points*** can appear in many rent events or not appear in any rent event

- a ***rent point*** can be the start point of 0 or many rent events, and same logic apply for end points

- a ***bicycle*** can be at only 1 rent point or can be in the street and a ***rent point*** can have 0 or many bicycles parked

- a ***client*** can use only 1 bicycle at a time or not use any bicycle

ER Diagram


Client
PK membership_id INT(5)
names VARCHAR(50)
lastname VARCHAR(50)
email VARCHAR(40)
phone VARCHAR(20)
membership_status VARCHAR(9)
address VARCHAR(200)
Bycicles
PK id INT(3)
FK client_id INT(5)
FK rentpoint_id INT(2)
Rent_Points
PK id INT(2)
empty_park_slots INT(2)
address VARCHAR(200)
Rent_Events
PK id INT(6)
FK client_id INT(5)
FK bycicle_id INT(3)
FK start_point INT(2)
FK end_point INT(2)
start_time DATETIME
end_time DATETIME