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Your home is our home ....

You have your own Gardening Service Company. You were holding all required information in your excel files before, now your Customer portfolio and their demands have increased significantly. You are serving the north side of town that has more than 5,000 homes with gardens and large trees,

**Business rules:**

1. You offer major services such as irrigation, landscaping, tree service, roof cleaning, yard waste removal, fall cleaning, fertilizing, pest control, holiday decoration etc.
  2. You provide different policies for commercial and residential services, such as, commercial service requires general liability insurance and workers comp.
  3. You have many ground workers; they all work at least one job per day.
  4. Ground workers may perform tasks at commercial or residential services
  5. Each customer can have multiple service packages such as landscaping, fertilization, pest control etc.
  6. All payment must be complete upfront.
  7. All customers must have valid address and phone number
  8. Your database is providing source of all plant types that customer has for their garden
  9. You are working with several local and a few international vendors for plants/seeds, garden tools and decoration.
  10. All vendors must have valid tax information/address and phone number.
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11. Each service uses one or many equipment to finish the work.
  12. All Workers should undergo at least one training for using the equipment.
  13. All workers should have valid employee id and unique state id.
  14. Each customer has to take at least one policy for the type of service opted.
  15. Each policy should have unique policy number, coverage, term price, type and issue date.
  16. Payment methods can be credit card, debit card or internet banking .
  17. Every equipment has a serial number, date\_made, last inspected date and service\_id to be used in.
  18. The customer valid address (zip code) should be checked in validation table of States.
  19. Each training should have training id, training name , equipment id for training assigned to the training.

20. Each vendor can provide multiple plants/seeds
21. Each plant has plant id , price, type, name
22. Each vendor has vendor id , vendor name, plant id , vendor type, location.
23. Each customer has customer id and valid payment method.
24. Each customer makes payment for service purchasing and insurance through valid payment method stored in payment table
25. Each Worker has to take one mandatory worker insurance (different from residential and commercial insurance).
26. Each equipment has to be sent for repair after inspection if it is faulty to equipment repair location.
27. Equipment Repairing has repair id , date of delivery, location and cost of repair
28. The payment is accepted in currency USD only.
29. For each service transaction opted there is an order id and date of order.
- 30.Each worker should be of age greater than 18.

2.)Decide your ERD components from business rules above;

a)Entities: Customer, States, Services, Order, Insurance, Payment, Plants, Worker, Service Job, Equipments, Equipment Repair, Equipment Training , Vendors., customer plants, Plants\_supply, vendor supply

b)Attributes:

1. Customer : Customer id, name , phone number, Address, Zipcode
2. States : id, city, state, zipcode
3. Services: service id , service name , service type, price
4. Order: order id, service id, policy number, address, customer id, payment id, date of order
5. Insurance : Policy number, Coverage, Term Price, Type, Date of issue, service id (FK)
6. Payment: Payment id, Payment type, payment name, Amount
7. Plants: Plantid , Plant name, Plant type , Price, Service id(FK)
8. Worker: worker id, state id , age , policy\_number(FK), Job id (FK), Training id(FK)
9. Service Job : Job id, job name, service id (FK), service type
10. Equipments : Serial Number, Date\_made, last inspected, Service id(FK), job id(FK)
11. Equipment Repair: Repair id , serial number(FK) , Cost,address, zipcode
12. Equipment Training : Training id , Training name , Serial number(FK)
13. Vendors: vendor id, vendor name , vendor type , tax id number , address, zipcode, phone number, plant id(FK)
14. Customer\_plants : plant id , customer id , plant name
15. Plants\_supply : Plant id ,service id
16. Vendor Supply : Vendor id , Plant id

c) Relationship between entities

- Customer validates states
- Customer selects services
- Customer takes insurance
- Customer makes payment
- Customer has plants
- Customer\_plants exists in plants
- Customer places order
- Service requires plant\_supply
- Plant\_supply exists in plants
- Vendor\_supply supply\_plants
- Vendor supply exists in vendors
- Services has service job
- Worker works in service job
- Worker takes insurance
- Service job uses equipments
- Equipment needs equipment training
- Worker undergoes equipment training
- Equipment get equipment repair

d) Cardinality of relationships

- Customer – States ( One to one)
- Customer – Customer Plants (One to many)
- Customer – Insurance (One to many)
- Customer – Services (one to many)
- Customer – Payment (One to One)
- Customer – Order (One to many)
- Worker- Insurance(one to one)
- Services- Plant supply (one to many)
- Plant supply – plants (many to one)
- Service- service job (one to many)
- Worker – service job (one to many)
- Service job – Equipments (one to many)
- Equipments – Equipment Training (one to one)
- Equipments – Equipment Repair ( One to one)
- Customer Plants – Plants (one to one)
- Plants- Vendor\_supply (one to many)
- Vendor supply – vendor (many to one)
- Worker- equipment training (one to many)

e) Define Key(s)

1. Customer : PK Customer id
2. States : PK Id
3. Services : PK Service Id
4. Order: CPK Order id , CpK - Service id, CPk :Policy Number, Customer id , Payment id,
5. Insurance: Pk Policy Number
6. Payment : PK Payment id
7. Plants: PK Plant id , FK Service id
8. Worker : CPK Worker id , FK – Policy number , CPK :Job id , CPK :Training id
9. Service Job : PK job id , Fk : Service id
10. Equipments : PK : Serial number , Fk : Service id , Job id
11. Equipment Repair : Pk : Repair id , Fk Serial Number
12. Equipment Training : PK : Training id , Fk : Serial Number
13. Vendors: PK : Vendor id , FK : Plant id
14. Customer plants: CPK Plant id , CPK : Customer id
15. Plants\_Supply(CPk : plant id , Cpk : Service id)
16. Vendor supply (CPK : vendor id , CPK: Plant id)

Finalize your whole ERD diagram with Crow Foot Notation ;

## GARDEN SERVICES ER DIAGRAM

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