Entity-Relationship Diagram

Entities

CUSTOMER
- Customer ID
- Name
- Phone number
- Address

AUTOMOBILE
- VIN
- Make
- Model
- Year

PART
- Part ID
- Unit Cost
- Quantity
- Description

EQUIPMENT
- Equipment ID
- Description
- Manufacturer
- Model

Equipment Check In/Out Log
- Equipment Check out ID
- Check out (Date, Time)
- Check in (Date, Time)
- TEmployee ID

REPAIR ESTIMATE
- Repair Estimate ID
- Description of proposed repair
- Estimated Cost/Amount
- Date of estimate
- {Skill Usage (Time)}
- {Equipment Usage (Time)}
- {Parts Required}

SKILLS
- Name
- Description

SHIFT
- Shift ID
- Start Period (Date, Time)
- End Period (Date, Time)

TECHNICIAN
- TEmployee ID
- {Skills}

Employee
- Employee ID
- Name
- Phone Number
- Date of Hire

Repair
- Repair ID
- Initiation Date
- Deposit Amount
- Total Amount
- Completion Date
- Description of Repair
- {Skill Usage (Time)}
- {Equipment Usage (Time)}
- {Parts Used}

MANAGER
- MEmployee ID

Parts Retrieved Log
- Parts Check out ID
- Date Retrieved
- Quantity of Part
- Part ID

Relationship Labels
- Has
- Belongs to
- Required by
- is retrieved and logged
- Links to
- is used for
- is included in
- Is checked out and recorded
- Has
- Associated with
- Requires
- Approves
- calls for
- Approved by
- require
- are needed for
- are used in
- are possessed by
- possesses
- checks out and records
- is worked by
- works
- estimates
- Approved by
- is spent working on
- links to
- Consumes
- Completed for
- is worked on during
- Approves
- Belongs to
- Supervised by
- Supervises
- Consumes
- Consumes

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Assumptions:
1) Customers can have multiple cars, but cars can only have a single customer to its file
2) When a car comes into EAR, they will always receive a repair estimate
3) A customer can come back to EAR multiple times with the same vehicle for different issues
4) Skills remain in database even if there is no technician that possesses that skill (ie. Only Technician with Painting skill quits)
5) A customer can have multiple repairs with EAR, but a repair may not be associated with a customer if the customer is in the shop's system but does not decide to go ahead with the repair
6) Repair Estimates will always use at least one part, one equipment and one skill.
7) A technician can work on multiple repairs during one shift
8) Managers are entered into the database when hired, so we are under the assumption that they may not be assigned to a repair estimate or repair
9) Each piece of Equipment a technician checks out is logged individually
10) Parts used are also logged individually