# Assignment #1

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The following is a form generated by a local mechanic when he performs work on an automobile.

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Work Order #** | | | 12345 | |  | | |
| **Date** | | | January 12, 2010 | |
| **Customer ID** | | | 0012 | |
| **Customer Name** | | | Bob Jones | |
| **Mechanic** | | | Handy Manny | |  | | |
|  | | | | | | | |
| **Quantity** | **Unit** | **Item Code** | | **Description** | | **Unit Price** | **Total** |
| 8 | hrs | LABOUR | | Replaced Widget | | 50.00 | 400.00 |
| 1 | ea | WIDGET | | 10” Purple Wingnut | | 35.00 | 35.00 |
| 5 | ft | DUCT | | Grey Duct Tape | | 75.00 | 375.00 |
|  |  |  | |  | |  |  |
|  | | | | | | **Subtotal** | 810.00 |
| **Tax** | 105.30 |
| **Balance Due** | 915.30 |

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1. List the categories or “entities” that are needed to store all the information from this form and, for each entity, list the fields that will hold the specific information.
   1. Customer
      * Customer ID
      * Customer Name
   2. Mechanic
      * Mechanic Name
   3. Work Order
      * Work Order #
      * Date of Work Order
      * Work Order Customer ID
      * Work Order Mechanic Name
      * Subtotal
      * Tax
      * Balance
   4. Item
      * Item Code
      * Description
      * Unit
      * Cost Per Unit
   5. Service
      * Service Work Order #
      * Item Code
      * Quantity
      * Total Price

1. For each field named above, briefly describe if it would or would not be a good candidate for a primary key and why.

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Entity: Customer

|  |  |  |
| --- | --- | --- |
| Field | Y/N? | Why? |
| Customer ID | Y | Because the customer ID would be uniquely assigned to an individual customer’s name |
| Customer Name | N | Because multiple customers could have the same name |
|  |  |  |
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Entity: Mechanic

|  |  |  |
| --- | --- | --- |
| Field | Y/N? | Why? |
| Mechanic Name | N | Because multiple mechanics could have the same name, thus, if we had a mechanic ID for example, it would have been possible to use that as a primary key. |
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Entity: Work Order

|  |  |  |
| --- | --- | --- |
| Field | Y/N? | Why? |
| Work Order # | Y | Because the work order # is specific and would be able to identify the record |
| Date of Work Order | N | Because there could be multiple work order #s in one date and this is just known as the data that is stored. |
| Work Order Customer ID | N | No, although this is a foreign key and was the primary key in the other entity, it would not uniquely identify the specific needs of this entity which is the work order. Customers can have multiple work orders under their Customer ID. |
| Work Order Mechanic Name | N | No, because this is a foreign key to relate this entity to the other entity (Mechanic) and not even a good candidate for primary key in its own entity, plus, it would not uniquely identify the specific needs of this entity because one mechanic can have multiple work orders under their name. |
| Subtotal | N | No, even if the amount of the subtotal varies with different customers, their could still be a chance for customers to have the same amount which, then, we would not be able to uniquely identify this entity with. |
| Tax | N | No, because the percentage of the tax would be the same for all customers (assuming that all the transactions are done within the same province with the same tax percentage). The actual amount might be different depending on the subtotal but it would still not be unique enough to identify this work order. |
| Balance | N | Like the tax and subtotal, the balance may differ with each customer, but that doesn’t mean that there’s no chance for two or more customers to have the exact same amount for the balance. |

Entity: Item

|  |  |  |
| --- | --- | --- |
| Field | Y/N? | Why? |
| Item Code | Y | Because this is uniquely assigned to a specific item to identify which item is being referred to in the entity. |
| Description | N | Because this would only be the data to describe the Item Code which is possible to be the same for two or more different item codes. |
| Unit | N | Because this is only the data that is stored in the entity to describe the unit of the Item Code which could be the same for multiple item codes. |
| Cost per Unit | N | Because multiple items could have the same cost per unit thus making it hard to uniquely identify it. |
|  |  |  |

Entity: Service

|  |  |  |
| --- | --- | --- |
| Field | Y/N? | Why? |
| Service Work Order # | Y | Because this would help uniquely identify which Work Order is being referred to |
| Service Item Code | N | This is a foreign key but would not be a could candidate for the primary key because there could be multiple work orders made for a specific service item code |
| Quantity | N | Because the same amount/quantity could be the same in multiple records. |
| Total Price | N | Because the same amount/quantity could be the same in multiple records. |
|  |  |  |

Entity:

|  |  |  |
| --- | --- | --- |
| Field | Y/N? | Why? |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

A company’s IT department needs to catalog the computer assets in order to better maintain their systems. They want to be able to enter information about standard hardware (e.g. a computer, printer or monitor) and who is using the hardwar e. They also want to track when a user requests a technician to service their hardware, what the request or complaint was about and what the technician during the service call.

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1. List what entities and what corresponding fields are required to maintain this information.   
   1. User
      * User ID
      * User Name
   2. Technician
      * Technician ID
      * Technician Name
   3. Hardware
      * Serial Number
      * Hardware Type
      * Hardware Description
      * Hardware User ID
   4. Complaint/Request
      * Complaint/Request Code
      * Complaint/Request Description
      * Complaint/Request User ID
      * Complaint/Request Tech ID
      * Complaint/Request Serial Number
      * Date of complaint/request
   5. Service
      * Service Code
      * Service Complaint/Request Code
      * Service Description

1. Describe the relationships between the different entities identified above by listing the entities and if they require a foreign key from another entity. If they do require a foreign key, include the name of the entity from where the foreign key is derived.  
     
   ex.   
   *One* ***Tree*** *has many* ***Leaves****, so* ***Leaf*** *would need a foreign key**from* ***Tree****.*

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* 1. One ***user*** has multiple ***hardware*,** so ***hardware*** would need a foreign key from ***user.***
  2. One ***technician*** has multiple ***Complaints/Requests,*** so ***Complaint/Request*** would need a foreign key from ***technician.***
  3. One ***Hardware*** has multiple ***Complaints/Requesst,*** so ***Complaint/Request*** would need a foreign key from ***Hardware.***
  4. One ***Complaint/Request*** hasmultiple ***Services,*** and one ***Service*** has multiple ***Complaints/Requests.***