# Assignment #1

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

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **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.  
     
   **Customer**

* Customer Name
* Customer ID

**Mechanic**

* Mechanic Name

**Work Order**

* Work Order #
* Date
* Customer ID
* Mechanic Name
* Subtotal
* Tax
* Balance Due

**Services**

* Work Order #
* Item Code
* Quantity
* Total Price

**Item**

* Description
* Item Code
* Unit
* Unit 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 Name | no | The customer name cannot be a PK because there could be other customers with the same name. |
| Customer ID | yes | Customer ID can be a PK because it is unique to the customer and cannot be the same as anyone else’s ID |
|  |  |  |

Entity: **Mechanic**

|  |  |  |
| --- | --- | --- |
| Field | Y/N? | Why? |
| Mechanic Name | no | The mechanic name would not be a good PK because a name doesn’t belong only to the individual. |
|  |  |  |

Entity: **Work Order**

|  |  |  |
| --- | --- | --- |
| Field | Y/N? | Why? |
| Work Order # | yes | This is a good primary key because it is a specific number for a single work order. |
| Date | no | The date would not be a good primary key because it could change. You could use the same work order # on a different day to refer to work that has been done on the vehicle. |
| Customer ID | no | Customer ID is not a good primary key because it will change with every work order |
| Mechanic | no | Mechanic would not be a good PK because the same mechanic could be working on multiple work orders so the mechanic name would not be unique to a single work order. |
| Tax | no | Tax could not be a primary key because the amount of tax will change depending on the work that is being done. |
| Subtotal | no | Subtotal could not be a primary key because it will change based on the work being done. |
| Balance Due | No | Balance due would not be a good primary key because it also would change based on the work being done. The total would not be the same every time. |

Entity: **Services**

|  |  |  |
| --- | --- | --- |
| Field | Y/N? | Why? |
| Work Order # | Yes | This would be a good primary key because the work order number would be unique to a certain work order. |
| Item Code | no | This would not be a good primary key because item code can be reused on different work orders. You may need the same items for multiple orders. |
| Quantity | no | Quantity would not be a good primary key because the quantity is subject to change and could change from order to order. |
| Total Price | no | The total price would not be a good primary key because it is subject to change and would be different |
|  |  |  |

Entity: **Item**

|  |  |  |
| --- | --- | --- |
| Field | Y/N? | Why? |
| Description | no | The description of the item would not be a good primary key because there is no guarantee it will be unique and it is subject to change |
| Item code | yes | The item code would be a good primary key because it would match a certain item and wouldn’t change. |
| Unit price | no | The unit price would not make a good primary key because it could change based on the amount of labour being done, how much of the item is needed, etc. |
| Unit | no | Unit would not make a good primary key because it will likely be reused. |
|  |  |  |

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 hardware. 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.   
     
   **USER**

* User Name
* User ID

**TECHNICIAN**

* Technician Name
* Technician ID

**HARDWARE**

* Serial Code
* Type/Name
* Description
* User ID

**REQUEST/COMPLAINT**

* Request/Complaint Code #
* Description
* User ID
* Technician ID
* Date
* Serial Code

**SERVICE**

* Service Code
* Request/Complaint Code #
* 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.

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**USER**- no foreign key

**TECHNICIAN**- no foreign key

**HARDWARE**- The FK (User ID) required to link Hardware to User.

**REQUEST/COMPLAINT**-FK (User ID) links Request/Complaint to User. FK (Technician ID) links the request/complaint to the Technician.

**SERVICE**- FK (Request/Complaint Code #) links Service to Request/Complaint.  
  
ex.   
*One* ***Tree*** *has many* ***Leaves****, so* ***Leaf*** *would need a foreign key**from* ***Tree****.*