Aiden Pratt
6016 Lab 1

Part 1 - English to Schema

1. Product [SKU(string), product name (string), inventory (integer) , price(real)]
2. Product [SKU(string), product name (string), price(real)]
    a. ProductAisle[SKU(string), display case(string), aisle(integer)]
3. Car[VIN(string), make(string), model(string), year(integer), color(string)]
    a. salesPerson[SSN(integer), name(string)]
    b. assignment[VIN(string), SSN(integer)]

Part 2 - SQL Table Declarations

```
CREATE TABLE Patrons (
        Name (string),
        CardNum(integer),
        PhoneNum(VarChar(15)),
        PRIMARY KEY (CardNum)

CREATE TABLE Inventory(
        ISBN(integer),
        Book(VarChar(255)),
        PRIMARY KEY(ISBN)

CREATE TABLE CheckedOut(
        CardNum(integer)
        ISBN(integer)
        PRIMARY KEY(CardNum, ISBN)
        FOREIGN KEY (CardNum) REFERENCES Patrons(CardNum)
        FOREIGN KEY(ISBN) REFERENCES Inventory(ISBN)
```

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Part 3 - Fill in Tables

Car				
VIN	MAKE	MODEL	YEAR	COLOR
V1	Toyota	Tacoma	2008	Red
V2	Toyota	Tacoma	1999	Green
V3	Tesla	Model 3	2018	White
V4	Subaru	WRX	2016	Blue
V5	Ford	F150	2004	Red

salesPerson	
SSN	NAME
1	Arnold
2	Hannah
3	Steve

assignment	
VIN	SSN
V1	1
V2	1
V5	2
V3	3

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Part 4 - Keys and Superkeys

Attribute Sets	Superkey?	Proper Subsets	Key?
{A1}	No	{}	No
{A2}	No	{}	No
{A3}	No	{}	No
{A1, A2}	Yes	{A1},{A2}	Yes
{A1, A3}	Yes	{A1},{A3}	Yes
{A2, A3}	Yes	{A2}, {A3}	Yes
{A1, A2, A3}	Yes	{A1},{A2}.{A3},{A1,A2},{A1,A3}{A2,A1},{A1,A3},{A3,A1},{A3,A2}	No

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Part 5 - Abstract Reasoning

- **If {x} is a superkey, then any set containing x is also a superkey.**
  - True
    - A superkey can uniquely identify a tuple within a table. so if there is a set that also contains x, it is automatically a superkey as well.
- **If {x} is a key, then any set containing x is also a key.**
  - False
    - if any of a key's subsets are not a superkey, then it is not a key. x is a minimal super key, so if more things are added, it is no longer minimal.
- **If {x} is a key, then {x} is also a superkey.**
  - True
    - Key is a minimal superkey. so by definition x in this case is also a super key.
- **If {x, y, z} is a superkey, then one of {x}, {y}, or {z} must also be a superkey.**
  - False
    - when x,y,z are combined it makes a super key but does not necessarily mean alone x,y,z are superkeys.
- **If an entire schema consists of the set {x, y, z}, and if none of the proper subsets of {x, y, z} are keys, then {x, y, z} must be a key.**
  - True
    - if x,y,z can be used to uniquely identify a tuple, then it is a key. if none of the proper subsets alone can be classified as a key, then all of xyz being together will result in being the key.