Samantha Pope
Lab 1: Relational Model and Keys

<u>PART ONE:</u>

first bullet point:

Product[__SKU(string)__, price(real), name(string, quantity(integer)]

second bullet point:

Product[__SKU(string)__, price(real), name(string), quantity(integer)]

GroceryStoreAisle[__AisleID(integer), name(string)]

ProductAisle[(__SKU(string)__, __AisleID(integer)]

third bullet point

CarList[__VIN(integer)__,make(string), model(string)]

Salesperson[__SSN(integer)__, name(string)]

CarsInChargeOf[__VIN(string)__,__SSN(integer)]

<u>PART TWO:</u>

```
CREATE TABLE Patrons {
        Name string,
        CardNum integer PRIMARY KEY
};
CREATE TABLE Phones {
        CardNum integer,
        PhoneNum string
        PRIMARY KEY(CardNum, PhoneNum),
        FOREIGN KEY (CardNum) REFERENCES Patrons(CardNum)
};
CREATE TABLE Titles {
        ISBN string PRIMARY KEY,
        Title string,
        Author string
};
CREATE TABLE Inventory {
        Serial integer PRIMARY KEY,
        ISBN string,
        FOREIGN KEY (ISBN) REFERENCES Titles(ISBN)
};
CREATE TABLE CheckedOut {
        CardNum integer,
        Serial integer
        PRIMARY KEY (CardNum, Serial),
        FOREIGN KEY(CardNum) REFERENCES Patrons(CardNum),
        FOREIGN KEY(Serial) REFERENCES Inventory(Serial),
};
```

PART THREE:

VIN	make	model	year	color
1FTFW1EF1	Toyota	Tacoma	2008	Red
1FTFW2EF2	Toyota	Tacoma	1999	Green
1FTFW3EF3	Tesla	Model 3	2018	White
1FTFW4EF4	Subaru	WRX	2016	Blue
1FTFW5EF5	Ford	F150	2004	Red

ssn	name
111-11-1111	Arnold
222-22-2222	Hannah
333-33-3333	Steve

VIN	ssn
1FTFW1EF1	111-11-1111
1FTFW2EF2	111-11-1111
1FTFW1EF1	222-22-2222
1FTFW5EF5	222-22-2222
1FTFW3EF3	333-33-3333

PART FOUR

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}, {A1, A3	No

PART FIVE:

If {x} is a superkey, then any set containing x is also a superkey.

> True. If x is a superkey, then any set containing it will be a superkey and identify the right tuple.

If {x} is a key, then any set containing x is also a key.

> False. if X is a key, then x is a minimal superkey. {x,y} would be able to identify tuples, but not be a key but it would be a superkey.

If {x} is a key, then {x} is also a superkey.

> True. because it is as minimal as it can be, so it is a superkey

If {x, y, z} is a superkey, then one of {x}, {y}, or {z} must also be a superkey.

> False. None of them could be keys and hold duplicates in their rows but all three together don't have the same rows

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. yes, because that would be the minimal key if none of the subsets of this makes it a superkey.