SQL Identity

During database design, you must define a primary key for each entity.

Sometimes, among the various candidate keys in a collection of attributes, there is no attribute that can serve as good primary key.

In such a case, it is necessary for the designer to create a ***surrogate*** key.

Surrogate keys are typically integers.

Surrogate keys are ideally created by the database software by using a column defined as an "Identity".

(NOTE: In the MySQL database, identities are called "auto_increment")

SQL Identity

For each column defined as "Identity", the database software creates and maintains a "sequence" object.

The sequence can be assigned an initial value, and with each subsequent insert, the database software increments the sequence.

The starting point and increment size for the identity can be modified by the ALTER command.

The identity object is available in PostgreSQL, but is not yet supported by bit.io.

NOTE: See Section 12 of the PostgreSQL Tutorial
https://www.postgresqltutorial.com/

SQL Identity

Let's create a table that uses an identity (sequence) as a unique identifier for each row that we insert.

CREATE statement

```
CREATE TABLE "alanparadise/nw"."shoppers"
(
          ShopperID     int          NOT NULL GENERATED ALWAYS AS IDENTITY,
          ShopperName   varchar(40)  NOT NULL ,
          Phone         varchar(20)  NOT NULL DEFAULT '0'
);
```

SQL Identity

Let's insert a new row into the shoppers table.

INSERT statement

```
INSERT INTO "alanparadise/nw"."shoppers" (shoppername, phone)
    VALUES  ('AlanParadise', '800-432-6543')
```

Note that no value was provided for the shopperid identity column

SQL Identity

After the insert:

```
SELECT * FROM shoppers;
```

shoppers

ShopperID	ShopperName	Phone
1	AlanParadise	800-432-6543

The database inserted the first row starting with the sequence of 1.

SQL Identity

Let's insert some more rows into the shoppers table.

```
INSERT INTO "alanparadise/nw"."shoppers" (shoppername, phone)
    VALUES  ('FredFlintstone', '800-123-4567');
INSERT INTO "alanparadise/nw"."shoppers" (shoppername, phone)
    VALUES  ('PeterParker', '800-987-6543');
INSERT INTO "alanparadise/nw"."shoppers" (shoppername, phone)
    VALUES  ('BartSimpson', '800-888-6969');
INSERT INTO "alanparadise/nw"."shoppers" (shoppername, phone)
    VALUES  ('ClarkKent', '800-999-2468');
```

SQL Identity

After the insert: `SELECT * FROM shoppers;`

shoppers

ShopperID	ShopperName	Phone
1	AlanParadise	800-432-6543
2	FredFlintstone	800-123-4567
3	PeterParker	800-987-6543
4	BartSimpson	800-888-6969
5	ClarkKent	800-999-2468

SQL Identity

The database incremented the sequence with each insert.

This identity column using the sequence guarantees a unique key value for each new row that is inserted.