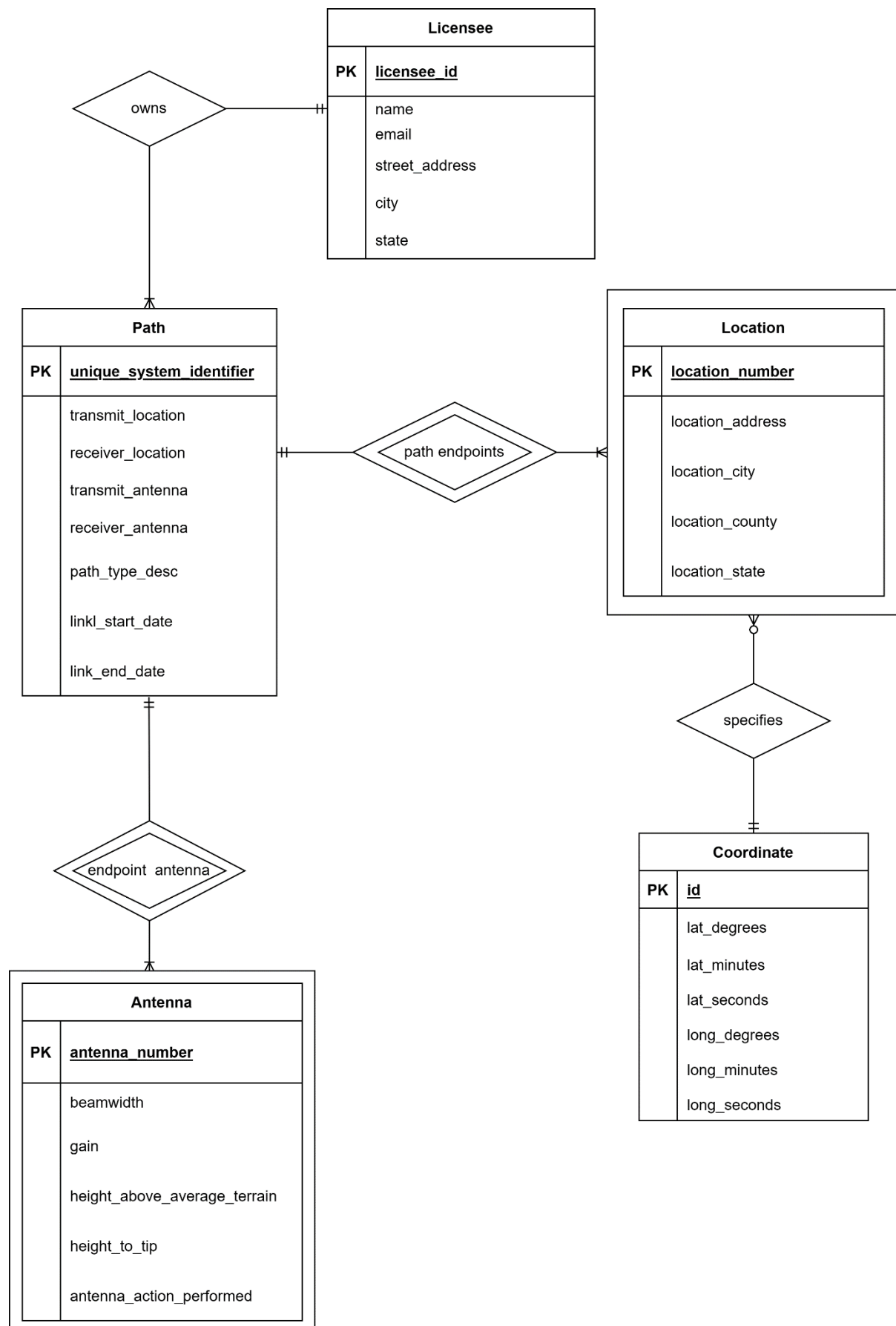


## ER Diagram:



## ER Diagram Description:

A path represents a radio communications path with references to both the transmit and receiver locations and antennas. There is also a path\_type\_desc attribute that tells the type of path. A path can be uniquely identified using its unique\_system\_identifier. This identifier is used by the FCC to uniquely identify each license. A path has at most two associated locations, and at most two associated antennas.

A licensee represents an entity that holds a license. The licensee is identified by their licensee\_id and has attributes name, email, street\_address, city, and state. A licensee can own multiple paths, and each path must have a single licensee associated with it.

The location table represents a location of transmission and/or a location of reception for a path. Each entry can be identified using the associated path and location number. It has attributes location\_address location\_city, location\_county, and location\_state.

The antenna represents the type of antenna and frequency for antennas used within a path. Each entry can be identified from its associated path and an antenna number. It has attributes antenna\_type\_code and frequency\_assigned.

The coordinate uses a unique id to identify a set of latitude and longitude coordinates. For both latitude and longitude, we have attributes for degrees, minutes, and seconds. A location must be associated with a coordinate, and a coordinate can be associated with 0 or many locations.

## Relational Schema:

**Licensee**(licensee\_id:INT [PK], name:VARCHAR(100), email:VARCHAR(100), street\_address:VARCHAR(255), city:VARCHAR(100), state:VARCHAR(20))

**Path**(unique\_system\_identifier:VARCHAR(10) [PK], transmit\_location:INT, receiver\_location:INT, transmit\_antenna:INT, receiver\_antenna:INT, path\_type\_desc:VARCHAR(255), link\_start\_date:datetime, link\_end\_date:datetime, licensee\_id:INT [foreign key to Licensee.licensee\_id])

**Location**(location\_number:INT [PK], unique\_system\_identifier:VARCHAR(10) [foreign key to Path.unique\_system\_identifier][PK], location\_address:VARCHAR(255), location\_city:VARCHAR(100), location\_county:VARCHAR(100), location\_state:VARCHAR(100), coordinate\_id:INT [foreign key to Coordinate.id])

**Antenna**(antenna\_number:INT [PK], unique\_system\_identifier:VARCHAR(10) [foreign key to Path.unique\_system\_identifier][PK], beamwidth:numeric(4,1), gain:numeric(4,1), height\_above\_avg\_terrain:numeric(5,1), height\_to\_tip:numeric(5,1), antenna\_action\_performed:char(1))

**Coordinate**(id:INT [PK], lat\_degrees:INT, lat\_minutes:INT, lat\_seconds:INT, long\_degrees:INT, long\_minutes:INT, long\_seconds:INT)