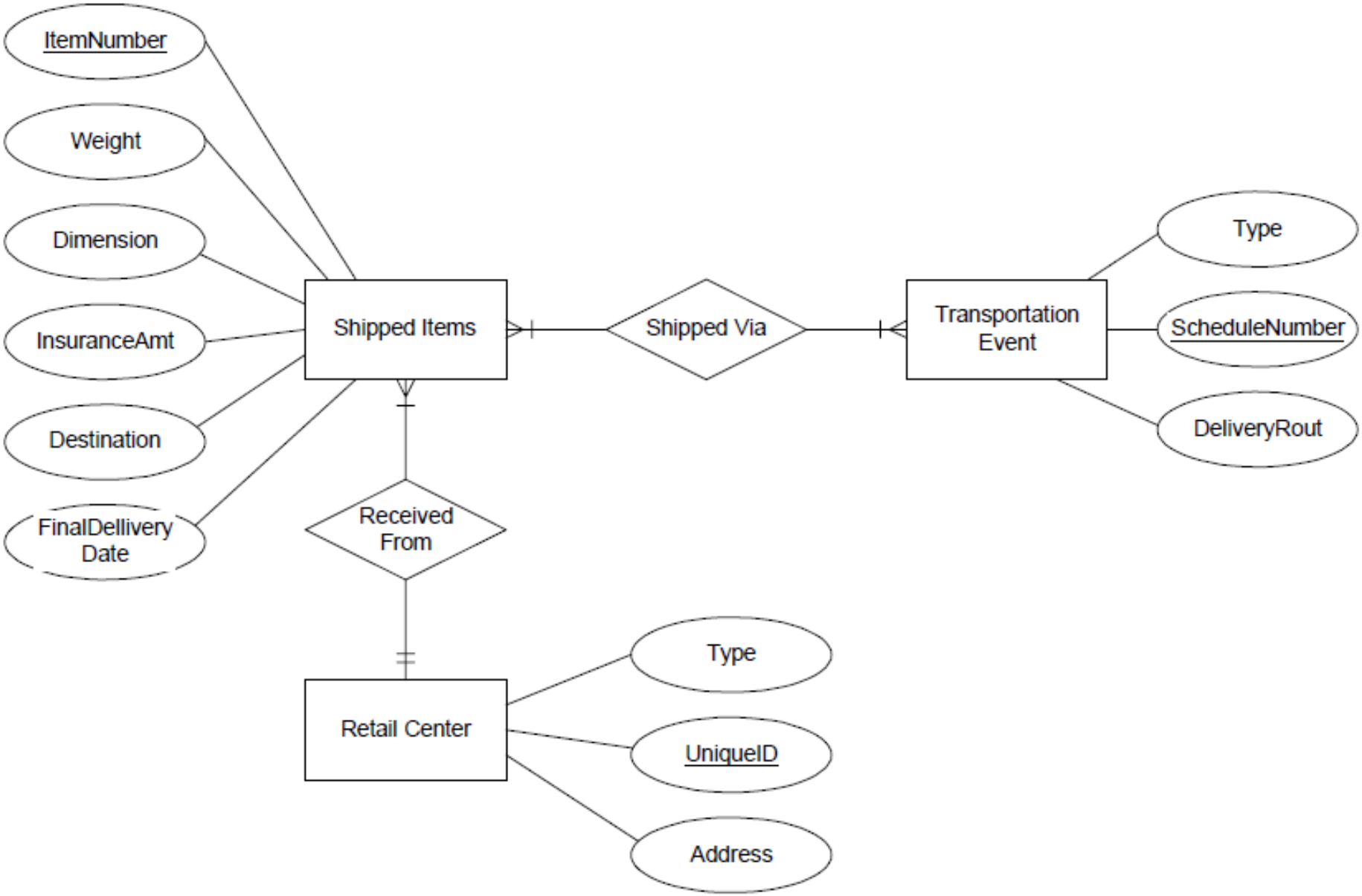
CREATING AN ENTITY-RELATIONSHP DIAGRAM

DPS prides itself on having up-to-date information on the processing and current location of each shipped item. To do this, DPS relies on a company-wide information system. Shipped items are the heart of the DPS product tracking information system. Shipped items can be characterized by item number (unique), weight, dimensions, insurance amount, destination, and final delivery date. Shipped items are received into the DPS system at a single retail center. Retail centers are characterized by their type, uniqueID, and address. Shipped items make their way to their destination via one or more standard UPS transportation events (i.e., flights, truck deliveries). These transportation events are characterized by a unique scheduleNumber, a type (e.g, flight, truck), and a deliveryRoute.
Please create an Entity Relationship diagram that captures this information about the DPS system. Be certain to indicate identifiers and cardinality constraints.

Solutions:


ItemNumber
Weight
Dimension
InsuranceAmt
Destination
FinalDellivery Date
Shipped Items
Shipped Via
Transportation Event
Type
ScheduleNumber
DeliveryRout
Received From
Retail Center
Type
UniqueID
Address

SQL Question

Given the relation schemas, write the following queries in SQL.

Student (snum: integer, sname: string, major: string, level: string, age: integer)

Student Table

snum	sname	major	level	age

Class (name: string, meets_at: string, room: string, fid: integer)

Class Table

name	meets_at	room	fid

Enrolled (snum: integer, cname: string)

Enrolled Table

snum	cname

Faculty (fid: integer, fname: string, deptid: integer)

Faculty

fid	fname	deptid

Q1: Find the department id of the faculty member named *I. Teach*.
Q2: Find the names of all junior students (level='JR'), and list in the order of age.
Q3: Find names and majors of students who have enrolled in at least one class.
Q4: Find the number of students who have enrolled in at least two class
Q5: Find distinct names of all Juniors (level = JR) enrolled in a class taught by I. Teach.

Key points

– Understand the semantics

• Entities: Student, Class, Faculty; Relationships: Enrolment, Teaching (where is the schema for it?)
• Meaning of attributes, keys, foreign keys, …

• Answer

Q1: Find the department id of the faculty member named *I. Teach*.

```
SELECT deptid
FROM Faculty
WHERE fname = 'I.Teach'
```

Q2: Find the names of all junior students (level='JR'), and list in the order of age.

```
SELECT S.sname
FROM Student S
WHERE S.level = 'JR'
ORDERED BY S.age
```

Q3: Find names and majors of students who have enrolled in at least one class.

```
SELECT S.sname, S.major
FROM Student S, Enrolled E
WHERE S.snum = E.snum
```

Q4: Find the number of students who have enrolled in at least two class

```
SELECT COUNT(DISTINCT S.sname)
FROM Student S, Enrolled E1, Enrolled E2
WHERE E1.snum = E2.snum AND
E1.cnum <> E2.cnum AND
S.snum = E1.snum
```

Q5: Find distinct names of all Juniors (level = JR) enrolled in a class taught by I. Teach.

```
SELECT DISTINCT S.sname as Student_Name
FROM Student S, Class C, Enrolled E, Faculty F
WHERE S.snum = E.snum AND E.cname = C.name AND C.fid = F.fid
AND F.fname = 'I.Teach' AND S.level = 'JR'
```