

Bryan Oliande, boliande@uci.edu, 13729240
Christopher Lam, lamcy1@uci.edu, 58939588
Thanh Do, thanhhd@uci.edu, 43671918

ER Model to Relational Model

Building(Street, City, zipcode, State, Name, BID)

Key: BID

LocationObject(Name, LOID, lower left X, lower left Y, upper right X, upper right Y)

Key: LOID

PartOf(BID, LOID, floor)

Key: LOID

IND:

PartOf[BID] \subseteq Building[BID]

PartOf[LOID] \subseteq LocationObject[LOID]

COMBINING RELATIONS (LocationObject,PartOf,Building)

LocationObject(Name, LOID, BID, lower left X, lower left Y, upper right X, upper right Y, floor)

Key: LOID

TookPlace(LOID, EID)

Key: EID

IND:

TookPlace[LOID] \subseteq LocationObject[LOID]

TookPlace[EID] \subseteq Event[EID]

Event(Confidence, EID, Activity)

Key: EID

COMBINING RELATIONS (Event, TookPlace, LocationObject)

Event(Confidence, EID, Activity, LOID)

Key: EID

Participated(EID, PID)

Key: EID, PID

IND:

Participated[EID] \subseteq Event[EID]

Participated[PID] \subseteq Person[PID]

Room(Name, LOID, lower left X, lower left Y, upper right X, upper right Y, capacity, number)

Key: LOID

Corridor(Name, LOID, lower left X, lower left Y, upper right X, upper right Y)

Key: LOID

OpenArea(Name, LOID, lower left X, lower left Y, upper right X, upper right Y)

Key: LOID

Office(LOID)

Key: LOID

IND:

$\text{Office}[\text{LOID}] \subseteq \text{LocationObject}[\text{LOID}]$

MeetingRoom(LOID)

Key: LOID

IND:

$\text{MeetingRoom}[\text{LOID}] \subseteq \text{LocationObject}[\text{LOID}]$

AssignedTo(PID, LOID)

Key: PID

IND:

$\text{AssignedTo}[\text{PID}] \subseteq \text{Person}[\text{PID}]$

$\text{AssignedTo}[\text{LOID}] \subseteq \text{LocationObject}[\text{LOID}]$

Person(PID, First Name, Last Name)

Key: PID

COMBINING RELATIONS (MeetingRoom, AssignedTo, Office)

Person(PID, First Name, Last Name, LOID)

Key: PID

OwnerOf(PID, SPID)

Key: SPID

IND:

$\text{OwnerOf}[\text{PID}] \subseteq \text{Person}[\text{PID}]$

$\text{OwnerOf}[\text{SPID}] \subseteq \text{SensorPlatform}[\text{SPID}]$

$\text{SensorPlatform}[\text{SPID}] \subseteq \text{OwnerOf}[\text{SPID}]$

SensorPlatform(SPID, Name)

Key: SPID

SensorHasSensorPlatform(SID, SPID)

Key: SID

IND:

$\text{SensorHasSensorPlatform}[\text{SID}] \subseteq \text{Sensor}[\text{SID}]$

$\text{SensorHasSensorPlatform}[\text{SPID}] \subseteq \text{SensorPlatform}[\text{SPID}]$

$\text{SensorPlatform}[\text{SPID}] \subseteq \text{SensorHasSensorPlatform}[\text{SPID}]$

Sensor(SID, Name)

Key: SID

MobilePlatform(SPID, Name)

Key: SPID

FixedPlatform(SPID, Name)

Key: SPID

PositionedAt(LOID, SPID)

Key: SPID

IND:

$\text{PositionedAt}[\text{LOID}] \subseteq \text{LocationObject}[\text{LOID}]$

$\text{PositionedAt}[\text{SPID}] \subseteq \text{FixedPlatform}[\text{SPID}]$

$\text{FixedPlatform}[\text{SPID}] \subseteq \text{PositionedAt}[\text{SPID}]$

LocationSensor(Real Time, SID)

Key: SID

LocationSensorHasMobilePlatform(SID, SPID)

Key: SPID (Could also be SID)

IND:

$\text{LocationSensorHasMobilePlatform}[\text{SID}] \subseteq \text{LocationSensor}[\text{SID}]$

$\text{LocationSensorHasMobilePlatform}[\text{SPID}] \subseteq \text{MobilePlatform}[\text{SPID}]$

$\text{MobilePlatform}[\text{SPID}] \subseteq \text{LocationSensorHasMobilePlatform}[\text{SPID}]$

ImageSensor(Resolution, Name, SID)

Key: SID

TemperatureSensor(Metric System, Name, SID)

Key: SID

GPSSensor(Power, Name, SID)

Key: SID

RawImage(Image, Timestamp, SID)

Key: SID

IND:

$\text{RawImage}[\text{SID}] \subseteq \text{ImageSensor}[\text{SID}]$

RawTemperature(Temperature, Timestamp, SID)

Key: SID

IND:

$\text{RawTemperature}[\text{SID}] \subseteq \text{TemperatureSensor}[\text{SID}]$

RawGPS(Latitude, Longitude, Timestamp, SID)

Key: SID

IND:

$\text{RawGPS}[\text{SID}] \subseteq \text{GPSSensor}[\text{SID}]$

Observation(OID, SID)

Key: OID, SID

IND:

Observation[SID] \subseteq RawImage[SID]

Observation[SID] \subseteq RawTemperature[SID]

Observation[SID] \subseteq RawGPS[SID]

DerivedFrom(OID, SID, EID)

Key: OID, SID, EID

IND:

DerivedFrom[OID, SID] \subseteq Observation[OID, SID]

DerivedFrom[EID] \subseteq Event[EID]

Event[EID] \subseteq DerivedFrom[EID]