1. Fire Event Report

**UNF:**

**FIRE\_EVENT** (fire\_event\_id, fire\_event\_name, fire\_event\_Sdate, fire\_event\_LiLost, fire\_event\_Tdamage, (pro\_id, building\_id, building\_class, dam\_Bdamage\_cost, Totally\_destr, insurance\_cov))

**1NF:**

**FIRE\_EVENT** (fire\_event\_id, fire\_event\_name, fire\_event\_Sdate, fire\_event\_LiLost, fire\_event\_Tdamage)

**BUILDING\_DAMAGE** (fire\_event\_id, pro\_id, building\_id, building\_class, dam\_Bdamage\_cost, Totally\_destr, insurance\_cov)

Partial dependencies:

(pro\_id, building\_id)🡪 building\_class, insurance\_cov, Totally\_destr

**2NF:**

**FIRE\_EVENT** (fire\_event\_id, fire\_event\_name, fire\_event\_Sdate, fire\_event\_LiLost, fire\_event\_Tdamage)

**BUILDING\_DAMAGE** (fire\_event\_id, pro\_id, building\_id, dam\_Bdamage\_cost)

**BUILDING** (pro\_id, building\_id, building\_class, insurance\_cov, Totally\_destr)

Transitive dependencies:

No transitive dependency

**3NF:**

**FIRE\_EVENT** (fire\_event\_id, fire\_event\_name, fire\_event\_Sdate, fire\_event\_LiLost, fire\_event\_Tdamage)

**BUILDING\_DAMAGE** (fire\_event\_id, pro\_id, building\_id, dam\_Bdamage\_cost)

**BUILDING** (pro\_id, building\_id, building\_class, insurance\_cov, Totally\_destr)

*Full dependencies:*

fire\_event\_id 🡪 fire\_event\_name, fire\_event\_date, fire\_event\_LiLost, fire\_event\_Tdamage

fire\_event\_id, pro\_id, building\_id 🡪 dam\_cost

pro\_id, building\_id 🡪 building\_class, insurance\_cov, Totally\_destr

**final 3NF after rename (**maintain relation name prefixes**):**

**FIRE\_EVENT** (fire\_event\_id, fire\_event\_name, fire\_event\_Sdate, fire\_event\_LiLost, fire\_event\_Tdamage)

**BUILDING\_DAMAGE** (fire\_event\_id, pro\_id, building\_id, dam\_Bdamage\_cost)

**BUILDING** (pro\_id, building\_id, building\_class, building\_insur\_cov, building\_Totally\_destr)

2. Building Damage Assessment Visits

**UNF:**

**ASSESSMENT\_REPORT** (pro\_id, pro\_addStreet, pro\_addTown, pro\_addPostcode, LGA\_code, LGA\_name, Building\_id, LGA\_Building\_value, Building\_class, fire\_event\_id, assessor\_id, assessor\_Gname, assessor\_fname, (arrive\_date, arrive\_time, depart\_date, depart\_time))

**1NF:**

**ASSESSMENT\_REPORT** (pro\_id, Building\_id, fire\_event\_id, pro\_addStreet, pro\_addTown, pro\_addPostcode, LGA\_code, LGA\_name, LGA\_Building\_value, Building\_class, assessor\_id, assessor\_Gname, assessor\_Fname)

**VISIT** (pro\_id, Building\_id, arrive\_date, arrive\_time, depart\_date, depart\_time, fire\_event\_id)

Candidate key:

(pro\_id, Building\_id, arrive\_date, arrive\_time)

(pro\_id, Building\_id, depart\_date, depart\_time)

Partial dependencies:

pro\_id 🡪 pro\_addStreet, pro\_addTown, pro\_addPostcode, LGA\_code, LGA\_name

pro\_id, Building\_id 🡪 Building\_class

**2NF:**

**ASSESSMENT\_REPORT** (pro\_id, Building\_id, fire\_event\_id, assessor\_id, assessor\_Gname, assessor\_Fname, LGA\_Building\_value)

**VISIT** (pro\_id, Building\_id, arrive\_date, arrive\_time, depart\_date, depart\_time, fire\_event\_id)

**PROPERTY** (pro\_id, pro\_addStreet, pro\_addTown, pro\_addPostcode, LGA\_code, LGA\_name)

**BUILDING** (pro\_id, Building\_id, Building\_class)

Transitive dependencies:

assessor\_id 🡪 assessor\_Gname, assessor\_Fname

LGA\_code 🡪 LGA\_name

**3NF:**

**ASSESSMENT\_REPORT** (pro\_id, Building\_id, fire\_event\_id, assessor\_id, LGA\_Building\_value)

**VISIT** (pro\_id, Building\_id, arrive\_date, arrive\_time, depart\_date, depart\_time, fire\_event\_id)

**PROPERTY** (pro\_id, pro\_addStreet, pro\_addTown, pro\_addPostcode, LGA\_code)

**BUILDING** (pro\_id, Building\_id, Building\_class)

**ASSESSOR** (assessor\_id, assessor\_Gname, assessor\_Fname)

**LGA** (LGA\_code, LGA\_name)

*Full dependencies:*

pro\_id, Building\_id, fire\_event\_id 🡪 Building\_class, assessor\_id, LGA\_Building\_value

pro\_id, Building\_id, arrive\_date, arrive\_time 🡪 fire\_event\_id, depart\_date, depart\_time

pro\_id 🡪 pro\_addStreet, pro\_addTown, pro\_addPostcode, LGA\_code

pro\_id, Building\_id 🡪 Building\_class

assessor\_id 🡪 assessor\_Gname, assessor\_Fname

LGA\_code 🡪 LGA\_name

**final 3NF after rename (**maintain relation name prefixes**):**

**ASSESSMENT\_REPORT** (pro\_id, Building\_id, fire\_event\_id, assessor\_id, asse\_Building\_value)

**VISIT** (pro\_id, Building\_id, Vi\_arrive\_date, Vi\_arrive\_time, Vi\_depart\_date, Vi\_depart\_time, fire\_event\_id)

**PROPERTY** (pro\_id, pro\_addStreet, pro\_addTown, pro\_addPostcode, LGA\_code)

**BUILDING** (pro\_id, Building\_id, Building\_class)

**ASSESSOR** (assessor\_id, assessor\_Gname, assessor\_Fname)

**LGA** (LGA\_code, LGA\_name)

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**Combine some relations in these two 3NF in order to consolidate logical model**

**\*ASSESSMENT\_REPORT in second form and BUILDING\_DAMAGE in first form are the same relation**

**\*BUILDING in first form and BUILDING in second form are the same relation**

**3NF** after combination:

**ASSESSMENT\_DAMAGE** (pro\_id, Building\_id, fire\_event\_id, asse\_Bdamage\_cost, asse\_Building\_value, assessor\_id)

**VISIT** (pro\_id, Building\_id, Vi\_arrive\_date, Vi\_arrive\_time, Vi\_depart\_date, Vi\_depart\_time, fire\_event\_id)

**PROPERTY** (pro\_id, pro\_addStreet, pro\_addTown, pro\_addPostcode, LGA\_code)

**BUILDING** (pro\_id, Building\_id, Building\_class, building\_insur\_cov, building\_Totally\_destr)

**ASSESSOR** (assessor\_id, assessor\_Gname, assessor\_Fname)

**LGA** (LGA\_code, LGA\_name)

**FIRE\_EVENT** (fire\_event\_id, fire\_event\_name, fire\_event\_Sdate, fire\_event\_LiLost, fire\_event\_Tdamage)

Full dependencies:

pro\_id, Building\_id, fire\_event\_id 🡪 asse\_Bdamage\_cost, asse\_Building\_value, assessor\_id

pro\_id, Building\_id, Vi\_arrive\_date, Vi\_arrive\_time 🡪 Vi\_depart\_date, Vi\_depart\_time, fire\_event\_id

pro\_id 🡪 pro\_addStreet, pro\_addTown, pro\_addPostcode, LGA\_code

pro\_id, Building\_id 🡪 Building\_class, building\_insur\_cov, building\_Totally\_destr

assessor\_id 🡪 assessor\_Gname, assessor\_Fname

LGA\_code 🡪 LGA\_name

fire\_event\_id🡪 fire\_event\_name, fire\_event\_Sdate, fire\_event\_LiLost, fire\_event\_Tdamage