**Local\_Market(lid,name,budget,phone\_number,address,city,zipcode)**

Step 1. Find merged minimal cover of FDs, which contains:

phone\_number --> name

zipcode --> city

address --> zipcode

Initially rel[1] contains the original table, with the FDs above

Round1: Checking whether table rel[1] is in BCNF

The FD [phone\_number --> name] violates BCNF as the LHS is not superkey. Table is split into the two below:

rel[2]= (phone\_number,name )

With FDs:

rel[3]= (lid,budget,phone\_number,city,address,zipcode )

With FDs:

Round2: Checking whether table rel[2] is in BCNF

\*\*\* Table rel[2] is in BCNF already, put it to relational model \*\*\*

Round3: Checking whether table rel[3] is in BCNF

The FD [address --> zipcode] violates BCNF as the LHS is not superkey. Table is split into the two below:

rel[4]= (address,zipcode,city )

With FDs:

rel[5]= (lid,budget,phone\_number,address )

With FDs:

Round4: Checking whether table rel[4] is in BCNF

The FD [zipcode --> city] violates BCNF as the LHS is not superkey. Table is split into the two below:

rel[6]= (zipcode,city )

With FDs:

rel[7]= (address,zipcode )

With FDs:

Round5: Checking whether table rel[5] is in BCNF

\*\*\* Table rel[5] is in BCNF already, put it to relational model \*\*\*

Round6: Checking whether table rel[6] is in BCNF

\*\*\* Table rel[6] is in BCNF already, put it to relational model \*\*\*

Round7: Checking whether table rel[7] is in BCNF

\*\*\* Table rel[7] is in BCNF already, put it to relational model \*\*\*

**Product(pid,name,hardness\_level,plant\_date,harvest\_date,min\_temp, altitude\_level)**

Step 1. Find merged minimal cover of FDs, which contains:

plant\_date --> harvest\_date

altitude\_level --> min\_temp

Initially rel[1] contains the original table, with the FDs above

Round1: Checking whether table rel[1] is in BCNF

The FD [plant\_date --> harvest\_date] violates BCNF as the LHS is not superkey. Table is split into the two below:

rel[2]= (plant\_date,harvest\_date )

With FDs:

rel[3]= (pid,name,plant\_date,hardness\_level,altitude\_level,min\_temp )

With FDs:

Round2: Checking whether table rel[2] is in BCNF

\*\*\* Table rel[2] is in BCNF already, put it to relational model \*\*\*

Round3: Checking whether table rel[3] is in BCNF

The FD [altitude\_level --> min\_temp] violates BCNF as the LHS is not superkey. Table is split into the two below:

rel[4]= (altitude\_level,min\_temp )

With FDs:

rel[5]= (pid,name,plant\_date,hardness\_level,altitude\_level )

With FDs:

Round4: Checking whether table rel[4] is in BCNF

\*\*\* Table rel[4] is in BCNF already, put it to relational model \*\*\*

Round5: Checking whether table rel[5] is in BCNF

\*\*\* Table rel[5] is in BCNF already, put it to relational model \*\*\*

**Farmer(fid,name,last\_name,address,city,zipcode)**

Step 1. Find merged minimal cover of FDs, which contains:

address --> zipcode

zipcode --> city

Initially rel[1] contains the original table, with the FDs above

Round1: Checking whether table rel[1] is in BCNF

The FD [address --> zipcode] violates BCNF as the LHS is not superkey. Table is split into the two below:

rel[2]= (address,zipcode,city )

With FDs:

rel[3]= (fid,name,last\_name,address )

With FDs:

Round2: Checking whether table rel[2] is in BCNF

The FD [zipcode --> city] violates BCNF as the LHS is not superkey. Table is split into the two below:

rel[4]= (zipcode,city )

With FDs:

rel[5]= (address,zipcode )

With FDs:

Round3: Checking whether table rel[3] is in BCNF

\*\*\* Table rel[3] is in BCNF already, put it to relational model \*\*\*

Round4: Checking whether table rel[4] is in BCNF

\*\*\* Table rel[4] is in BCNF already, put it to relational model \*\*\*

Round5: Checking whether table rel[5] is in BCNF

\*\*\* Table rel[5] is in BCNF already, put it to relational model \*\*\*