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Q-1 Student table

Aadhar-id \rightarrow CK/PK

Aadhar id \rightarrow Phone-no., DOB, Address, f-name, l-name, Email.

Prime = { Aadhar id }

Non prime = { DOB, phone no, Address., L-name, f-name, Email }

Not in first NF as multivalued attribute is present, hence no other normal forms is possible further.

Course / Branch table :-

Student unique id \rightarrow course id, date of enrolment^{together}
course name

Course-id \rightarrow course span, course name

CK = { student unique id, no of enrollments together }

prime = { student id, no of enrolments }

Non-prime = { course id, course span, course-name }

It is in 1st normal form as partial dependency exist as student unique-id (part of CK) is determining Non-prime attributes

Subjects

Subjectid \rightarrow PK

Subject id \rightarrow Total Credits, Lecture id

CK = subject-id

prime attributes = {subject-id}

Non prime attributes = {Total-cred, lecture-id}

It is in BCNF as in FD's all attributes on LHS is CK

Exam:

Student-unique-id \rightarrow PK

Student unique-id \rightarrow Grades, CGPA, SGPA

CK = {student unique-id}

Non-prime = {grades, CGPA, SGPA}

It is in BCNF as in FD's LHS is C.K.

Ques-2

Student Table

Aadhar-id \rightarrow PK

Aadhar-id \rightarrow DOB, email-id, fname, l.name, Address

Hence C.K = {Aadhar-id}

prime attributes = {Aadhar-id}

Nonprime Att. = {DOB, Email-id, fname, l.name, Address}

Hence it is in BCNF as in FD's LHS is C.K

Trp Table :-

Training id \rightarrow PK

Training-id \rightarrow Training Type, Training span.

Training Type \rightarrow Training-id.

Hence C.K = {Training type, Training id}

prime = {Training id, Training type}

It satisfies BCNF as LHS is C.K in FD's

Company Table

Company-id \rightarrow Type, Comp-name

Comp-name \rightarrow Type

CK = { Comp. description, Comp-id }

prime { ———— || ———— ———— || ———— }

non-prime { Comp-name, type }

It is in 2nd NF and it is not in 3rd NF as a Non prime attribute is finding another non prime

Single offer

offer id \rightarrow salary, location

position \rightarrow salary

CK = { offer-id, position } \rightarrow Together

prime attributes = { offer-id, position }

Non-prime = { Location, salary }

It is in 1st NF and not in 2nd NF as there is partial dependency (part of CK is determining N.P attributes)

Multi offer

offerid, company \rightarrow location, salary

CK = offer-id

It is in BCNF as in FD'n L.N.S. is CK

Academics details

Student unique-id \rightarrow CGPA, SGPA, Credits

CK = student unique-id

prime attributes = { student unique-id }

Non prime attributes = { CGPA, SGPA, Credits }

It is in BCNF as in FD'n L.N.S. is CK

Sol-3

Staff

Staff-id \rightarrow name

C.K = { staff-id }

prime attributes = { staff-id }

Non prime = { name }

It is in BCNF as LHS of FD's is C.K

Student table

Aadhar id \rightarrow PK

Aadhar id \rightarrow DOB, Email id, f name, l name, address

Hence ck = { Aadhar id }

prime = { Aadhar id }

Non-prime = { DOB, Email id, f name, L name, Address }

Hence it is in BCNF as in FD's LHS is C.K

Books

ISBN \rightarrow PK

ISBN \rightarrow Author, Category, Price, no. of pages

Author \rightarrow Category

CK = { ISBN }

Prime = { ISBN }

~~Non prime = {~~

It is in 2nd Normal form not in 3rd as transitive dependency { NP finding NP } is there

Non prime = { Author, Category, Price, no of pages }

Publisher

Publisher-id \rightarrow name

C.K = { Publisher-id }

prime = { publisher id }

Nonprime = { name }

It is in BCNF LHS of FD's is C.K