**Assignment\_4 Normalization**

1. NEU\_Program Table:

First Normal Form: Satisfies 1NF requirements

* Table has a primary key attribute identified as program\_name
* No multi value attributes present
* No repeating groups

Second Normal Form: Satisfies 2NF requirements

* All requirements for 1NF met
* No partial dependency on any column
* None of the fields have data calculated from other fields

Third Normal Form: Satisfies 3NF requirements

* 2NF requirements satisfied
* No transitive dependency

Graphical user interface, text, application, email

Description automatically generated

1. NEU\_Course\_Catalog Table:

First Normal Form: Satisfies 1NF requirements

* Table has a primary key attribute identified as course\_id
* No multi value attributes present
* No repeating groups

Second Normal Form: Satisfies 2NF requirements

* All requirements for 1NF met
* No partial dependency on any column
* None of the fields have data calculated from other fields

Third Normal Form: Satisfies 3NF requirements

* 2NF requirements satisfied
* No transitive dependency

Graphical user interface, text, application, email

Description automatically generated

1. NEU\_Event Table:

First Normal Form: Satisfies 1NF requirements

* Table has a primary key attribute identified as event\_id
* No multi value attributes present
* No repeating groups

Second Normal Form: Satisfies 2NF requirements

* All requirements for 1NF met
* No partial dependency on any column
* None of the fields have data calculated from other fields

Third Normal Form: Satisfies 3NF requirements

* 2NF requirements satisfied
* No transitive dependency

Graphical user interface, text, application, email

Description automatically generated

1. Course\_Core\_Requirement Table:

First Normal Form: Satisfies 1NF requirements

* Table has a primary key attribute identified as core\_course\_id
* No multi value attributes present
* No repeating groups

Second Normal Form: Satisfies 2NF requirements

* All requirements for 1NF met
* No partial dependency on any column
* None of the fields have data calculated from other fields

Third Normal Form: Satisfies 3NF requirements

* 2NF requirements satisfied
* No transitive dependency

Graphical user interface, text, application, email

Description automatically generated

1. Resource\_Material1 Table:

First Normal Form: Satisfies 1NF requirements

* The table has a primary key attribute identified as core\_course\_id
* No multi-value attributes present
* No repeating groups

Second Normal Form: Does not satisfy 2NF requirements

* All requirements for 1NF met
* No partial dependency on any column
* None of the fields have data calculated from other fields

Third Normal Form: Does not satisfy the 3rd normal form

* 2NF requirements satisfied.
* There is a transitive dependency on the course\_id column in addition to the PK software\_name. Different courses may need the same software downloads and the curriculum of different courses may be in alignment for some part leading to similar resource material. To eradicate this we created NEU\_Course\_Resource table where we have software mapped to specific course IDs.

NEU\_Resource\_Materials Table:

Graphical user interface, text, application, email

Description automatically generated

Neu\_Course\_Resource Table:

Graphical user interface, text, email

Description automatically generated

1. Jobs\_Info table:

First Normal Form: Satisfies 1NF requirements

* Table has a primary key attribute identified as job\_no
* No multi value attributes present
* No repeating groups

Second Normal Form: Satisfies 2NF requirements

* All requirements for 1NF met
* No partial dependency on any column
* None of the fields have data calculated from other fields

Third Normal Form: Does not satisfy the 3rd normal form

* 2NF requirements satisfied
* There is transitive dependency on job\_id. There is a possibility that a program can have same job\_id which will generate two different job numbers for same job\_i. Hence, we are creating a bridge table **program\_jobs** to remove the transitive dependency.

Program\_ jobs Table:

Graphical user interface, text

Description automatically generated

Job\_Info table:

Graphical user interface, text, application, email

Description automatically generated

1. Neu\_Course\_Faculty table:

First Normal Form: Satisfies 1NF requirements

* The table has a primary key attribute identified as job\_no
* No multi-value attributes present
* No repeating groups

Second Normal Form: Satisfies 2NF requirements

* All requirements for 1NF met
* No partial dependency on any column
* None of the fields have data calculated from other fields

Third Normal Form: Does not satisfy the 3rd normal form

* 2NF requirements satisfied
* There is a transitive dependency on faculty\_name. Different courses can have the same faculty. Therefore the faculty\_name column is transitively dependent on the course\_id column. To resolve this we created two tables NEU\_Facultys and NEU\_Course\_Faculty.

NEU\_facultys:

Graphical user interface, application

Description automatically generated

NEU\_Course\_faculty Table:

Graphical user interface, text, application, email

Description automatically generated

1. NEU\_Specialization Table:

First Normal Form: Satisfies 1NF requirements

* The table has a primary key attribute identified as job\_no
* No multi-value attributes present
* No repeating groups

Second Normal Form: Satisfies 2NF requirements

* All requirements for 1NF met
* No partial dependency on any column
* None of the fields have data calculated from other fields

Third Normal Form: Does not satisfy the 3rd normal form

* 2NF requirements satisfied
* There is a transitive dependency on course\_id column. Multiple specializations can have same courses under them due to which spec\_course\_id which is the primary key will not be unique for different specializations. To resolve this we created two tables NEU\_course\_specialization and NEU\_Specialization.

NEU\_course\_Specialization table:

Graphical user interface

Description automatically generated with medium confidence

Neu\_Specialization Table:

Graphical user interface, text, email

Description automatically generated