Data and Applications: Project Phase-1

Team No: 30
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Mapping ER to Relational Diagram

Explanations along with the Slight Changes made to accommodate Relational:
Colleges:

- The composite attribute "Location" (City, State) are split into separate columns for City and State.
- The multivalued attribute "Contact details" is made into a separate relation.

Programs:

- The multivalued attribute "Specialisations" is made into a separate relation.
- The multivalued attribute "Career Opportunities" is made into a separate relation.

Entrance Exams:

- The multivalued attribute "Exam preparation resources" is made into a separate relation.

News/Updates:

- The multivalued attribute "URLs of related articles" is made into a separate relation.
- Removed the multivalued attribute "College IDs" to removed redundancy as it is already represented in the CollegesOffersPrograms relation
- The multivalued attribute "Exams Related" is made into a separate relation.

News/Updates:

- The multivalued attribute "Criteria Evaluated" is made into a separate relation.
- Removed the multivalued attribute "Top College IDs" to removed redundancy as it is already represented in the CollegesListedinRanking relation

Disciplines/Branches/Specialisations:

- The multivalued attribute "Future Scope/ Career Opportunities" is made into a separate relation.

Alumni:

- The composite attribute "Name" (FirstName, LastName) are split into separate columns for FirstName and LastName.
- The composite attribute "Current Company Position" (Company, Position) are split into separate columns for Company and Position.

Startups:

- The multivalued attribute "Founder(s)" is made into a separate relation.

Relationships

For each relationship type R, we create a new relation S to represent R.
Except the relationship **Startup** *founded in* **College** which is an N:1 relationship and can be represented in the Startup Table using College ID as Foregin Key

1st Normal Form:

Definition:

“It states that the domain of an attribute must include only atomic (simple, indivisible) values and that the value of any attribute in a tuple must be a single value from the domain of that attribute, i.e., a relation should have no multivalued attributes or nested relations.”

It is now considered to be a part of the formal definition of a relation in the basic relational model. So our relational model only has single valued attributes and thus, no changes were made. New relations were made for multivalued attributes and composite attributes were decomposed into single valued attributes.

2nd Normal Form:

Definition:

“A relation schema R is in 2NF if every nonprime attribute A in R is fully functionally dependent on the primary key of R”

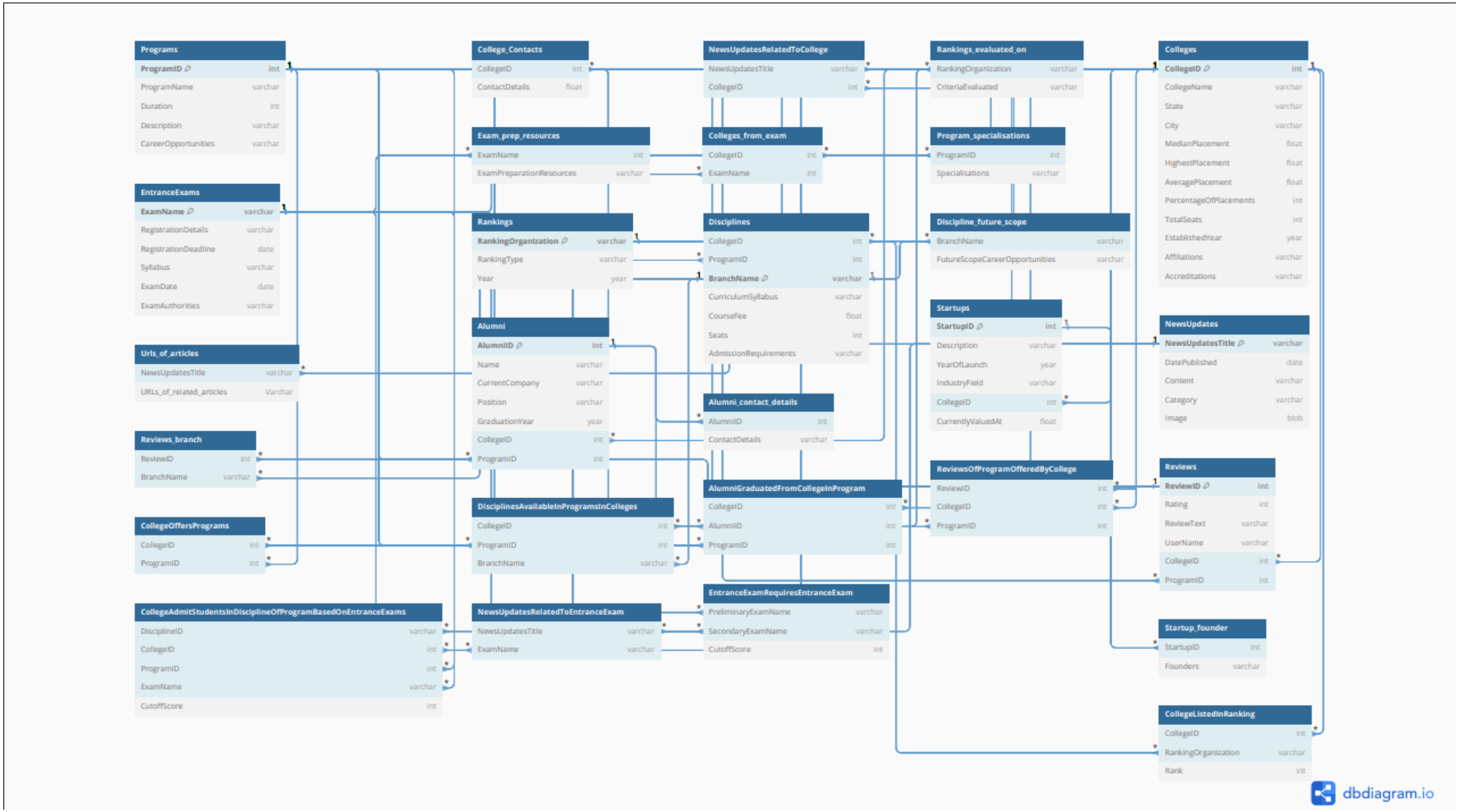
This is already satisfied by our relational model. So, no modification was required.

3rd Normal Form:

Definition:

“A relation schema R is in 3NF if it satisfies 2NF and no nonprime attribute of R is transitively dependent on the primary key.”

As our relational model does not have any transitive dependencies, no changes were required.



The relational schema of the miniworld

The 1 NF of the schema is the same as the relational schema
Link to the diagram : https://dbdiagram.io/d/65561ad43be1495787215509