**PK and NF justification**

***Instructions***

The next table should state the normal form, primary key, and justifications for primary key choices for all tables of your final relational model (after normalization and resolving m:n relationships). The justification for primary key choices should include considered alternatives (if any, e.g., composite natural key versus artificial key).

If you decide to either decompose tables or merge tables due to normalization or other design decisions, you should provide a justification, too.

|  |  |  |  |
| --- | --- | --- | --- |
| Table name | NF | PK | Justification |
| **Strong Entities** |  |  |  |
| Student | BCNF | student\_ID (artificial key) | * The only natural keys that may be feasible are ‘student username’ and ‘student access code’, however it is not clear whether username is unique (or if it can change), while access code is unique but can still be changed, which is not desirable. Neither adds any additional meaning |
| ParentInd | BCNF | parentInd \_ID (artificial Key) | * No natural key exists. * The attribute ‘parent email’ may not be unique (parents share email) and could also change (undesirable). * Any combination of ‘parent first name’ + ‘parent last name’ + ‘parent email’ is not guaranteed to be unique. |
| Class\_Listing | BCNF | class\_listing \_ID (artificial key) | * No natural key exists that is suitable. * ‘class story code’ is unique but can change (undesirable). * Any combination of ‘class name’ + ‘class grade’ + ‘class points’ is not guaranteed to be unique. |
| Teacher | BCNF | teacher\_ID (artificial Key) | * No natural key exists, * ‘teacher last name’ may not be unique. |
| **Weak Entities (Existence-Dependent)** | | | |
| Story | BCNF | story\_ID (artificial Key) | * No suitable natural key exists. * The only possible natural keys are ‘story create time’ and ‘story publish time’, however it is not ideal to use time data types as PKs. |
| Skill | BCNF | Skill\_ID (artificial Key) | * No natural key exists that is suitable. * ‘skill name’ may not be unique. * Any combination of ‘skill name’ + ‘skill negpos’ + ‘skill weight’ is not guaranteed to be unique. * A skill is associated with only one class, but what if two different classes want to use the exact same skill? Only an artificial key can be used in this scenario, and duplicated values for skills may be unavoidable, although they should be negligible. |
| Student\_Feedback | BCNF | student\_feedback\_ID (artificial key) | * No suitable natural key exists. * The only possible natural key is ‘feedback datetime’, however it is not ideal to use time data types as PKs. |
| Comment\_Post | BCNF | comment\_post\_ID (artificial key) | * No suitable natural key exists. * The only possible natural key is ‘comment datetime’, however it is not ideal to use time data types as PKs. |
| **Weak Entities (ID-Dependent)** | | | |
| Student\_Enrollment | BCNF | student\_ID, class\_listing \_ID (composite) | * No suitable natural key exists. |
| Class\_Teacher (bridge table) | BCNF | class\_listing \_ID, teacher\_ID (composite) | * bridging m:n of Classes taught by Teachers |
| Story\_Like (bridge table) | BCNF | story\_ID, parentInd \_ID (composite) | * bridging m:n of Stories liked by Parents |
| Student\_Parent (bridge table) | BCNF | student\_ID, parentInd \_ID (composite) | * bridging m:n of Students belonging to Parents |
| Student\_Story (subtype) | BCNF | story\_ID (artificial key) | * Inherits PK as subtype of supertype Story |
| Class\_Story (subtype) | BCNF | story\_ID (artificial key) | * Inherits PK as subtype of supertype Story |