

## 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
<b>Strong Entities</b>			
Student	BCNF	student_ID (artificial key)	<ul style="list-style-type: none"><li>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</li></ul>
ParentInd	BCNF	parentInd_ID (artificial Key)	<ul style="list-style-type: none"><li>No natural key exists.</li><li>The attribute 'parent email' may not be unique (parents share email) and could also change (undesirable).</li><li>Any combination of 'parent first name' + 'parent last name' + 'parent email' is not guaranteed to be unique.</li></ul>
Class_Listing	BCNF	class_listing_ID (artificial key)	<ul style="list-style-type: none"><li>No natural key exists that is suitable.</li><li>'class story code' is unique but can change (undesirable).</li><li>Any combination of 'class name' + 'class grade' + 'class points' is not guaranteed to be unique.</li></ul>
Teacher	BCNF	teacher_ID (artificial Key)	<ul style="list-style-type: none"><li>No natural key exists,</li><li>'teacher last name' may not be unique.</li></ul>
<b>Weak Entities (Existence-Dependent)</b>			
Story	BCNF	story_ID (artificial Key)	<ul style="list-style-type: none"><li>No suitable natural key exists.</li><li>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.</li></ul>
Skill	BCNF	Skill_ID (artificial Key)	<ul style="list-style-type: none"><li>No natural key exists that is suitable.</li><li>'skill name' may not be unique.</li></ul>

			<ul style="list-style-type: none"> <li>Any combination of 'skill name' + 'skill negpos' + 'skill weight' is not guaranteed to be unique.</li> <li>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.</li> </ul>
Student_Feedback	BCNF	student_feedback_ID (artificial key)	<ul style="list-style-type: none"> <li>No suitable natural key exists.</li> <li>The only possible natural key is 'feedback datetime', however it is not ideal to use time data types as PKs.</li> </ul>
Comment_Post	BCNF	comment_post_ID (artificial key)	<ul style="list-style-type: none"> <li>No suitable natural key exists.</li> <li>The only possible natural key is 'comment datetime', however it is not ideal to use time data types as PKs.</li> </ul>
<b>Weak Entities (ID-Dependent)</b>			
Student_Enrollment	BCNF	student_ID, class_listing_ID (composite)	<ul style="list-style-type: none"> <li>No suitable natural key exists.</li> </ul>
Class_Teacher (bridge table)	BCNF	class_listing_ID, teacher_ID (composite)	<ul style="list-style-type: none"> <li>bridging m:n of Classes taught by Teachers</li> </ul>
Story_Like (bridge table)	BCNF	story_ID, parentInd_ID (composite)	<ul style="list-style-type: none"> <li>bridging m:n of Stories liked by Parents</li> </ul>
Student_Parent (bridge table)	BCNF	student_ID, parentInd_ID (composite)	<ul style="list-style-type: none"> <li>bridging m:n of Students belonging to Parents</li> </ul>
Student_Story (subtype)	BCNF	story_ID (artificial key)	<ul style="list-style-type: none"> <li>Inherits PK as subtype of supertype Story</li> </ul>
Class_Story (subtype)	BCNF	story_ID (artificial key)	<ul style="list-style-type: none"> <li>Inherits PK as subtype of supertype Story</li> </ul>