





# Functional Dependencies on Instagram

## Minimal FD Set :

$\{\text{CommentUsername}, \text{OnPostID}, \text{CommentTimestamp}\} \rightarrow \text{Content}$

$\text{PostID} \rightarrow \text{Type}$

$\text{PostID} \rightarrow \text{Length}$

$\text{PostID} \rightarrow \text{Date}$

$\text{PostID} \rightarrow \text{Location}$

$\text{PostID} \rightarrow \text{Caption}$

$\text{PostID} \rightarrow \text{Archived}$

$\text{PostID} \rightarrow \text{Username}$

$\{\text{Username}, \text{AgainstUsername}\} \rightarrow \text{ReportID}$

$\{\text{Username}, \text{AgainstUsername}\} \rightarrow \text{Reason}$

$\text{Username} \rightarrow \text{Name}$

$\text{Username} \rightarrow \text{Bio}$

$\text{Username} \rightarrow \text{Privacystatus}$

$\text{Username} \rightarrow \text{ProfilePhoto}$

$\text{Username} \rightarrow \text{Verified}$

$\{\text{Timestamp}, \text{SenderUsername}, \text{ReceiverUserName}\} \rightarrow \text{Content}$

$\{\text{Timestamp}, \text{SenderUsername}, \text{ReceiverUserName}\} \rightarrow \text{Type}$

$\{\text{Timestamp}, \text{SenderUsername}, \text{ReceiverUserName}\} \rightarrow \text{LikedByReciever}$

$\{\text{Timestamp}, \text{SenderUsername}, \text{ReceiverUserName}\} \rightarrow \text{LikedBySender}$

$\text{StoryID} \rightarrow \text{Username}$

$\text{StoryID} \rightarrow \text{TimeStamp}$

$\text{StoryID} \rightarrow \text{Highlighted}$

$\text{StoryID} \rightarrow \text{Type}$

$\text{StoryID} \rightarrow \text{Length}$

$\text{archiveID} \rightarrow \text{Date}$

$\text{archiveID} \rightarrow \text{PostID}$

$\text{SID} \rightarrow \text{WeekOld}$

$\{\text{Username}, \text{StoryID}\} \rightarrow \text{Content}$

$\{\text{Username}, \text{StoryID}\} \rightarrow \text{Type}$

$\{\text{OnPostID}, \text{CommentUsername}, \text{CommentTimestamp}, \text{ReplyTimestamp}, \text{ReplyByUsername}\} \rightarrow \text{Content}$

$\{\text{OnPostID}, \text{CommentUsername}, \text{CommentTimestamp}, \text{ReplyTimestamp}, \text{ReplyByUsername}\} \rightarrow \text{POnPostID}$

$\{\text{OnPostID}, \text{CommentUsername}, \text{CommentTimestamp}, \text{ReplyTimestamp}, \text{ReplyByUsername}\}$   
 $\rightarrow \text{PCommentUsermene}$   
 $\{\text{OnPostID}, \text{CommentUsername}, \text{CommentTimestamp}, \text{ReplyTimestamp}, \text{ReplyByUsername}\}$   
 $\rightarrow \text{PCommentTimestamp}$   
 $\{\text{OnPostID}, \text{CommentUsername}, \text{CommentTimestamp}, \text{ReplyTimestamp}, \text{ReplyByUsername}\}$   
 $\rightarrow \text{PReplyByName}$   
 $\{\text{OnPostID}, \text{CommentUsername}, \text{CommentTimestamp}, \text{ReplyTimestamp}, \text{ReplyByUsername}\}$   
 $\rightarrow \text{PReplyTimestamp}$

Table Name	Proof for BCNF Normal Form
Comment	$\{\text{CommentUsername}, \text{OnPostID}, \text{CommentTimestamp}\} \rightarrow \text{Content}$  Since for every $A \rightarrow B$ , A is the super key, the relation is BCNF.
Post	$\text{PostID} \rightarrow \text{Type}$ $\text{PostID} \rightarrow \text{Length}$ $\text{PostID} \rightarrow \text{Date}$ $\text{PostID} \rightarrow \text{Location}$ $\text{PostID} \rightarrow \text{Caption}$ $\text{PostID} \rightarrow \text{Archived}$ $\text{PostID} \rightarrow \text{Username}$  Since for every $A \rightarrow B$ , A is the super key, the relation is BCNF.
Report	$\{\text{Username}, \text{AgainstUsername}\} \rightarrow \text{ReportID}$ $\{\text{Username}, \text{AgainstUsername}\} \rightarrow \text{Reason}$  Since for every $A \rightarrow B$ , A is the super key, the relation is BCNF.
Users	$\text{Username} \rightarrow \text{Name}$ $\text{Username} \rightarrow \text{Bio}$ $\text{Username} \rightarrow \text{Privacystatus}$ $\text{Username} \rightarrow \text{ProfilePhoto}$ $\text{Username} \rightarrow \text{Verified}$

	<p>Since for every <math>A \rightarrow B</math>, A is the super key, the relation is BCNF.</p>
Messages	<p> <math>\{\text{Timestamp, SenderUsername, ReceiverUserName}\} \rightarrow \text{Content}</math>  <math>\{\text{Timestamp, SenderUsername, ReceiverUserName}\} \rightarrow \text{Type}</math>  <math>\{\text{Timestamp, SenderUsername, ReceiverUserName}\} \rightarrow \text{LikedByReceiver}</math>  <math>\{\text{Timestamp, SenderUsername, ReceiverUserName}\} \rightarrow \text{LikedBySender}</math> </p> <p>Since for every <math>A \rightarrow B</math>, A is the super key, the relation is BCNF.</p>
Story	<p> <math>\text{StoryID} \rightarrow \text{Username}</math>  <math>\text{StoryID} \rightarrow \text{TimeStamp}</math>  <math>\text{StoryID} \rightarrow \text{Highlighted}</math>  <math>\text{StoryID} \rightarrow \text{Type}</math>  <math>\text{StoryID} \rightarrow \text{Length}</math> </p> <p>Since for every <math>A \rightarrow B</math>, A is the super key, the relation is BCNF.</p>
Archived	<p> <math>\text{archiveID} \rightarrow \text{Date}</math>  <math>\text{archiveID} \rightarrow \text{PostID}</math> </p> <p>Since for every <math>A \rightarrow B</math>, A is the super key, the relation is BCNF.</p>
Highlights	<p><math>\text{SID} \rightarrow \text{WeekOld}</math></p> <p>Since for every <math>A \rightarrow B</math>, A is the super key, the relation is BCNF.</p>
StoryReply	<p> <math>\{\text{Username, StoryID}\} \rightarrow \text{Content}</math>  <math>\{\text{Username, StoryID}\} \rightarrow \text{Type}</math> </p> <p>Since for every <math>A \rightarrow B</math>, A is the super key, the relation is BCNF.</p>

Reply	<p> <math>\{OnPostID, CommentUsername, CommentTimestamp, ReplyTimestamp, ReplyByUsername\} \rightarrow Content</math>  <math>\{OnPostID, CommentUsername, CommentTimestamp, ReplyTimestamp, ReplyByUsername\} \rightarrow POnPostID</math>  <math>\{OnPostID, CommentUsername, CommentTimestamp, ReplyTimestamp, ReplyByUsername\} \rightarrow PCommentUserame</math>  <math>\{OnPostID, CommentUsername, CommentTimestamp, ReplyTimestamp, ReplyByUsername\} \rightarrow PCommentTimestamp</math>  <math>\{OnPostID, CommentUsername, CommentTimestamp, ReplyTimestamp, ReplyByUsername\} \rightarrow PReplyByName</math>  <math>\{OnPostID, CommentUsername, CommentTimestamp, ReplyTimestamp, ReplyByUsername\} \rightarrow PReplyTimestamp</math> </p> <p>Since for every <math>A \rightarrow B</math>, A is the super key, the relation is BCNF.</p>
PostTagged	This relation is BCNF.
StoryTagged	This relation is BCNF.
Likes	This relation is BCNF.
Follows	This relation is BCNF.
Sends	This relation is BCNF.
StoryTagged	This relation is BCNF.
Block	This relation is BCNF.
Follows	This relation is BCNF.
PostLike	This relation is BCNF.
Saved	This relation is BCNF.
PhoneNumber	This relation is BCNF.

Email	This relation is BCNF.
TagFollow	This relation is BCNF.
Tag	This relation is BCNF.