



1

Find the Normal Forms: Exercises

- ❑ $R(ABCDE)$, FD: $\{CE \rightarrow D, D \rightarrow B, C \rightarrow A\}$
 - ✓ CE is candidate key
 - ✓ It is in 1NF. Because $C \rightarrow A$ is a partial dependency.
- ❑ $R(ABCDEF)$, FD: $\{AB \rightarrow C, DC \rightarrow AE, E \rightarrow F\}$
 - ✓ ABD, BCD are candidate keys
 - ✓ It is in 1NF. $DC \rightarrow AE$ $\{DC \rightarrow A, DC \rightarrow E\}$, Because $DC \rightarrow E$ is a partial dependency
- ❑ $R(ABCDE)$, FD: $\{AB \rightarrow CD, D \rightarrow A, BC \rightarrow DE\}$
 - ✓ AB, BD, BC are candidate keys
 - ✓ It is in 3NF. Because all LHS are not super key, as well as no partial or transitive FD's.

Introduction: 1-2

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Find the Normal Forms: Exercises

- ❑ $R(ABCDE)$, FD: $\{BC \rightarrow ADE, D \rightarrow B\}$
 - ✓ BC, CD are candidate keys
 - ✓ It is in 3NF. Because all LHS are not super key, as well as no partial or transitive FD's.
- ❑ $R(ABCDEFGHI)$, FD: $\{AB \rightarrow C, BD \rightarrow EF, AD \rightarrow GH, A \rightarrow I\}$
 - ✓ ABD is candidate key
 - ✓ It is in 1NF. Because $AB \rightarrow C$ is a partial dependency.
- ❑ $R(VWXYZ)$, FD: $\{X \rightarrow YV, Y \rightarrow Z, Z \rightarrow Y, VW \rightarrow X\}$
 - ✓ VW, XW are candidate keys
 - ✓ It is in 1NF. Because in $X \rightarrow YV$, $\{X \rightarrow Y\}$ is a partial dependency.

Introduction: 1-3

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Find the Normal Forms: Exercises

- ❑ $R(ABCDEF)$, FD: $\{ABC \rightarrow D, ABD \rightarrow E, CD \rightarrow F, CDF \rightarrow B, BF \rightarrow D\}$
 - ✓ ABC, ACD are candidate keys
 - ✓ It is in 1NF. Because $CD \rightarrow F$ is a partial dependency.
- ❑ $R(ABC)$, FD: $\{A \rightarrow B, B \rightarrow C, C \rightarrow A\}$
 - ✓ A, B, C are candidate keys
 - ✓ It is in BCNF. Because all FD's LHS is a super key.

Introduction: 1-4

4

Find the Normal Forms: Exercises

- ❑ $R(ABCDEF)$, FD: $\{A \rightarrow BCDEF, BC \rightarrow ADEF, DEF \rightarrow ABC\}$
- ❑ $R(ABC)$, FD: $\{AB \rightarrow C, C \rightarrow A\}$
- ❑ $R(ABCDE)$, FD: $\{A \rightarrow B, BC \rightarrow E, DE \rightarrow A\}$
- ❑ $R(ABCDE)$, FD: $\{AB \rightarrow CD, D \rightarrow A, BC \rightarrow DE\}$
- ❑ $R(WXYZ)$, FD: $\{Z \rightarrow W, Y \rightarrow XZ, XW \rightarrow Y\}$
- ❑ $R(ABCDE)$, FD: $\{A \rightarrow B, B \rightarrow E, C \rightarrow D\}$
- ❑ $R(ABCDEF)$, FD: $\{AB \rightarrow C, DC \rightarrow AE, E \rightarrow F\}$

Introduction: 1-5