# Discussion Session on Assignment Project Exam Help Functional Dependency

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Consider the following FDs for relation R(A, B, C, D, E).

A->C Assignment Project Exam Help

C->B https://powcoder.com

B->D

D->E Add WeChat powcoder

List all the keys for R (make sure they are minimal, i.e. not a superset of some other key).

# Q1 Solution

 $closure(A) = \{A,C,B,D,E\}$ 

```
A+ = A

= AC [A->C] Assignment Project Exam Help
= ABC [C->B] https://powcoder.com
= ABCD [B->D]
= ABCDE [D->E] Add WeChat powcoder
```

# Q1 Solution (Cont.)

A is a candidate key for the given relation R

A->C

C->B

B->D

D->E

Consider the following FDs for relation R(A, B, C, D, E).

A->C

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B->D

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AB->E

List all the keys for R (make sure they are minimal, i.e. not a superset of some other key).

# Q2 Solution (Cont.)

AB is a candidate key for the given relation Remarks

A->C

B->D

AB->E

Consider the following FDs for relation R(A, B, C, D, E).

A->C

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B->AD

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AB->E

List all the keys for R (make sure they are minimal, i.e. not a superset of some other key).

# Q3 Solution (Cont.)

```
closure(A) = {A,C}

closure(B) = {A, B, C, PssEnment Project Exam Help

closure(AB) = {A, B, C, D, E}

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```

B is a candidate key for the given relation Roder

A->C B->AD AR->F

Consider the following sets of FDs for relation R(A, B, C, D, E, F).

FD1 = {A->C, AC->D, F->ADn F->F Project Exam Help

 $FD2 = \{A->CD, E->AF\}.$ 

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Are these two set of FDs equivalent?

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# FD Equivalence

Two sets of functional dependencies F1 and F2 are equivalent if:

- 1. Every functional dependency in F2 can be interred from the functional dependency in F1 (F1 covers F2)
- 2. Every functional dependency in F1 can be inferred from the functional dependency in F2-(F2-G0yers-E1)er

# Step 1: F1 covers F2

```
A+ = A
= AC [A->C]
= ACD [AC->D]
CD \subseteq ACD
```

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F1 F2 A->CD A->CD E->AF E->AF E->F

# Step 1: F1 covers F2

```
E+=E
```

- = ADE [E->AD]
- = ADEF [E->F]
- = ACDEF [A->C]

**AF** ⊆ **ACDEF** 

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**F1** 

A->C

AC->D

E->AD

E->F

**F2** 

A->CD

E->AF

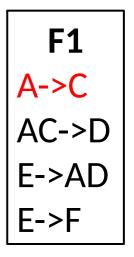
```
A+ = A
= ACD [A->CD]
C \subseteq ACD
```

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```
AC+ = AC

= ACD [A->CD] Assignment Project Exam Help

D ⊆ ACD

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```

F2 F1
A->CD A->C
E->AF AC->D
E->AD
F->F

```
E+ = E

= AEF [E->AF] Assignment Project Exam Help
= ACDEF [A->CD]

AD ⊆ ACDEF

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```

F2 F1
A->CD A->C
E->AF AC->D
E->AD
E->F

```
E+ = E

= AEF [E->AF] Assignment Project Exam Help
= ACDEF [A->CD]

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A->CD
E->AF

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```

F1 and F2 are equivalent.

F2 F1 ->CD A->C ->AF AC->D E->AD E->F

Consider the following set F1 of FDs for relation R(A, B, C).

F1 = {A -> B, B -> C} Assignment Project Exam Help

Now, compute the closure for set F1. https://powcoder.com

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# Q5 Solution

The closure set of a set F1 of Functional Dependencies (FDs) is the set of all FDs implied by F1. This closure set is denoted by F1+.

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```
F1+ = {A -> A, B -> B, C -> https://powgoder.com, BC -> BC, ABC -> ABC, (all from reflexivity), A -> Ag(given), Bc -> BC, and A -> C (transitivity), and A -> BC(union)}
```