R(A, B, C, D, E, F)

F.D = [A → B, B → C, C → D, D → E]

~~ABCDEF~~$^+$ = [ABCDEF]

AF$^+$ = [ABCDEF] super key

is it candidate? check proper subset

شيلك لو هم بالطرف اليسار (آتربيوت معرفهم). ⇐ بيعطيك CK ثاني

A$^+$ = [ABCDE]

F$^+$ = [F]

candidate AF: prime attributes

A, F: prime attrs

× F →

A → B not in 2NF (prime defines non prime)

⟹

R(ABCD)

FD = [AB → CD, C → A, D → B]

~~ABCD~~$^+$ = [ABCD] ⟹ AB$^+$ = [ABCD] super key

is it candidate?

A$^+$ → A ⟹ candidate key, prime attrs: A, B

B$^+$ → B

none is super key

more CK? AB ck

- CB: C$^+$ → CA, B$^+$ → B ∴ candidate
- AD: A$^+$ → A, D$^+$ → DB ∴ candidate

primes: AB, C, D

R (A, B, C, D)

F.D = [A -> B, B -> C, C -> D]

$AB(D)^+ = [ABCD]$

$A^+ = [ABCD]$ super key, already candidate key

more CK? no

R(A, B, C, D)

F = [A -> B, B -> D]

$AB(C)(D)^+ = [ABCD]$

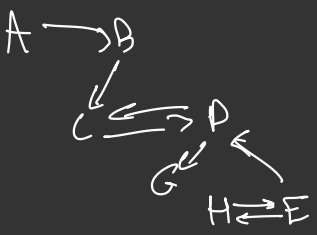
$AC^+ = [ABCD]$ super key

candidate? $A^+ = [ABD]$ => C.K

$C^+ = C$ no super

$C^+ \rightarrow$

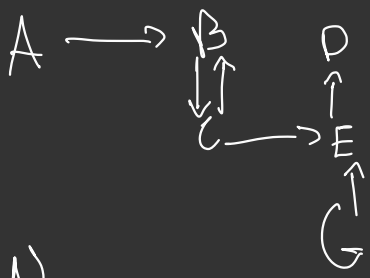
$A^+ \rightarrow B$ non prime depend on prime => not in 2NF



Keys: AH, AE

primes: A, E, H

is it 2NF?



1)

$F = [A \to B, B \to C, C \to BE, E \to D, G \to E]$

2) Key: GA

3) $B^+ = BCED$

$BE^+ = BECD$

4) $R_1(\underline{AG})\ F_1 = [\ ]$ 2NF

$R_2(\underline{A}BCED)\ F_2 = [A \to B, B \to C, C \to BE, E \to G]$ 2NF, ~~3NF~~

$R_3(\underline{G}ED) = F_3[G \to E, E \to D]$ 2NF, ~~3NF~~

5)

$R_{21}(\underline{A}B)\ F_{21} = [A \to B]$

$R_{22}[\underline{B}CED]\ F_{22} = [B \to C, C \to BE, E \to G]$

$R_{221}[\underline{B}C]\ F_{221} = [B \to C, C \to B]$

$R_{222}[\underline{C}ED]\ F_{222} = [C \to E, E \to G]$

$R_{2221}[\underline{C}E]\ F_{2221} = [C \to E]$

$R_{2222}[E \to D] f_{2222} = [E \to D]$

$R_{31}[C \to E] f_{31}[C \to E]$

$R_{32}[E \to D] f_{32}[E \to D]$