```
result := {R };
done := false;
compute F +;
while (not done) do
  if (there is a schema Ri in result  that is not in BCNF)
    then begin
           let α → β  be a nontrivial functional dependency that
              holds on Ri  such that α → Ri is not in F +,
                and α ∩ β  = ∅;
             result := (result – Ri ) ∪ (Ri – β) ∪ (α, β );
           end
    else done := true;
```

To check if a relation R_i in a decomposition of R is in BCNF,

- Either test R_i for BCNF with respect to the **restriction** of F to R_i (that is, all FDs in F^+ that contain only attributes from R_i)
- or use the original set of dependencies F that hold on R, but with the following test:
  - for every set of attributes $\alpha \subseteq R_i$, check that α^+ (the attribute closure of α) either includes no attribute of $R_i - \alpha$, or includes all attributes of R_i.
  - If the condition is violated by some $\alpha \rightarrow \beta$ in F, the dependency

    $\alpha \rightarrow (\alpha^+ - \alpha) \cap R_i$

    can be shown to hold on R_i, and R_i violates BCNF.
  - We use above dependency to decompose R_i

```
Let Fc be a canonical cover for F;
i := 0;
for each  functional dependency α → β in Fc do
  if none of the schemas Rj, 1 ≤ j  ≤ i contains  α β
         then begin
                   i := i  + 1;
                   Ri  := α β
              end
if none of the schemas Rj, 1 ≤ j  ≤ i contains a candidate key for R
  then begin
              i := i  + 1;
              Ri := any candidate key for R;
         end
/* Optionally, remove redundant relations */
repeat
if any schema Rj is contained in another schema Rk
       then /* delete Rj */
         Rj = Ri;;
         i=i-1;
return (R1, R2, ..., Ri)
```

Consider a set F of functional dependencies and the functional dependency $\alpha \rightarrow \beta$ in F.

To test if attribute $A \in \alpha$ is extraneous in α

1. compute $(\{\alpha\} - A)^+$ using the dependencies in F
2. check that $(\{\alpha\} - A)^+$ contains β; if it does, A is extraneous in α

To test if attribute $A \in \beta$ is extraneous in β

1. compute α^+ using only the dependencies in

   $F' = (F - \{\alpha \rightarrow \beta\}) \cup \{\alpha \rightarrow (\beta - A)\}$,
2. check that α^+ contains A; if it does, A is extraneous in β