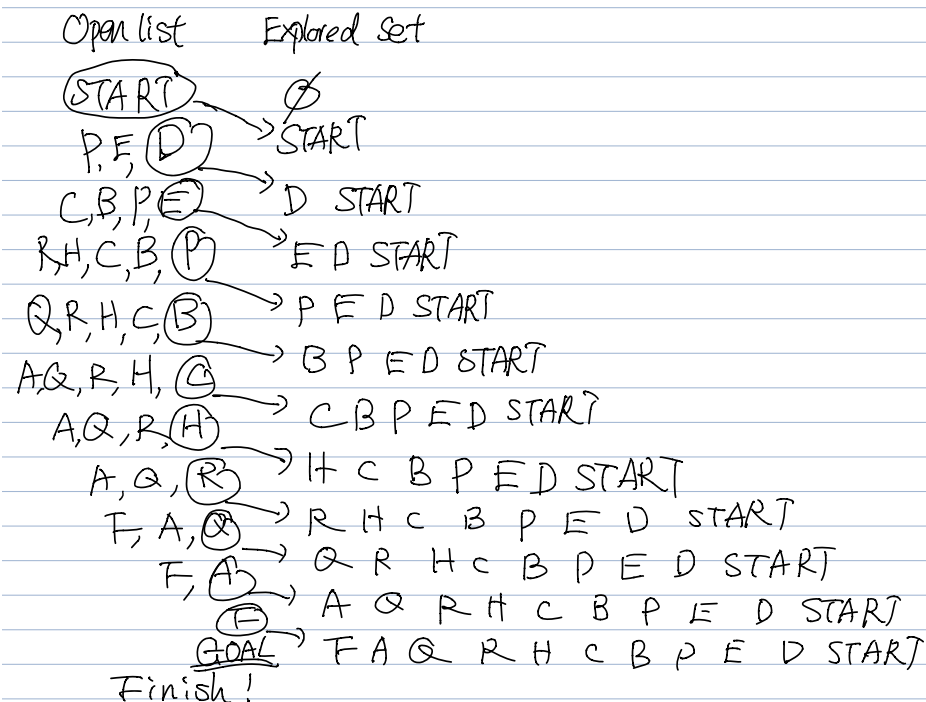


## ① Breadth-First Search

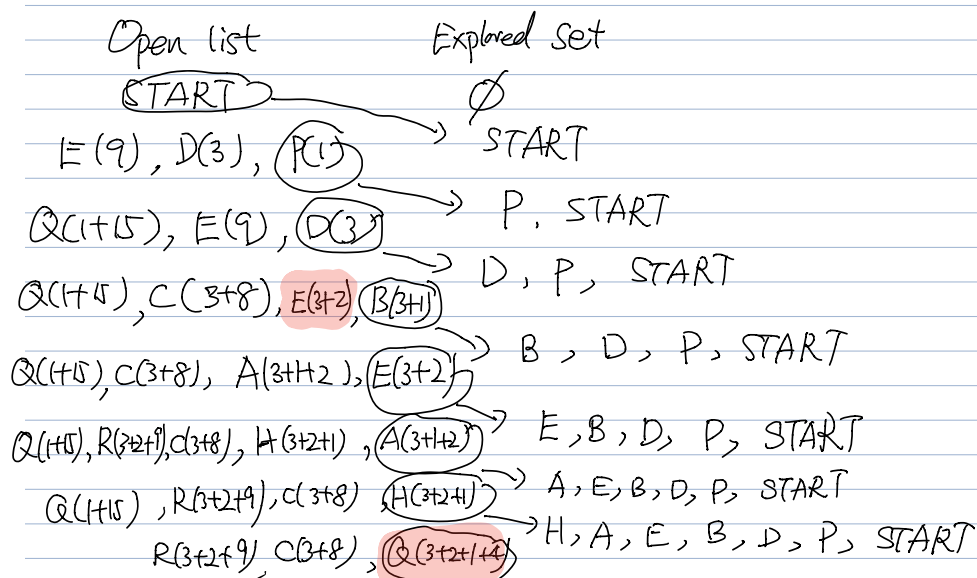


PATH: START  $\rightarrow$  D  $\rightarrow$  E  $\rightarrow$  P  $\rightarrow$  B  $\rightarrow$  C  $\rightarrow$  H  $\rightarrow$  R  $\rightarrow$  Q  $\rightarrow$  A  $\rightarrow$  F  $\rightarrow$  GOAL

Path length = 11

Path found : START  $\rightarrow$  E  $\rightarrow$  R  $\rightarrow$  F  $\rightarrow$  GOAL depth = 4

## ② Uniform Cost Search



$R(3+2+1+4+3)$  →  $C(3+8)$  → Q, H, A, E, B, D, P, START  
 $R(3+2+1+4+3)$  → C, Q, H, A, E, B, D, P, START  
 $F(3+2+1+4+3+5)$  → R, C, Q, H, A, E, B, D, P, START  
 GOAL → F, R, C, Q, H, A, E, B, D, P, START  
 $(3+2+1+4+3+5+5)$   
 $= 23$

Final Path: START → D → E → H → Q → R → F → GOAL

③ Depth-first Search (DFS)

START

START D

START DB

START DBA

START DC

START DCA

START DE

START DEH

START DEHP

START DEHPQ

START DEHPQR

START DEHPQRF

START DEHPQRFc

START DEHPQRFCA

START DEHPQRFcGOAL

#### ④ Bidirectional Search (BFS)

Explored Set

START

P E (D) →

C B P (E) →

R H C B P

Explored Set

GOAL

← (F)

R

Finish. ! ⇒ Path: START → E → R → F → GOAL