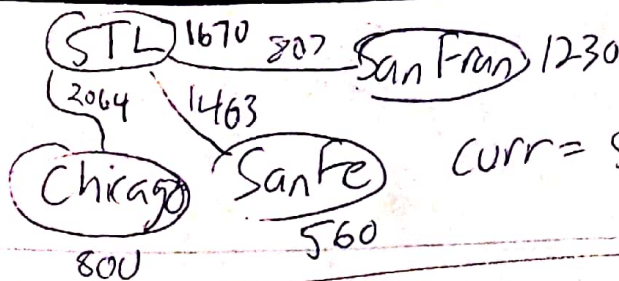
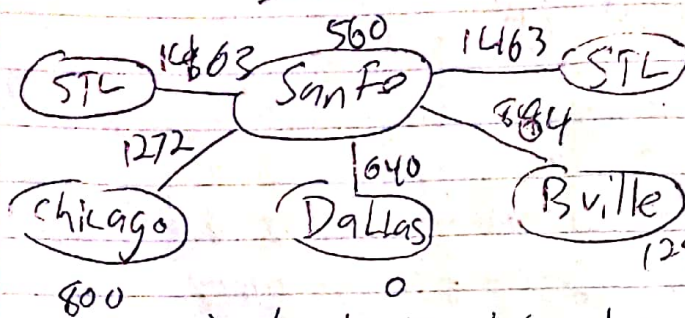


Step 1)



$F_{lim} = \infty$   
 $best = 1463 + 506 = 2023$   
 $curr = STL$   
 $alt = 2037$   
 $next = San Fe$

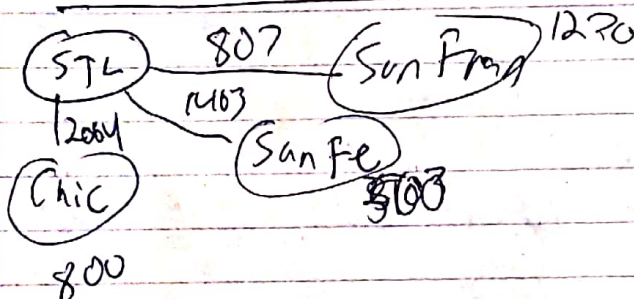
Step 2)



$F_{lim} = 2037$   
 $best = 2103 \neq 2037$   
 $alt = 3535$   
 $curr = San Fe$   
 $next = Dallas$

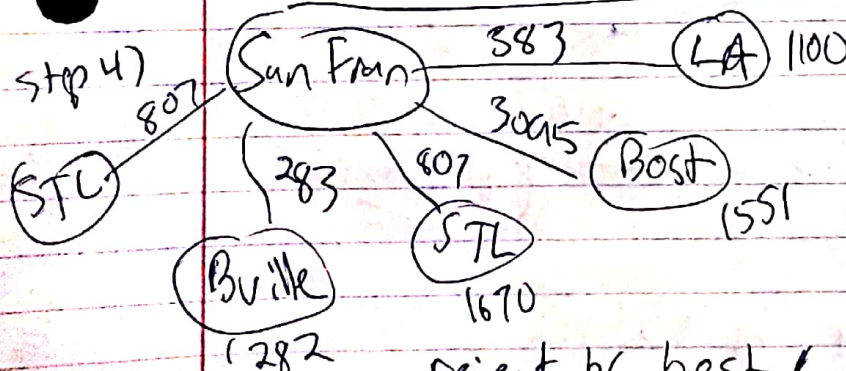
reject this bc best &  $F_{lim}$ . choose alt from step 1.

Step 3)



$F_{lim} = \infty$   
 $best = 2037$   
 $alt = 2103$   
 $curr = STL$   
 $next = San Fran.$

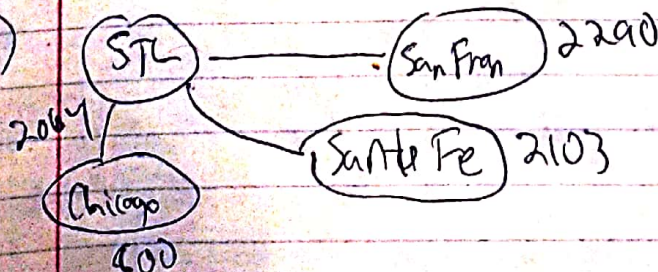
Step 4)



$F_{lim} = 2103$   
 $best = 2290 (LA) \neq 2103$   
 $alt = 2372 (Buille)$   
 $curr = San Fran.$   
 $next = LA.$

reject bc best &  $F_{lim}$ , go back to previous step

Step 5)

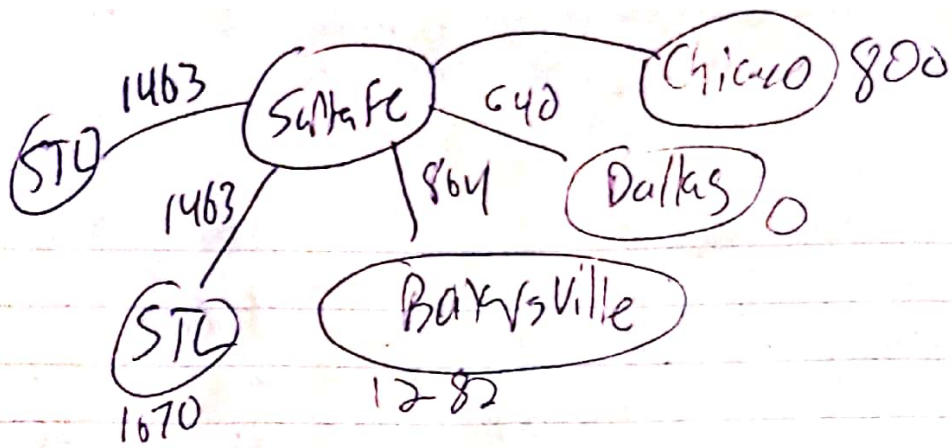


$F_{lim} = \infty$   
 $best = 2103$   
 $alt = 2290$   
 $curr = STL, next = San Fe$

Chose Santa Fe initially, had a better alternative considering Fe's children, explored alternative realized it was going to be worse, took Fe.

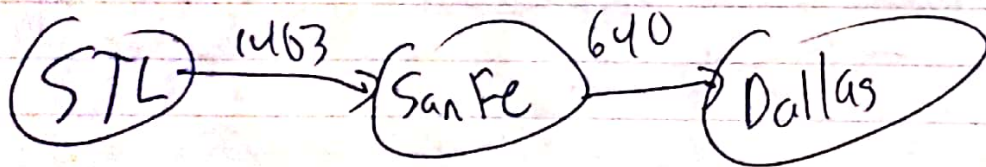


step 6)

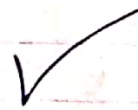


$E_{lim} = 2290$  ← option of going  $STL \rightarrow San Fe \rightarrow LA$   
 $best = 2103$  ←  $STL \rightarrow San Fe \rightarrow Dallas$   
 $alt = 3535$  ←  $STL \rightarrow San Fe \rightarrow Chicago \rightarrow \text{Chicago}$   
 $curr = San Fe$   
 $next = Dallas.$

step 7) we are at the goal node, terminate.  
 the best path is

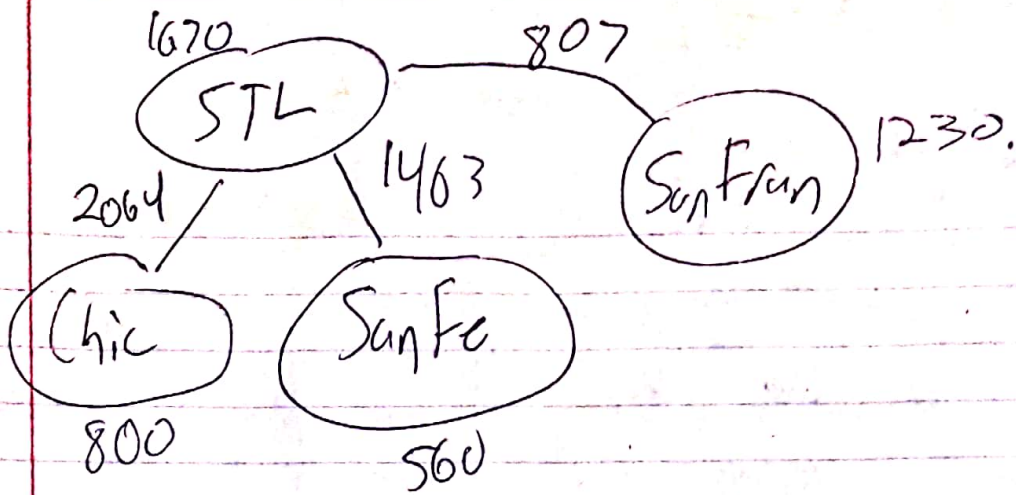


for a cost of 2103





Step 1)



a) curr = STL

b) Children

↳ Chicago =  $2064 + 800 = 2864$

↳ San Fe =  $2023 + 1465 + 560$

↳ San Fran =  $807 + 1230 = 2037$

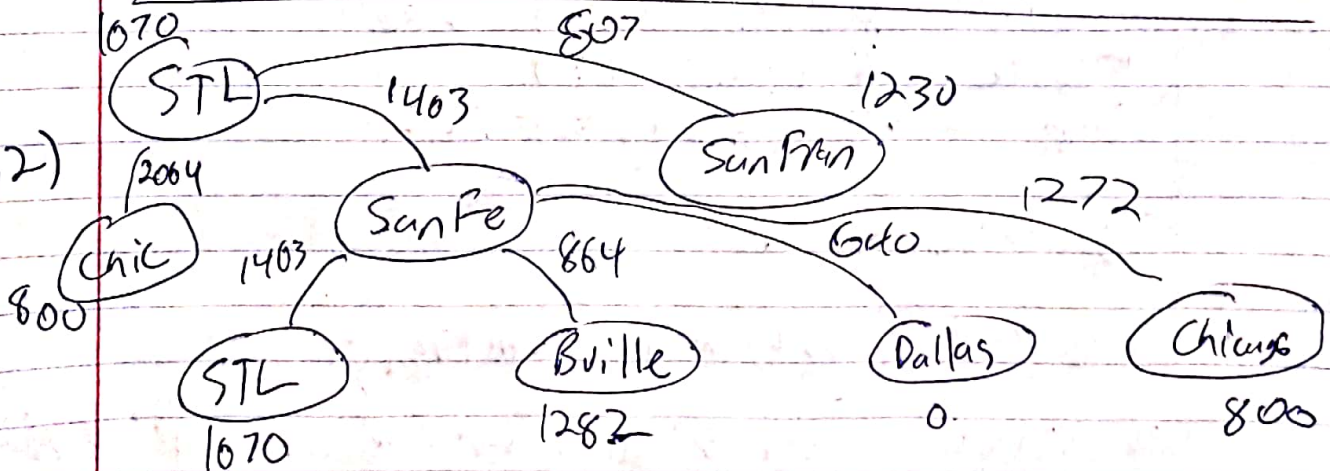
d) explored = { STL }

e) Frontier = [ SFe: 2023, SFr: 2037, Chic: 2864 ]

c) STL → STL : p-c = 0

f) Next = Santa Fe

Step 2)



a) curr = Santa Fe

b) Children

↳ STL =  $1463 + (1463 + 670) = 4596$

↳ Buille =  $1463 + (864 + 1282) = 3609$

↳ Dallas =  $1463 + (640 + 0) = 2103$

↳ Chic =  $1463 + (1272 + 800) = 3535$

c) STL → Santa Fe = 1463

d) explored = { STL, San Fe }

e) Frontier =

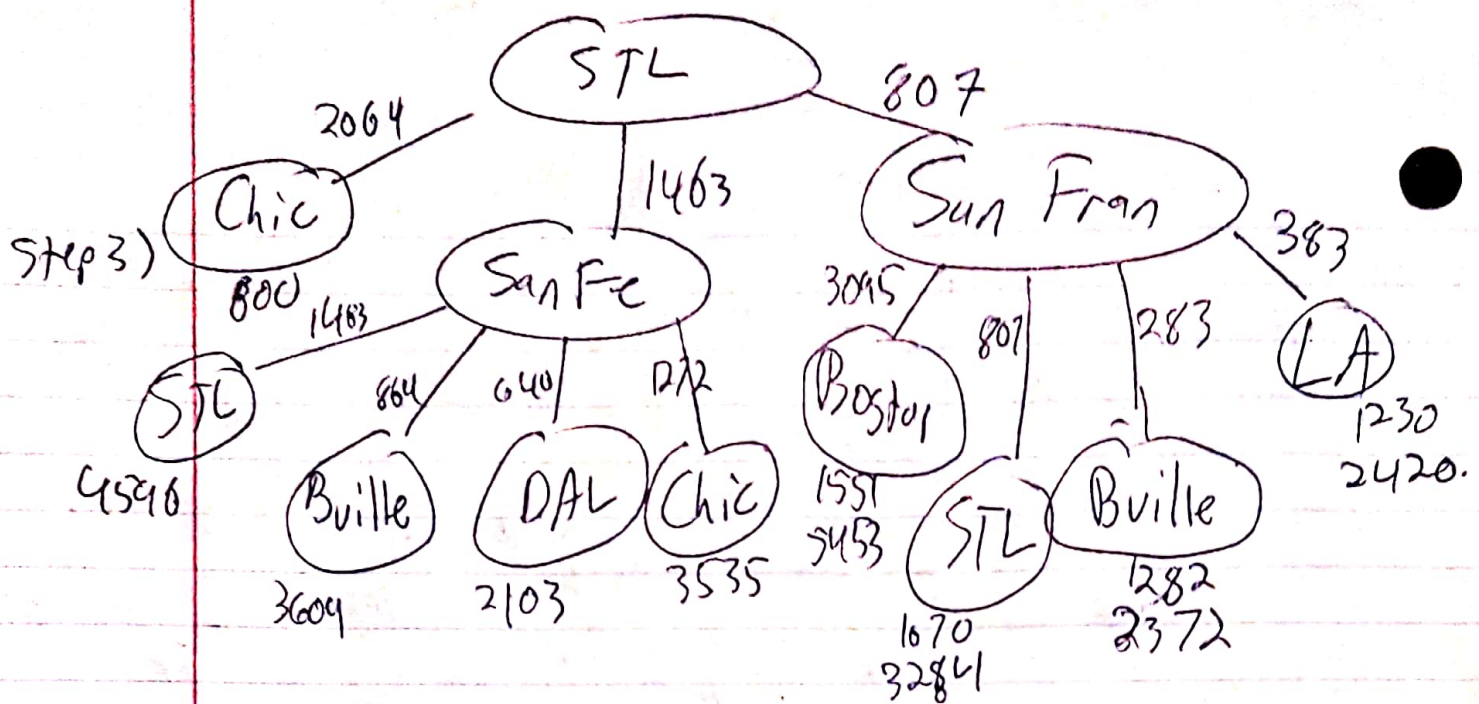
[ San Fran: 2037,

Chic: 2864,

Dallas: 2103,

Buille: 3609 ]

f) next node: San Fran



a) curr = San Fran

b) children

$$\hookrightarrow \text{Boston} = 807 + (3095 + 1551) = 5453$$

$$\hookrightarrow \text{STL} = 807 + (807 + 1670) = 3284$$

$$\hookrightarrow \text{Buille} = 807 + (283 + 1282) = 2372$$

$$\hookrightarrow \text{LA} = 807 + (383 + 1230) = 2420$$

c)  $\text{STL} \rightarrow \text{Sun Fran} = 807$

d) explored = { STL, San Fe, Sun Fran }

e) Frontier = [ Dallas: 2103, LA: 2420, Buille: 2372, Boston: 5453, Chicago: 2864 ]

f) next = Dallas (2103)

Step 4) visit dallas. Dallas is target, final path is

STL  $\rightarrow$  San Fe  $\rightarrow$  Dallas

$$\text{cost is } 1463 + 640 = 2103$$