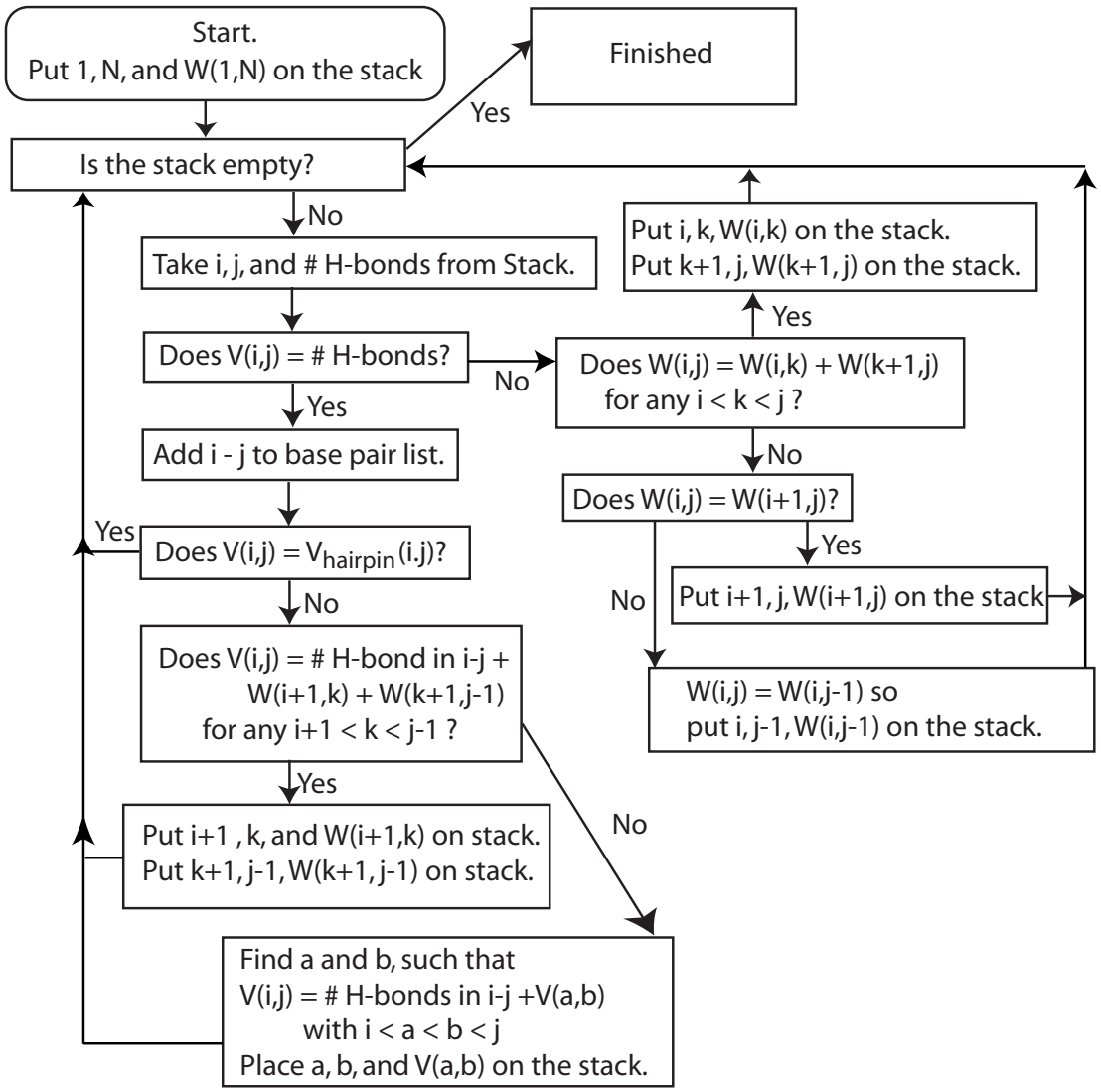
- $V(i,j) = 0$ *if i and j cannot pair canonically*
  $= \mathbf{max}[V_{hairpin}(i,j), V_{stack/internal/bulge}(i,j), V_{multibranch}(i,j)]$ *if i and j can pair*
- $V_{hairpin} = 0,$ *if* $j-i \leq 3$
  $=$ # hydrogen bonds in pair i and j, *if* $j-i > 3$
- $V_{stack/internal/bulge}$ = (# hydrogen bonds in pair i and j) + $\mathbf{max}[V(k1, k2)$ *for* $i < k1 < k2 < j]$
- $V_{multibranch}$ = (# hydrogen bonds in pair i and j) + $\mathbf{max}[W(i+1, k)+W(k+1,j-1)$ *for* $i+1 < k < j-1]$

- $W(i,j) = \mathbf{max}[V(i,j), W(i+1,j), W(i,j-1), W(i,k) +W(k+1,j)$ *for* $i < k < j]$

1. Filling step rules



2. Traceback step rules

V	i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
j		G	C	G	G	G	U	A	C	C	G	A	U	C	G	U	C	G	C
18	C								0	0	6	0	0	0	3	0	0	0	
17	G		?					0	8	8	0	0	2	3	0	0	0		
16	C						0	0	0	0	5	0	0	0	0	0			
15	U					6	0	5	0	0	2	2	0	0	0				
14	G				0	0	4	0	3	3	0	0	0	0					
13	C			8	7	5	0	0	0	0	0	0	0						
12	U		0	5	5	4	0	2	0	0	0	0							
11	A	0	0	0	0	0	2	0	0	0	0								
10	G	0	9	0	0	0	2	0	0	0									
9	C	6	0	6	3	3	0	0	0										
8	C	3	0	3	3	0	0	0											
7	A	0	0	0	0	0	0												
6	U	2	0	0	0	0													
5	G	0	0	0	0														
4	G	0	0	0															
3	G	0	0																
2	C	0																	
1	G																		

W	i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
j		G	C	G	G	G	U	A	C	C	G	A	U	C	G	U	C	G	C
18	C								8	8	6	3	3	3	3	0	0	0	
17	G		?					8	8	8	5	3	3	3	0	0	0		
16	C						5	5	5	5	5	2	0	0	0	0			
15	U					6	5	5	3	3	2	2	0	0	0				
14	G				7	5	4	3	3	3	0	0	0	0					
13	C			8	7	5	2	2	0	0	0	0	0						
12	U		9	6	5	4	2	2	0	0	0	0							
11	A	9	9	6	3	3	2	0	0	0	0								
10	G	9	9	6	3	3	2	0	0	0									
9	C	6	6	6	3	3	0	0	0										
8	C	3	3	3	3	0	0	0											
7	A	2	0	0	0	0	0												
6	U	2	0	0	0	0													
5	G	0	0	0	0														
4	G	0	0	0															
3	G	0	0																
2	C	0																	
1	G																		

5’ GCGGGUACCGAUCGUCGC3’

Need to consider W array because of multi-branches