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**Algorithm 1** STEPLEFT( $r$ )

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1: **return**  $C[r] + \text{Occ}(BWT[r], r)$

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**Algorithm 2** UNPERMUTE

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1:  $r \leftarrow 1$   
2:  $T \leftarrow \text{“ ”}$   
3: **while**  $BWT[r] \neq \$$  **do**  
4:      $T \leftarrow \text{prepend } BWT[r] \text{ to } T$   
5:      $r \leftarrow \text{STEPLEFT}(r)$   
6: **end while**  
7: **return**  $T$

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**Algorithm 3** EXACTMATCH( $P[1, p]$ )

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1:  $c \leftarrow P[p]$   
2:  $sp \leftarrow C[c] + 1$   
3:  $ep \leftarrow C[c + 1] + 1$   
4:  $i \leftarrow p - 1$   
5: **while**  $sp < ep$  and  $i \geq 1$  **do**  
6:      $c \leftarrow P[i]$   
7:      $sp \leftarrow C[c] + \text{Occ}(c, sp) + 1$   
8:      $ep \leftarrow C[c] + \text{Occ}(c, ep) + 1$   
9:      $i \leftarrow i - 1$   
10: **end while**  
11: **return**  $sp, ep$

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