Algorithmen und Datenstrukturen
Tutorium V

Michael R. Jung

18. - 21. 05. 2015

1 Sortieralgorithmen

- RadixExchangeSort
- BucketSort

An folgender Beispielinstanz wird RadixExchangeSort veranschaulicht:

010
110
001
111
011
000
101
100

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2.                 k,l,r: integer) {
3.   if k>m then
4.     return;
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6.   d := divide*(S, k, l, r);
7.   radixESort(S, k+1, l, d);
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12.    if S[j][k]=1 then j--;
13.    if i≥j then
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15.    end if;
16.    swap( S[i], S[j]);
17.  end while;
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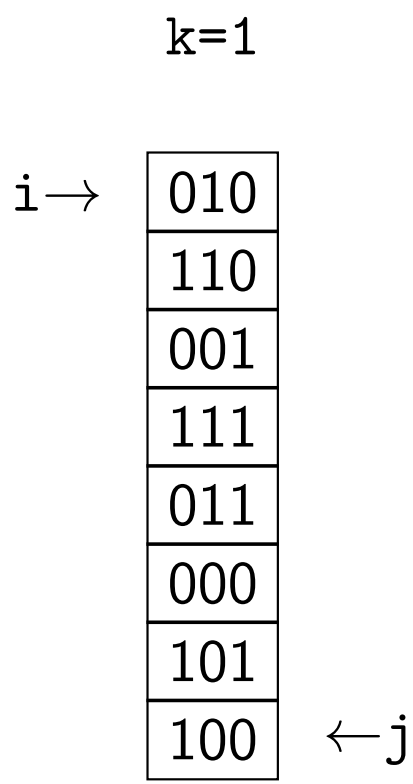

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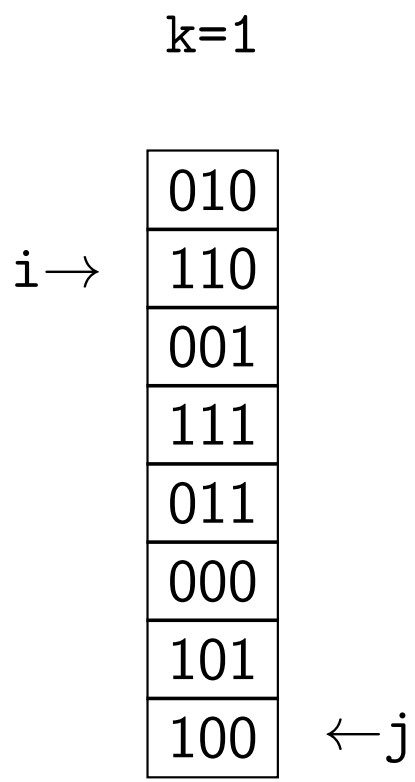

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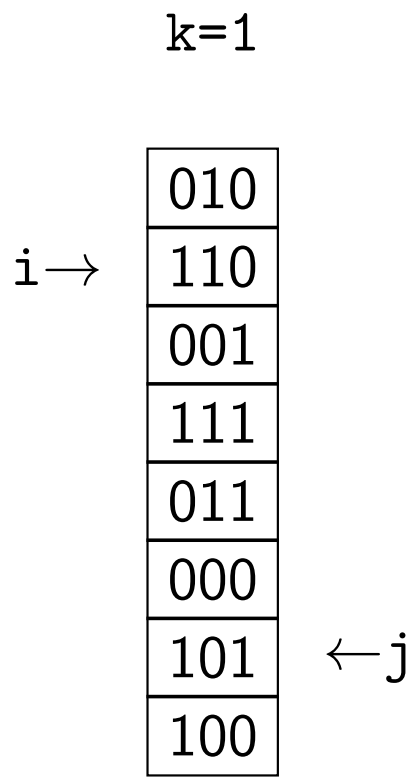

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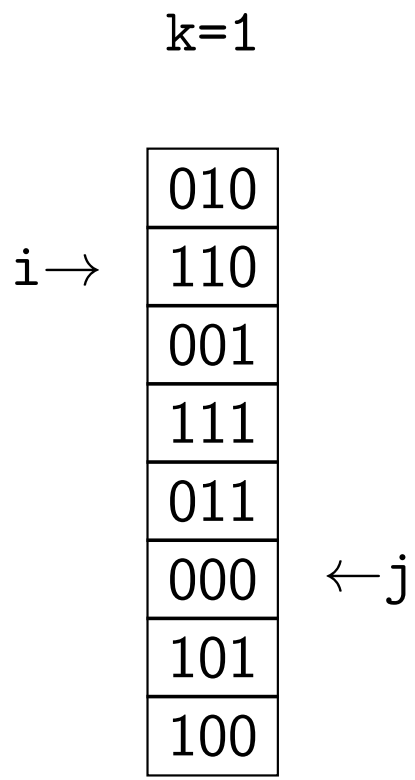

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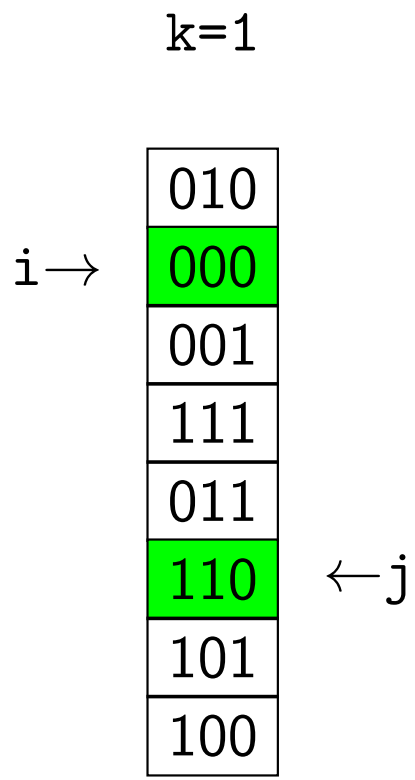

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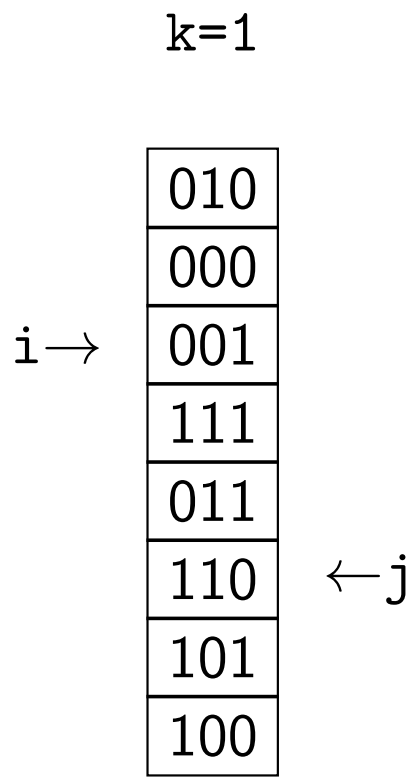

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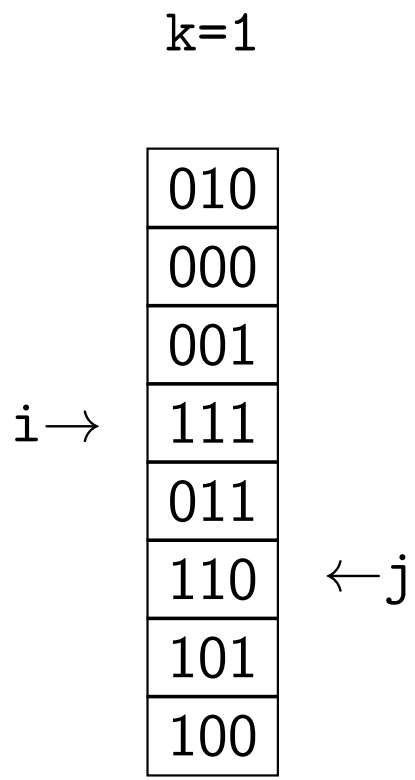

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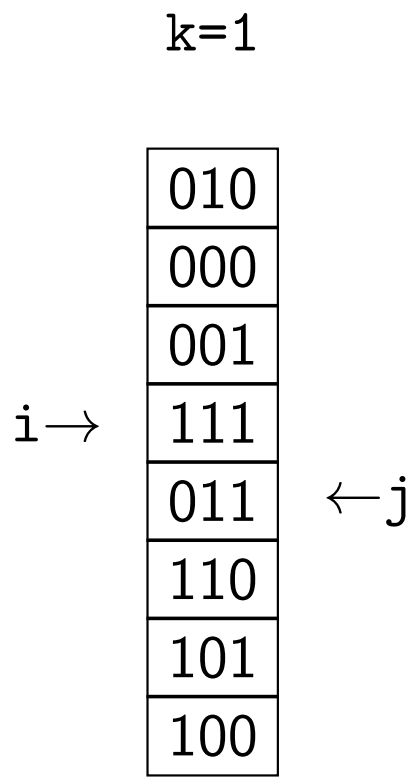

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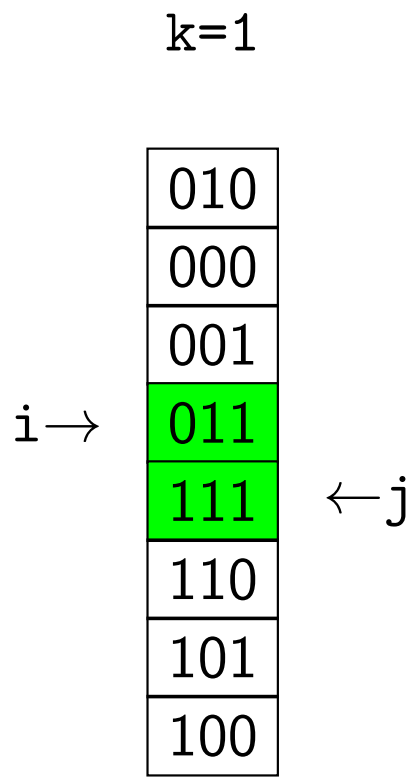

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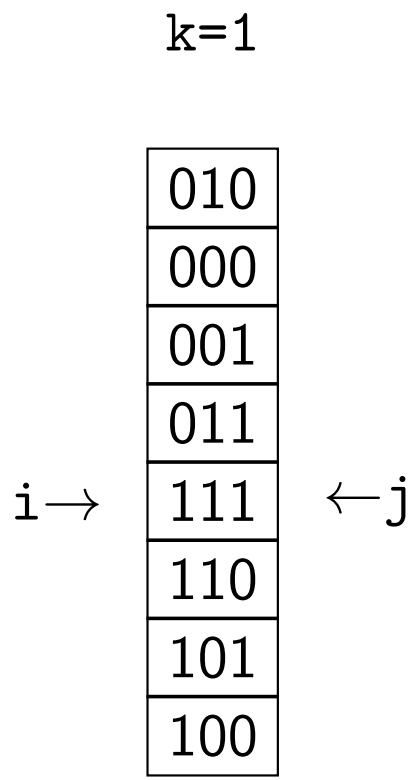

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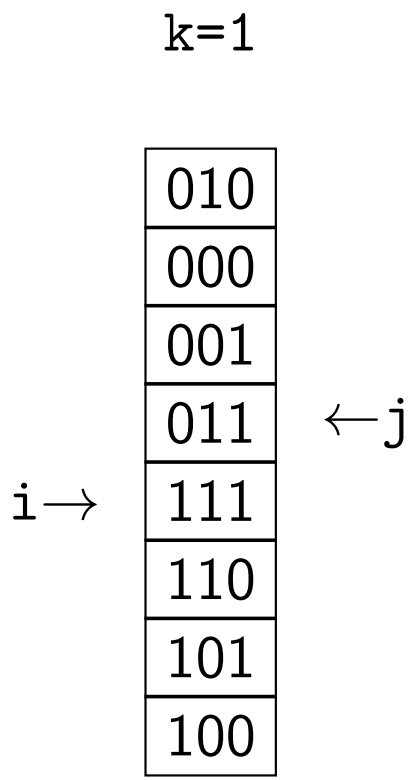

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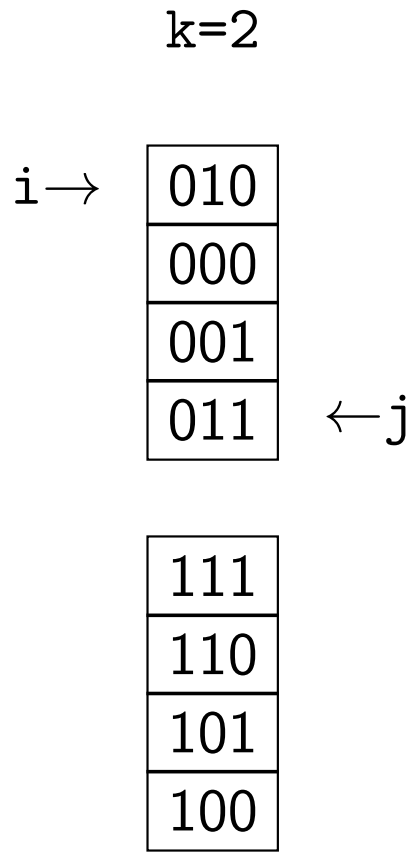

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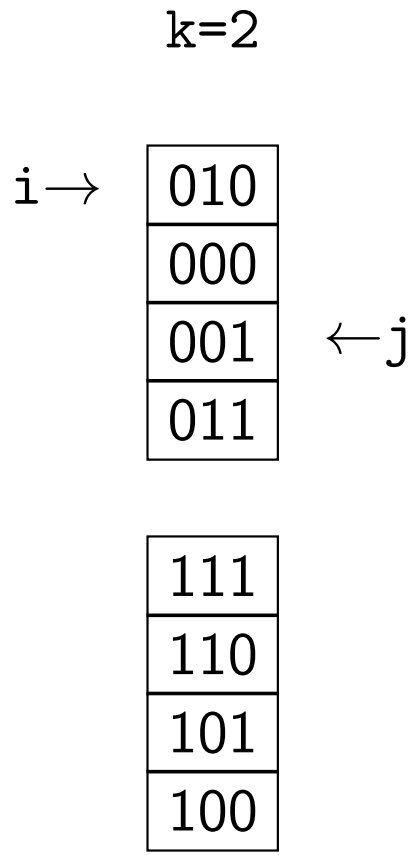

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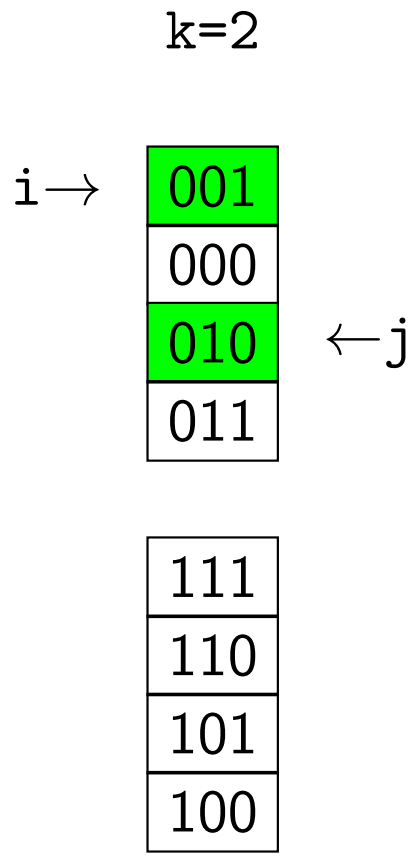

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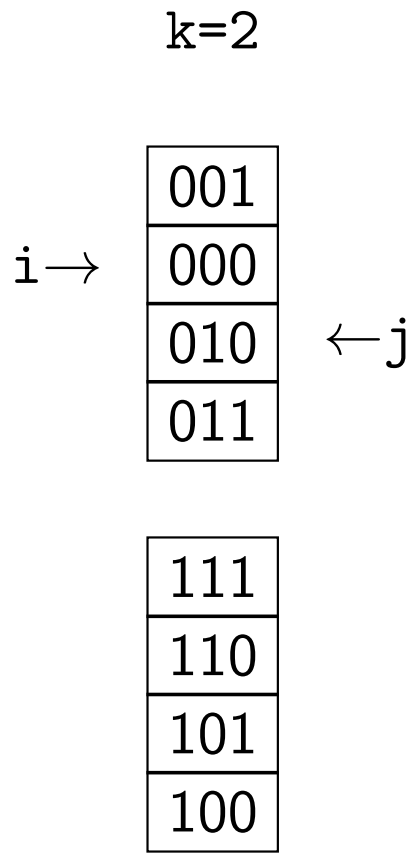

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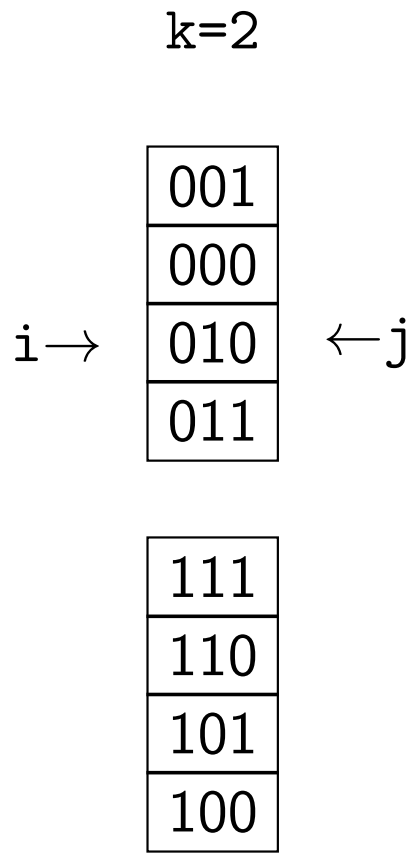

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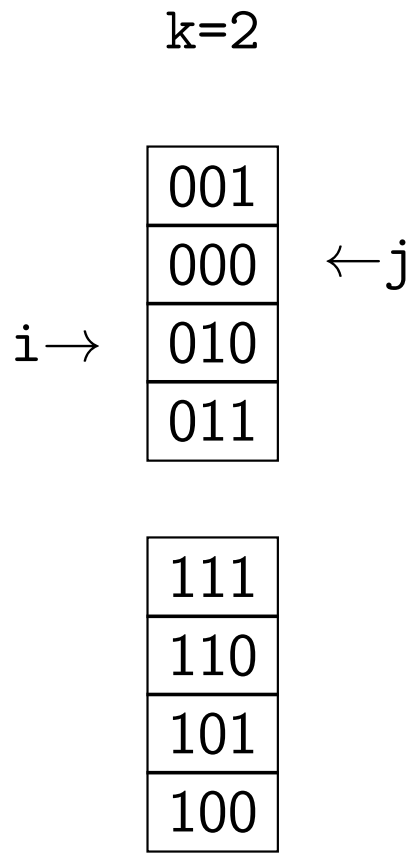

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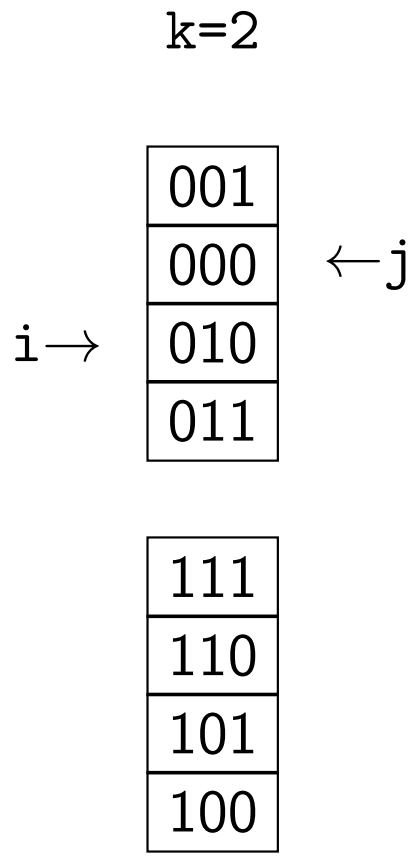

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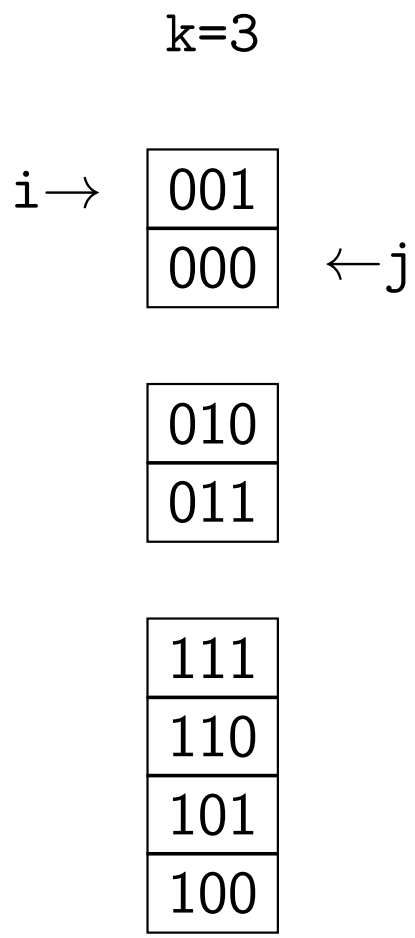

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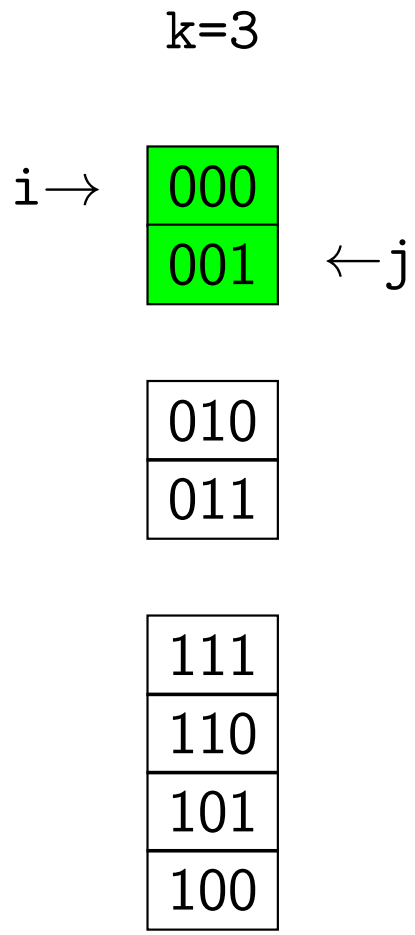

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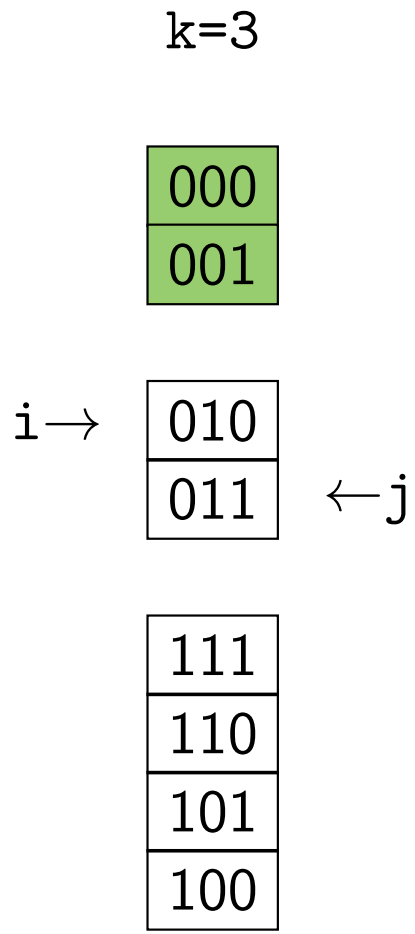

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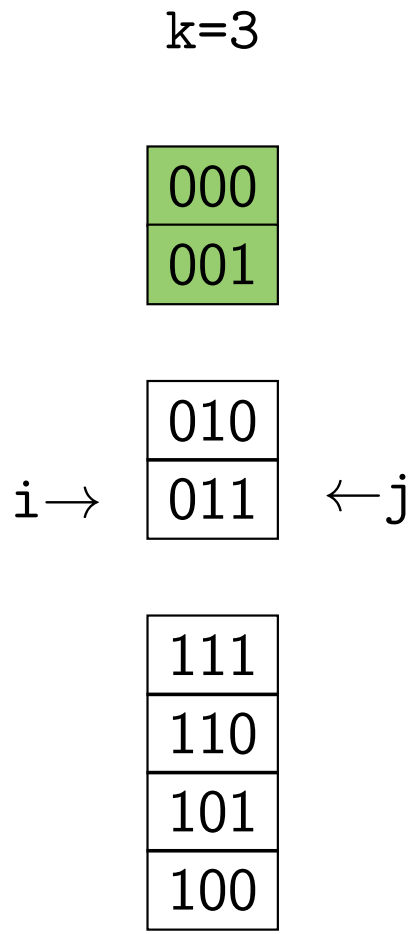

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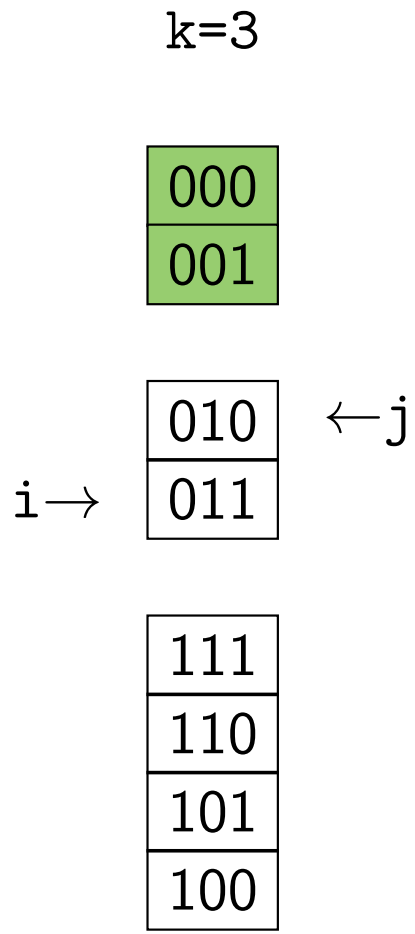

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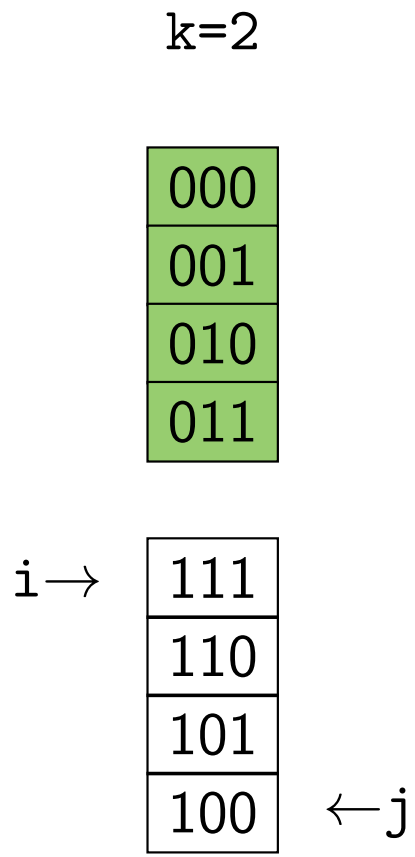

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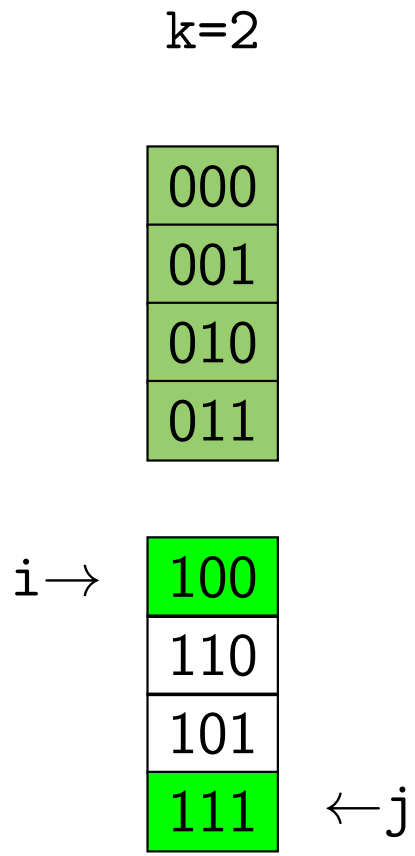

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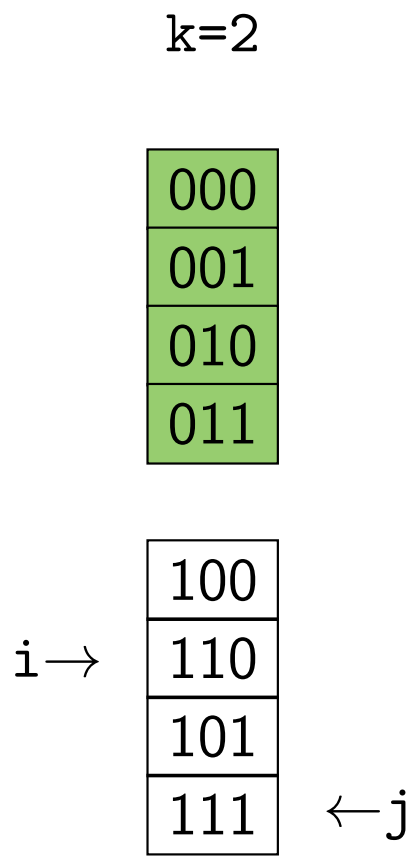

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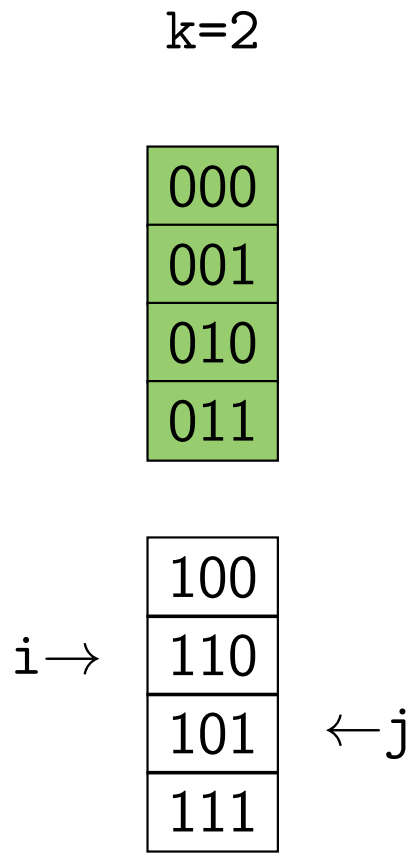

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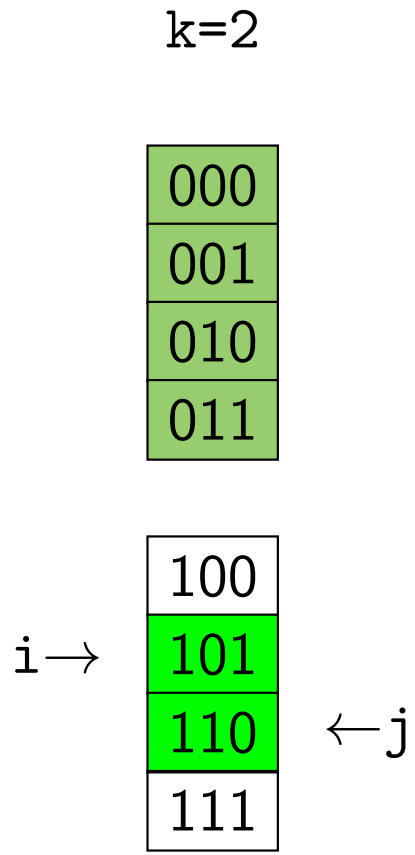

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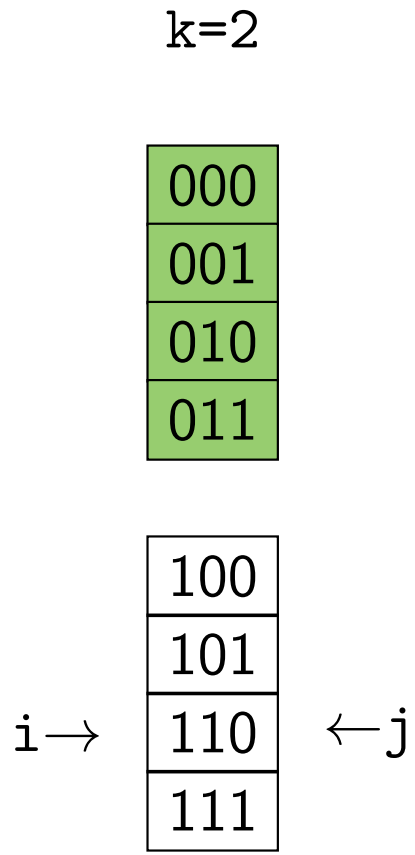

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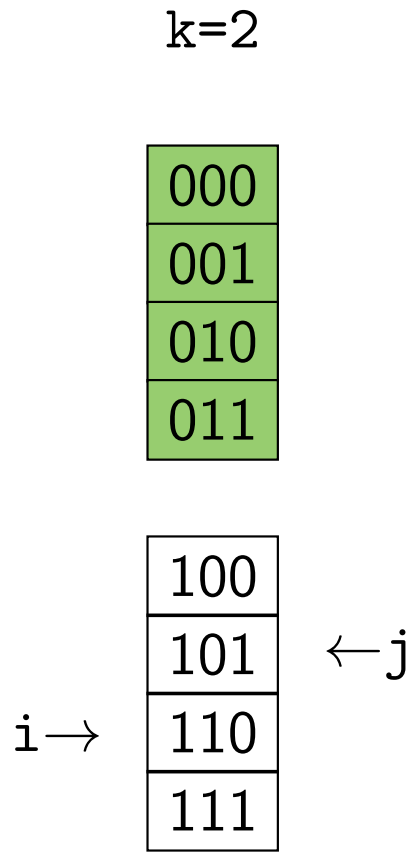

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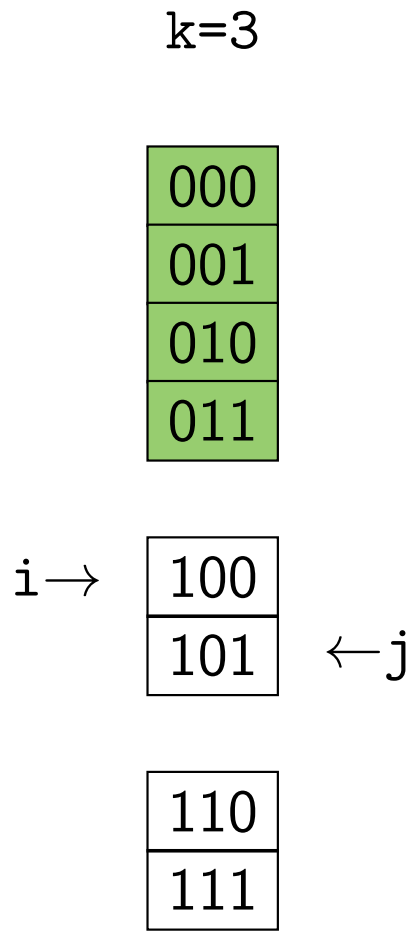

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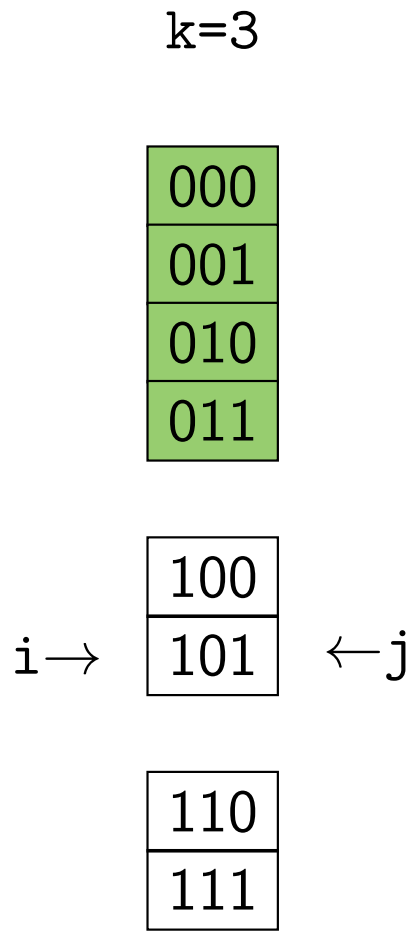

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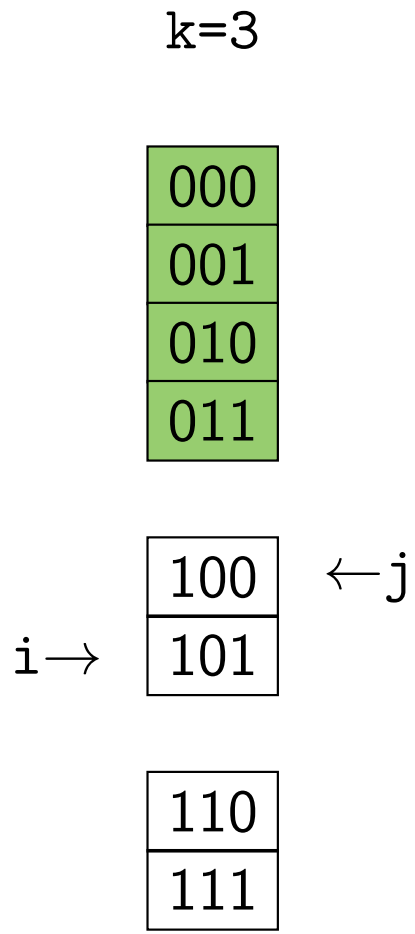

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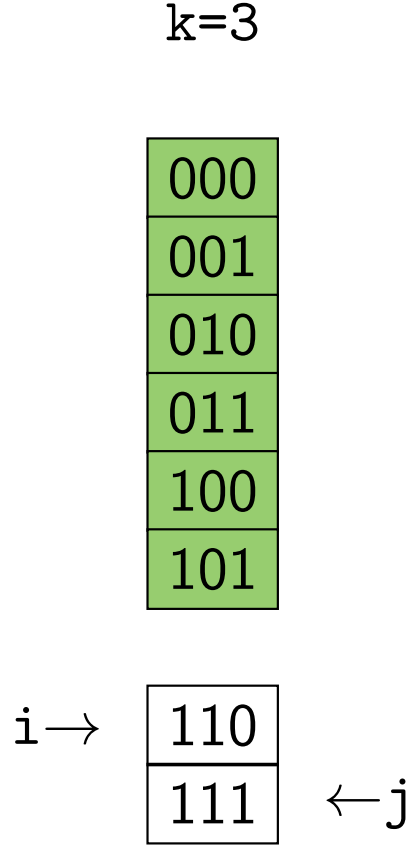

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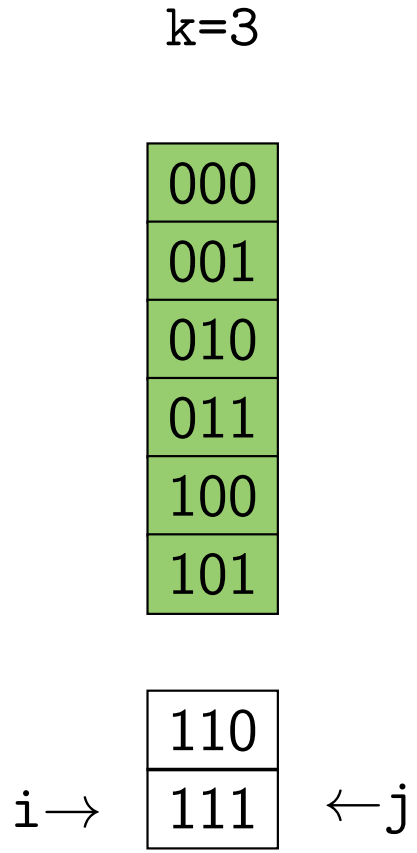

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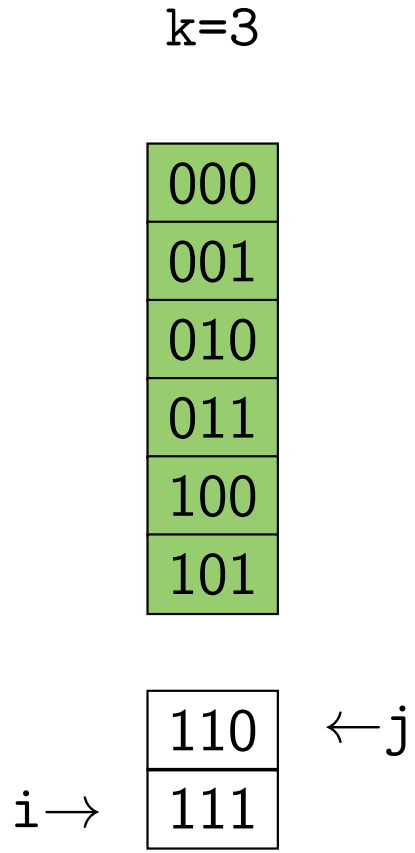
6.     repeat
7.       i := i+1;
8.     until S[i][k]=1 or i≥j;
9.     repeat
10.      j := j-1;
11.    until S[j][k]=0 or i≥j;
12.    if S[j][k]=1 then j--;
13.    if i≥j then
14.      break while;
15.    end if;
16.    swap( S[i], S[j]);
17.  end while;
18.  return j;
19.}
```



```
1. func radixESort(S array;
2.                 k,l,r: integer) {
3.   if k>m then
4.     return;
5.   end if;
6.   d := divide*(S, k, l, r);
7.   radixESort(S, k+1, l, d);
8.   radixESort(S, k+1, d+1, r);
9. }
```

```
1. func int divide*(S array;
2.                  k,l,r: int) {
3.   i := l-1;
4.   j := r+1;
5.   while true
6.     repeat
7.       i := i+1;
8.     until S[i][k]=1 or i≥j;
9.     repeat
10.      j := j-1;
11.    until S[j][k]=0 or i≥j;
12.    if S[j][k]=1 then j--;
13.    if i≥j then
14.      break while;
15.    end if;
16.    swap( S[i], S[j]);
17.  end while;
18.  return j;
19.}
```

k=3

000
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010
011
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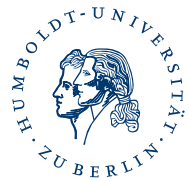
101
110
111



An folgender Beispielinstanz wird Bucketsort veranschaulicht:

GTT	AAC	GCT	ATA	AAC	TGA	TCT	TTA	TGG	GTA	TAG	GGA	CCG	GAC	GTA	CAC


GTT
AAC
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TAG
GGA
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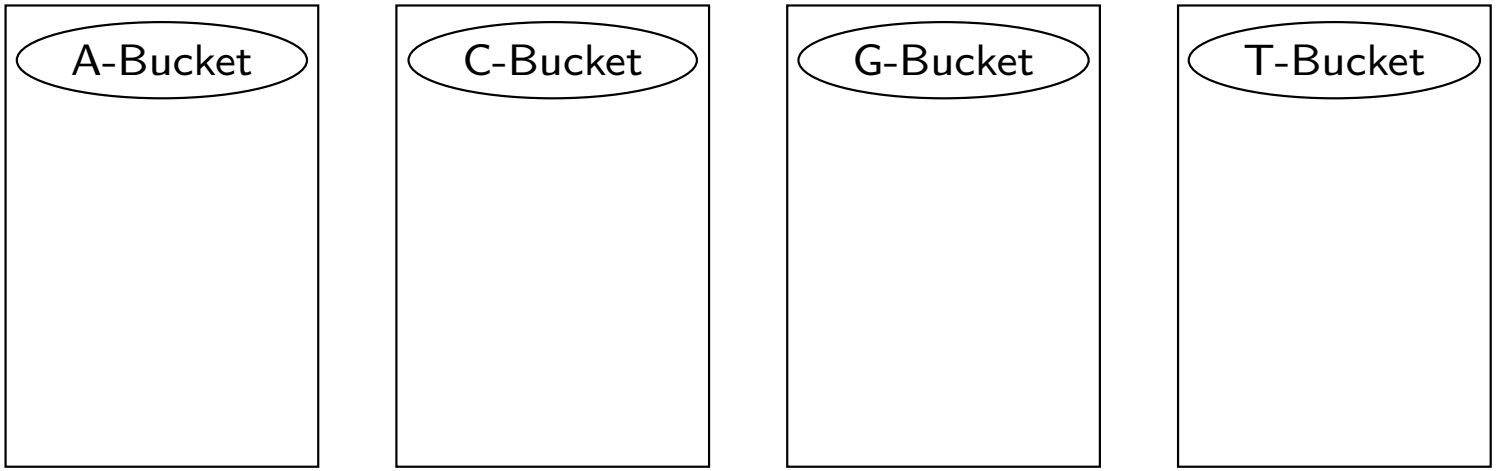
A-Bucket
C-Bucket
G-Bucket
T-Bucket


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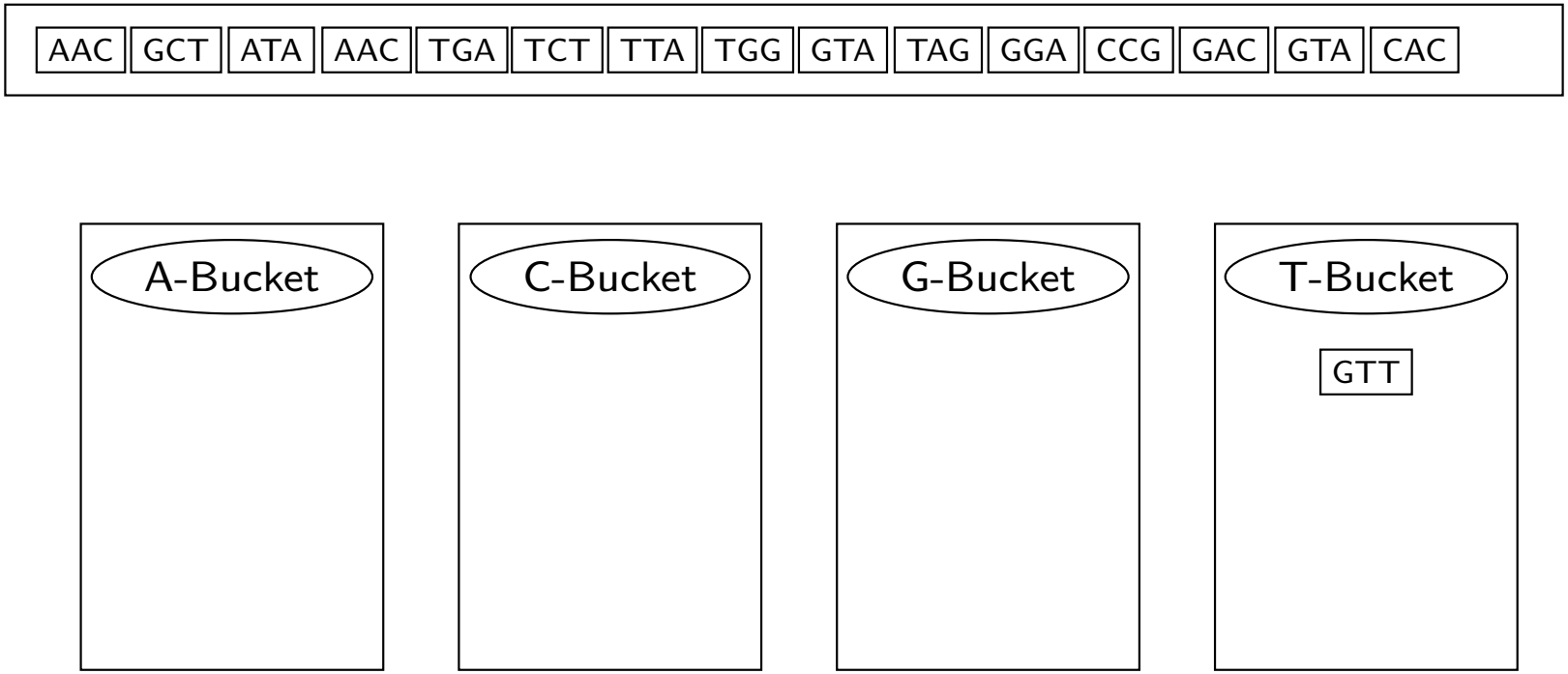
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A-Bucket
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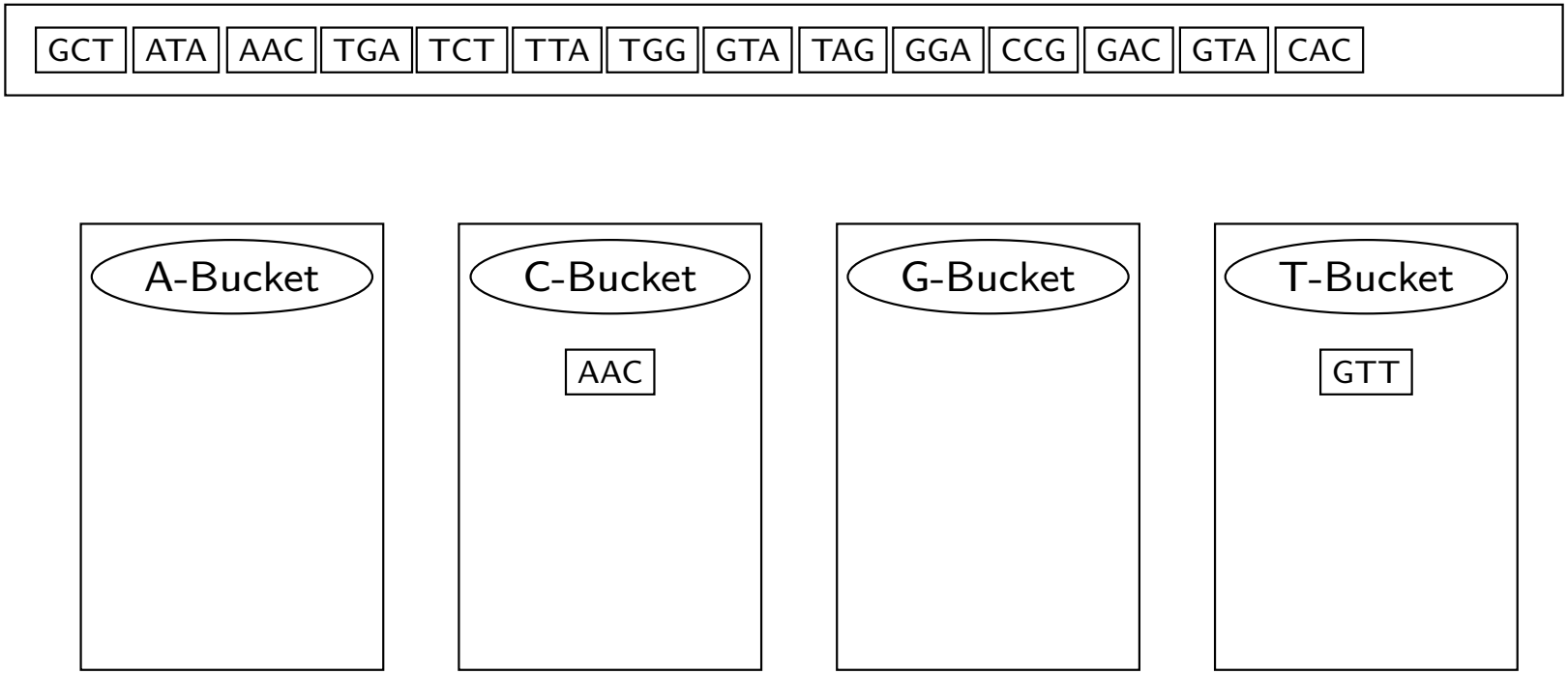
G-Bucket
T-Bucket
GTT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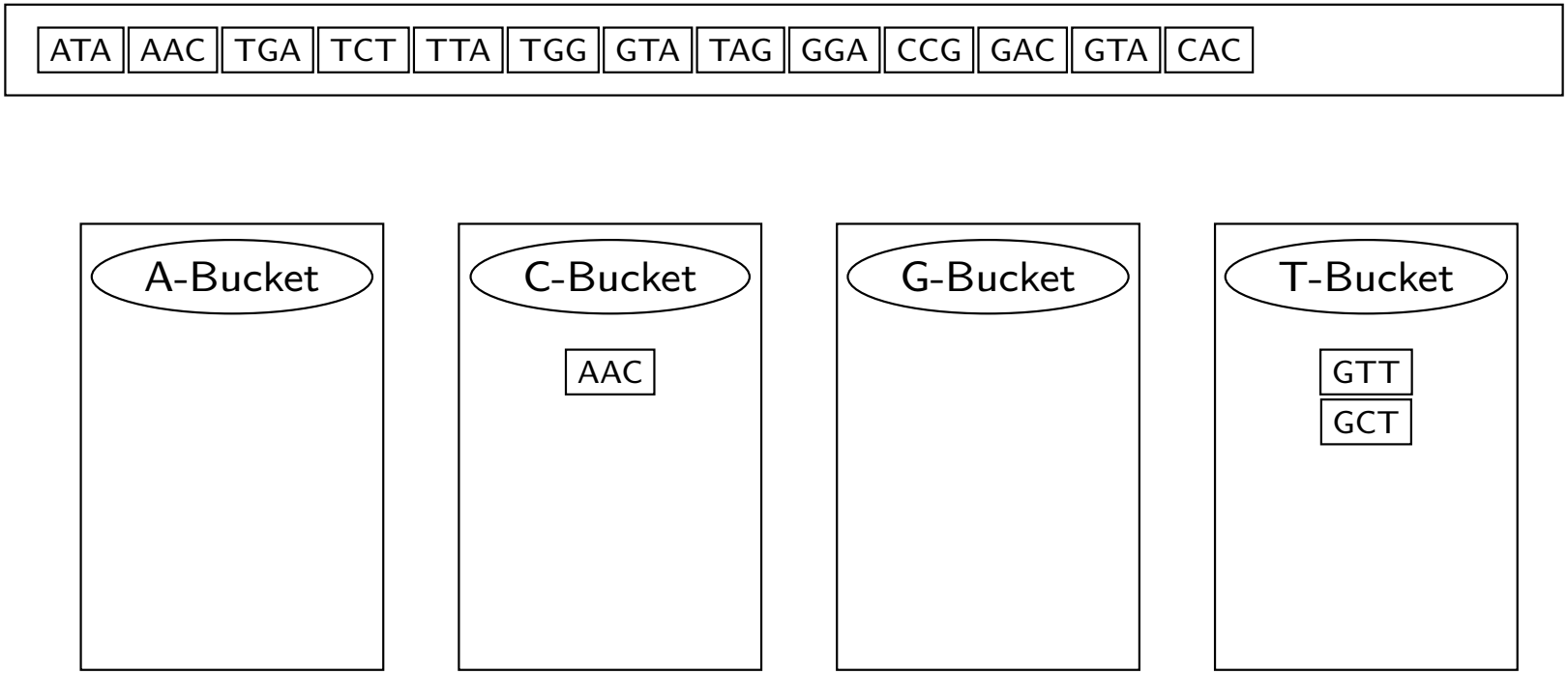
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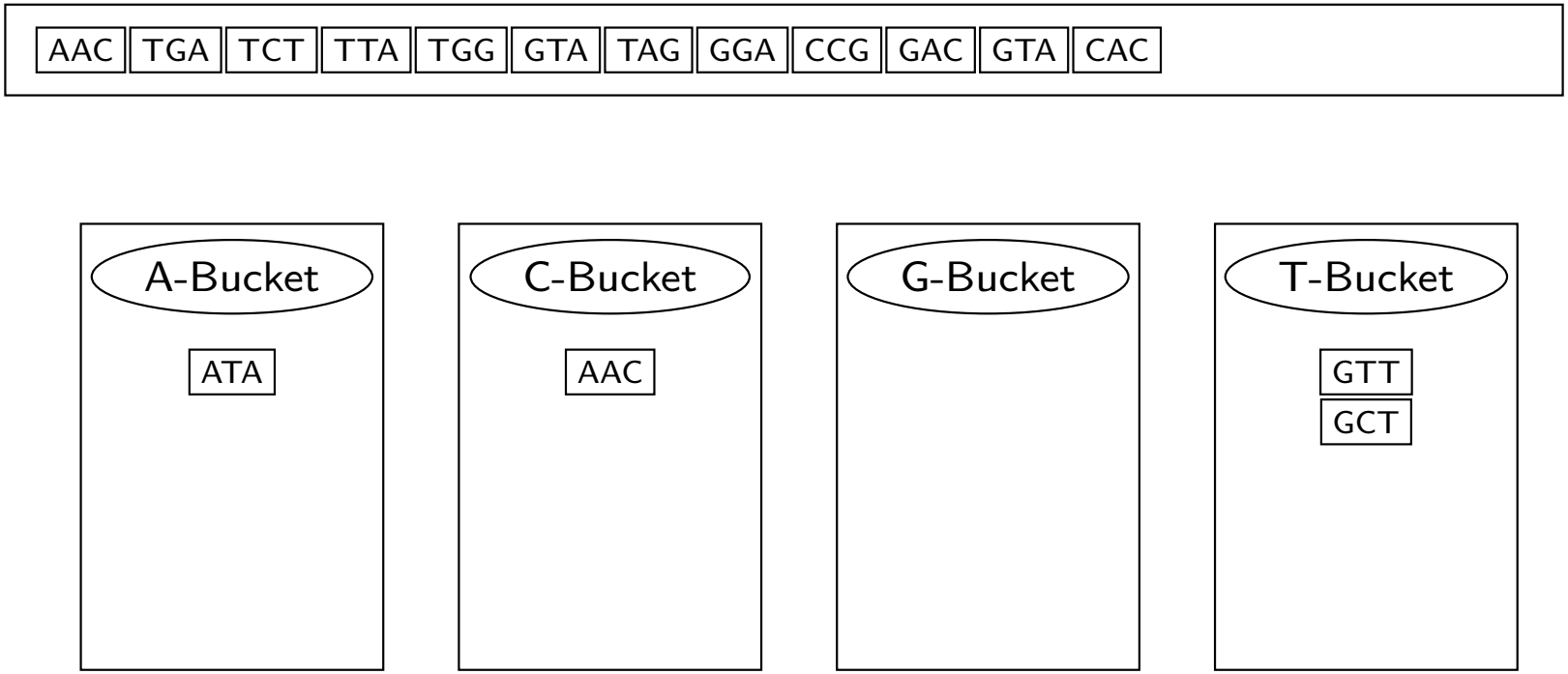
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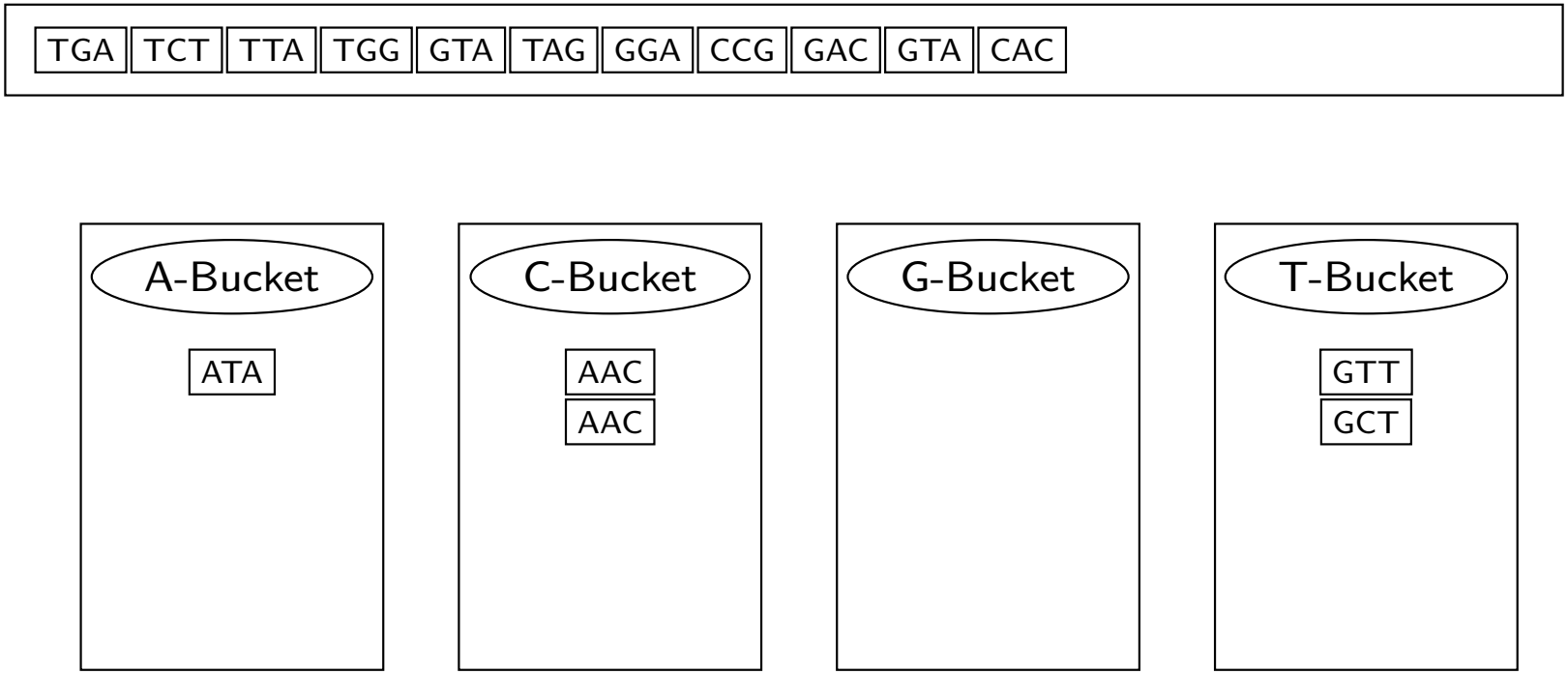
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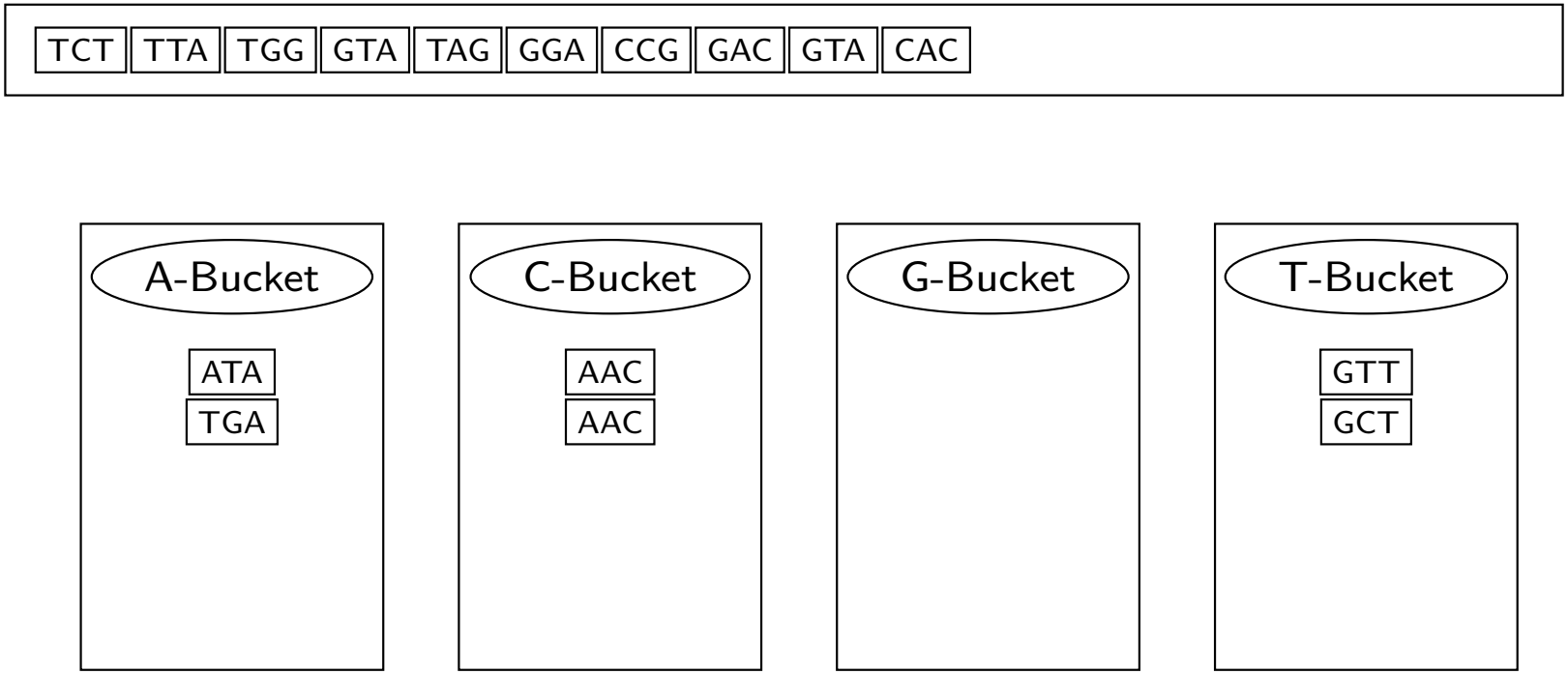
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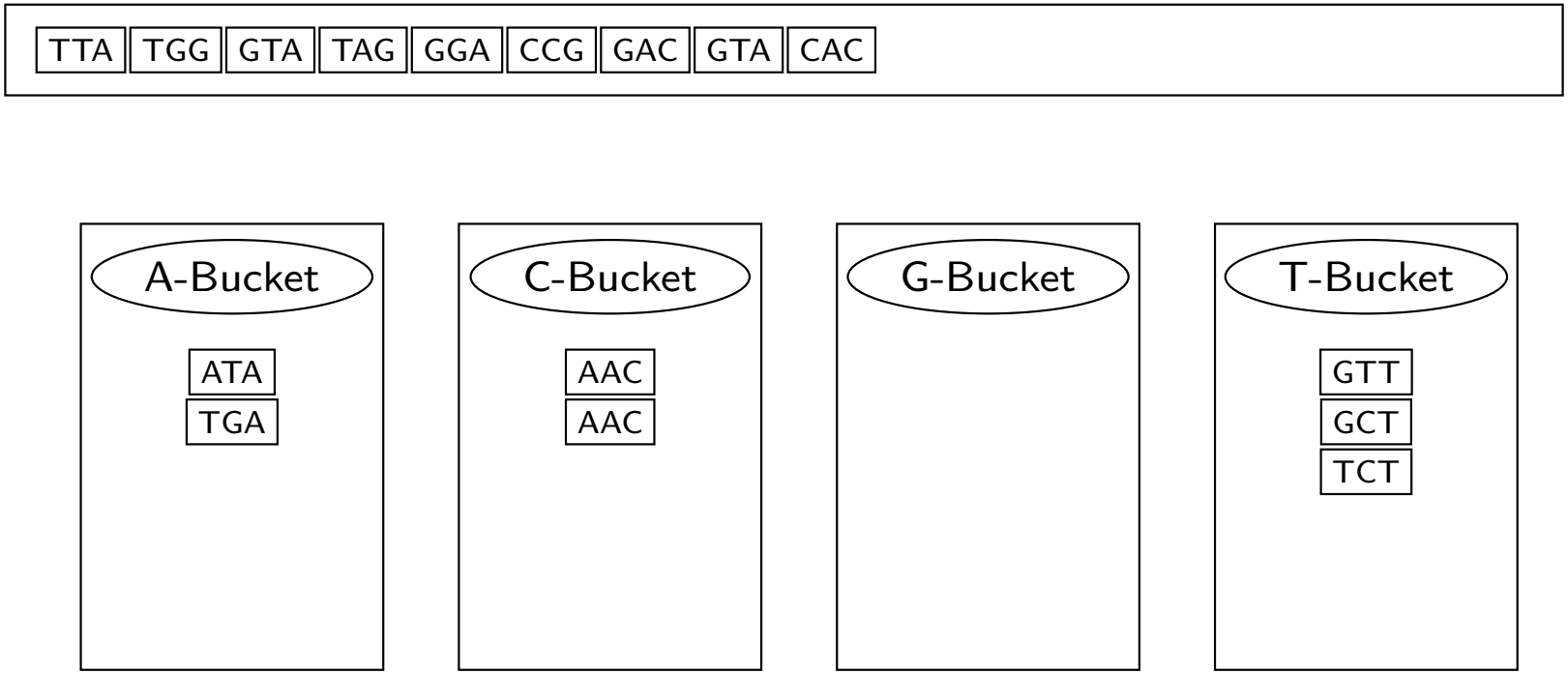
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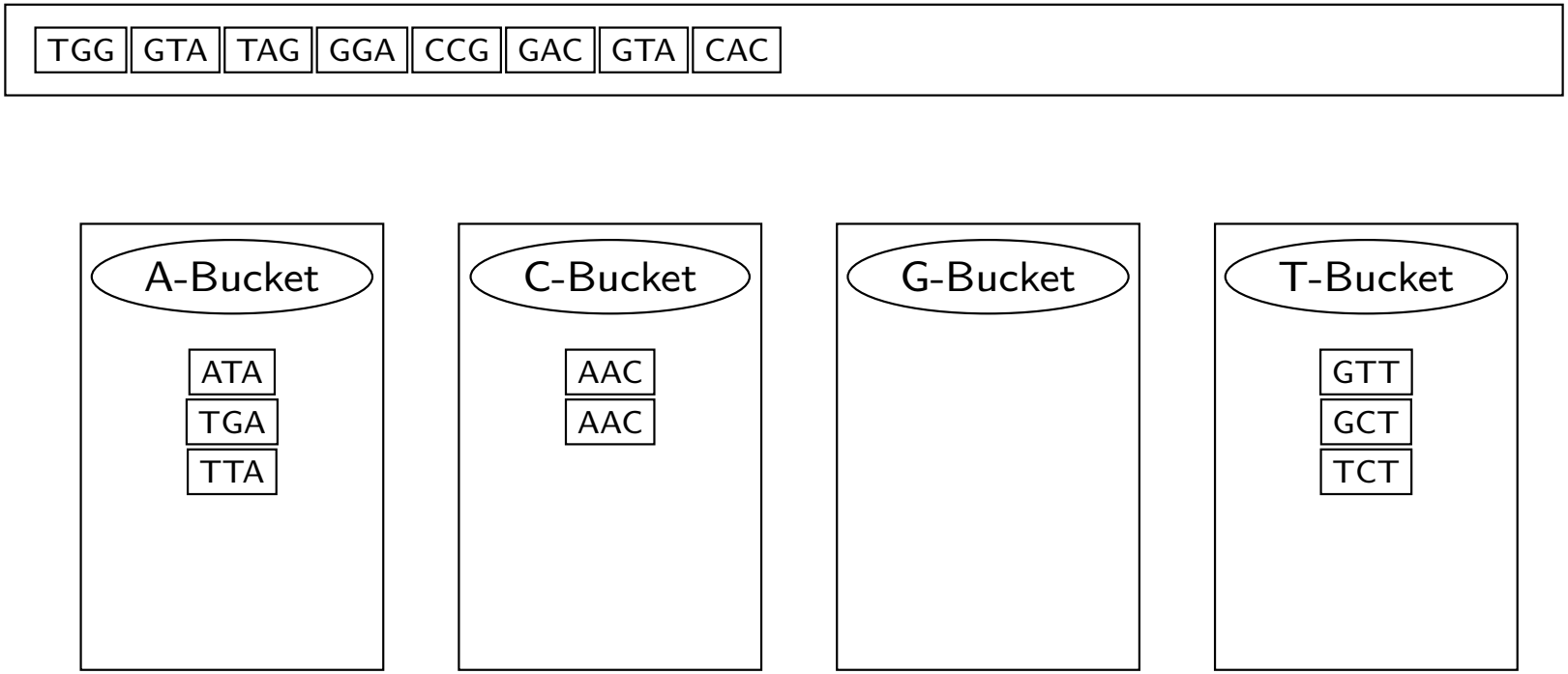
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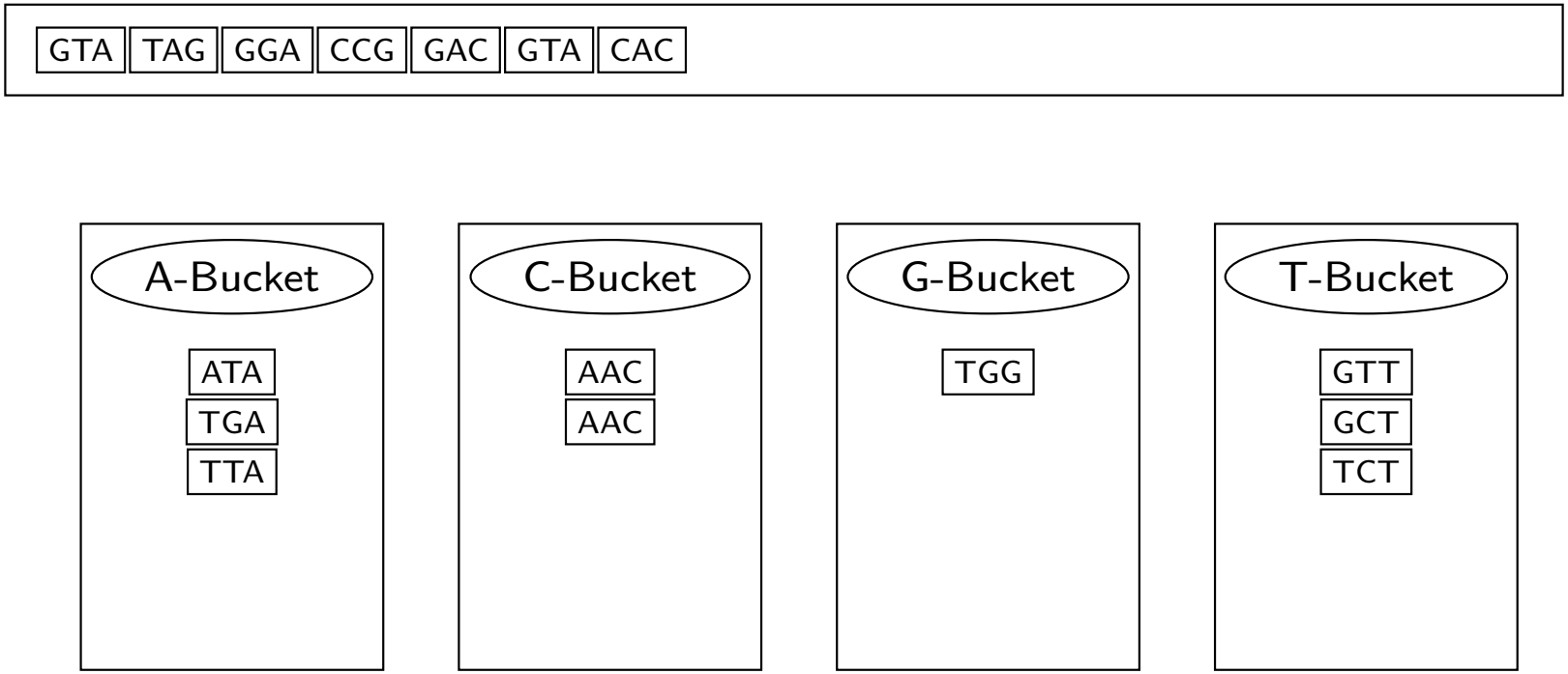
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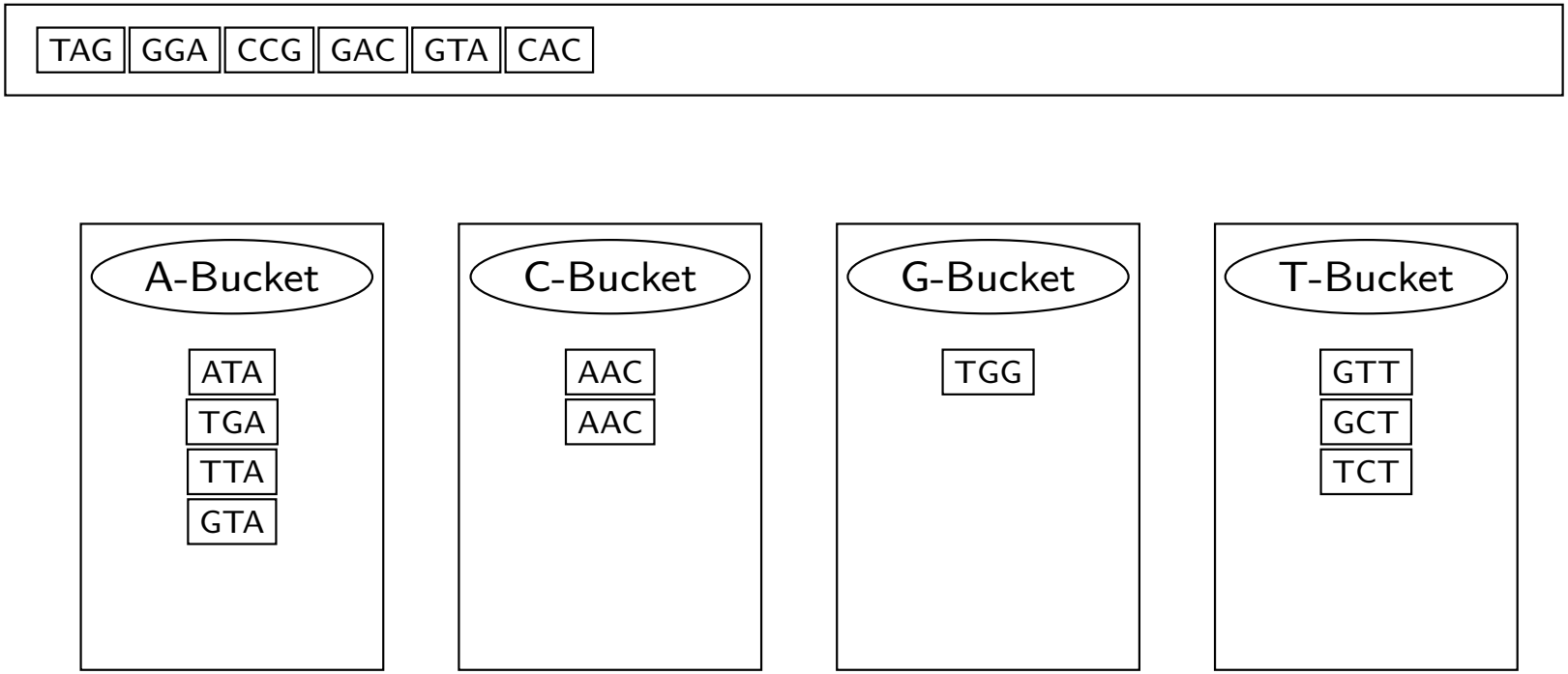
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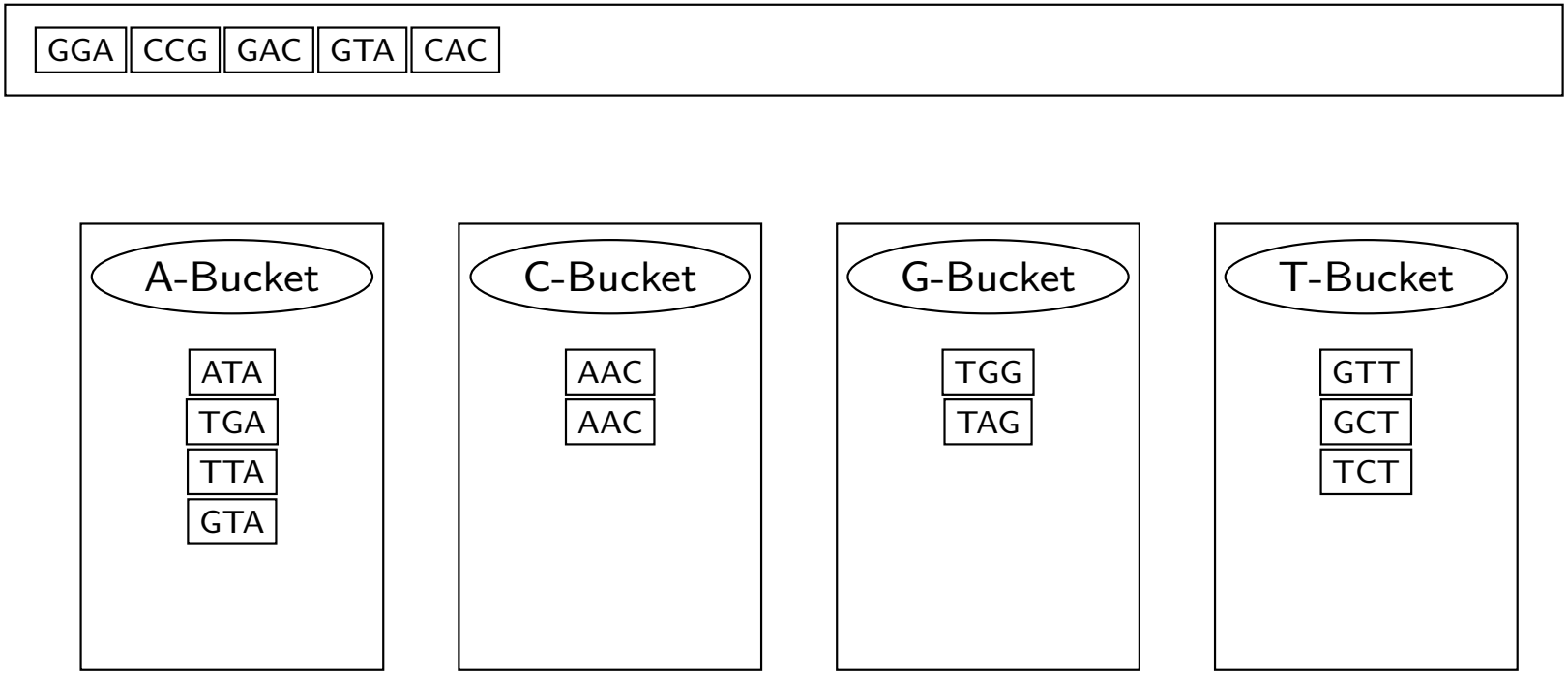
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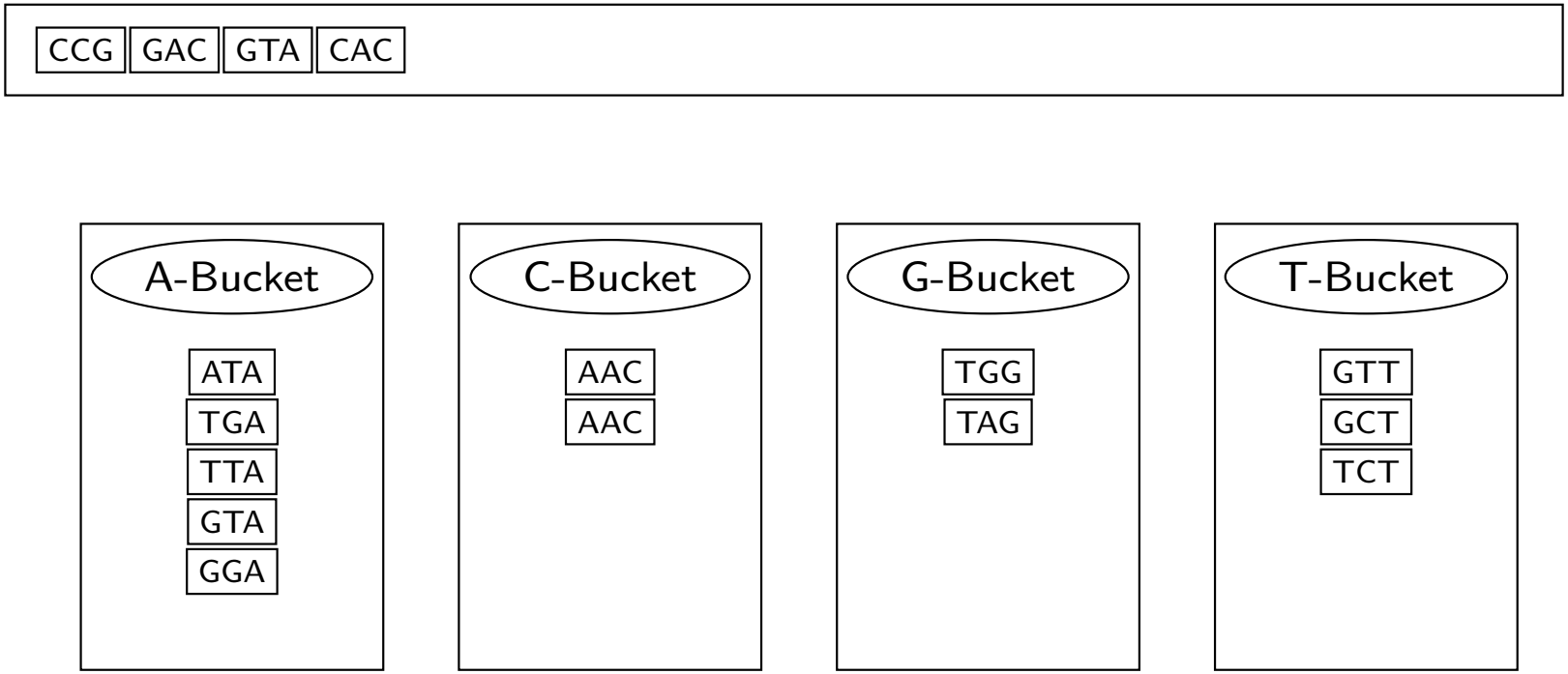
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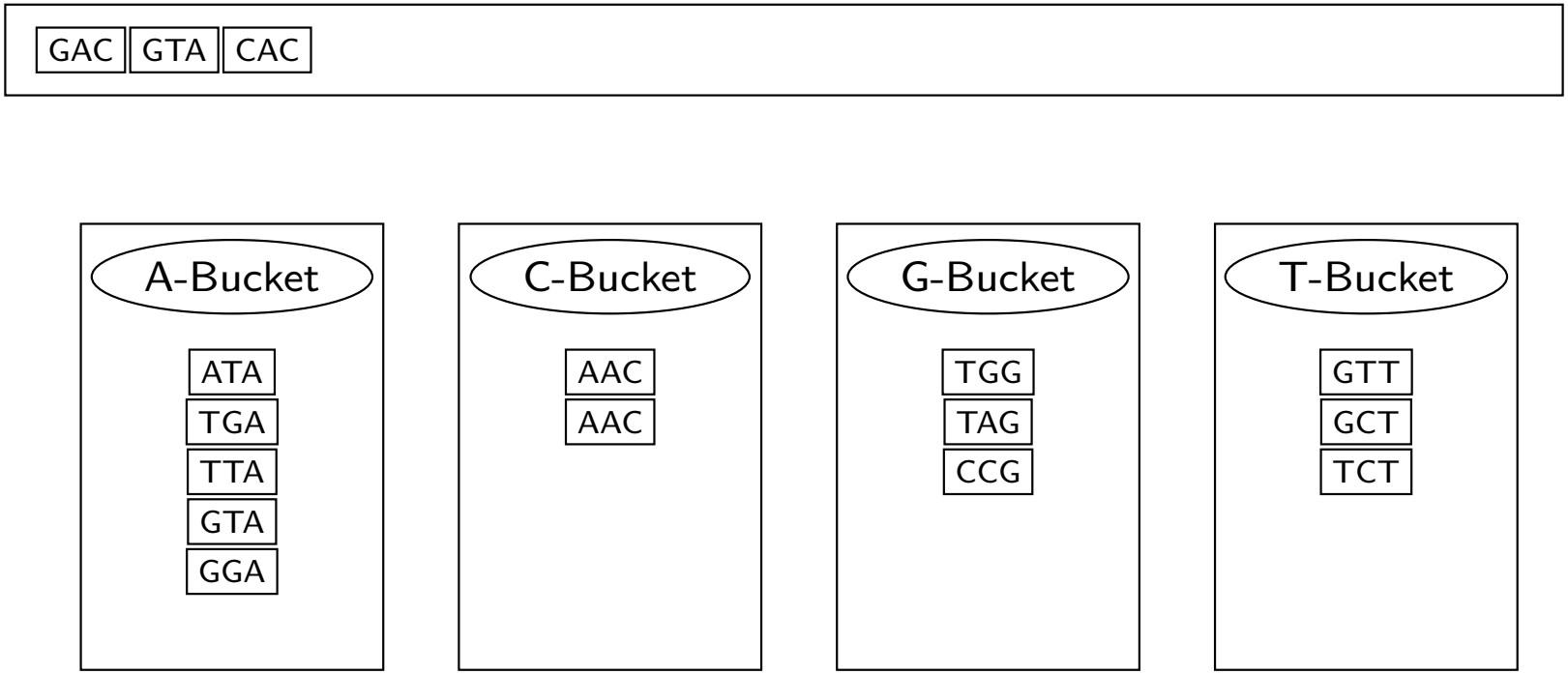
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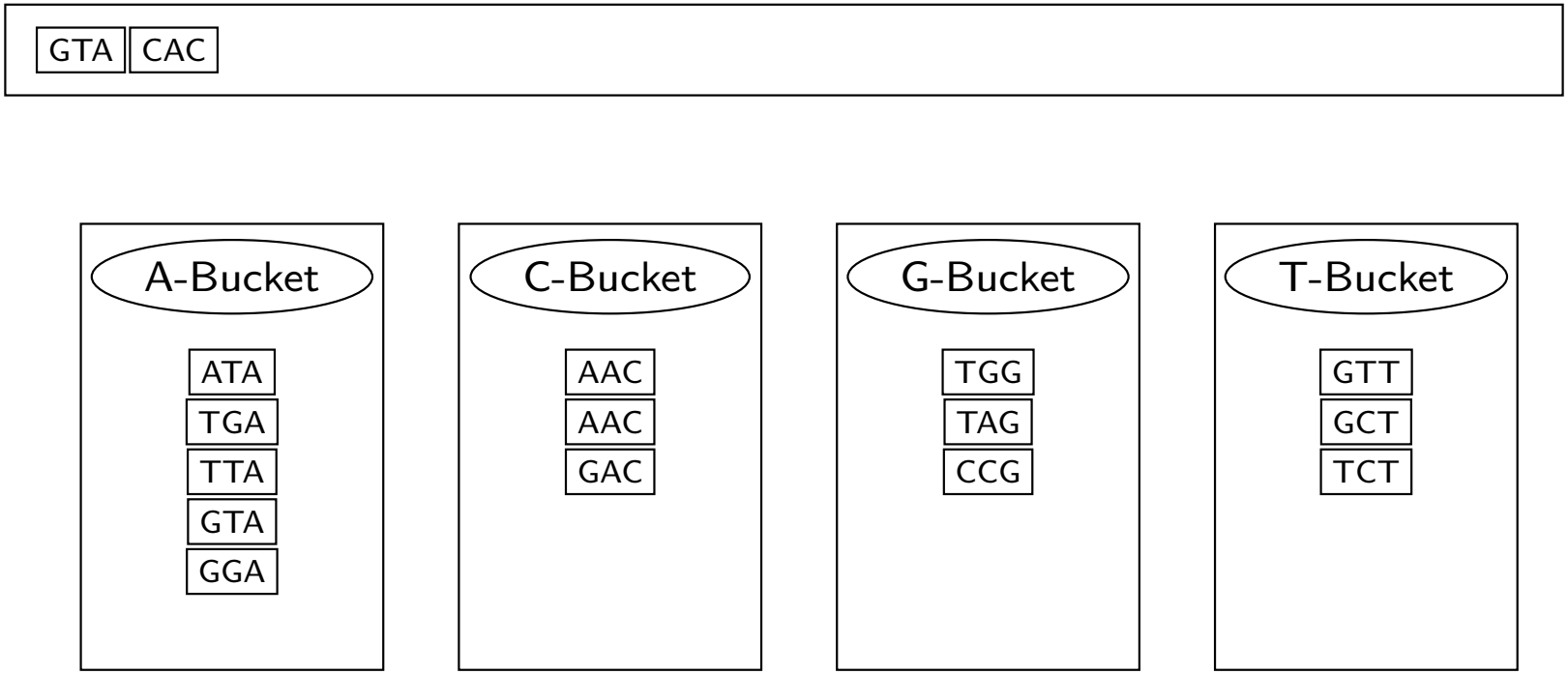
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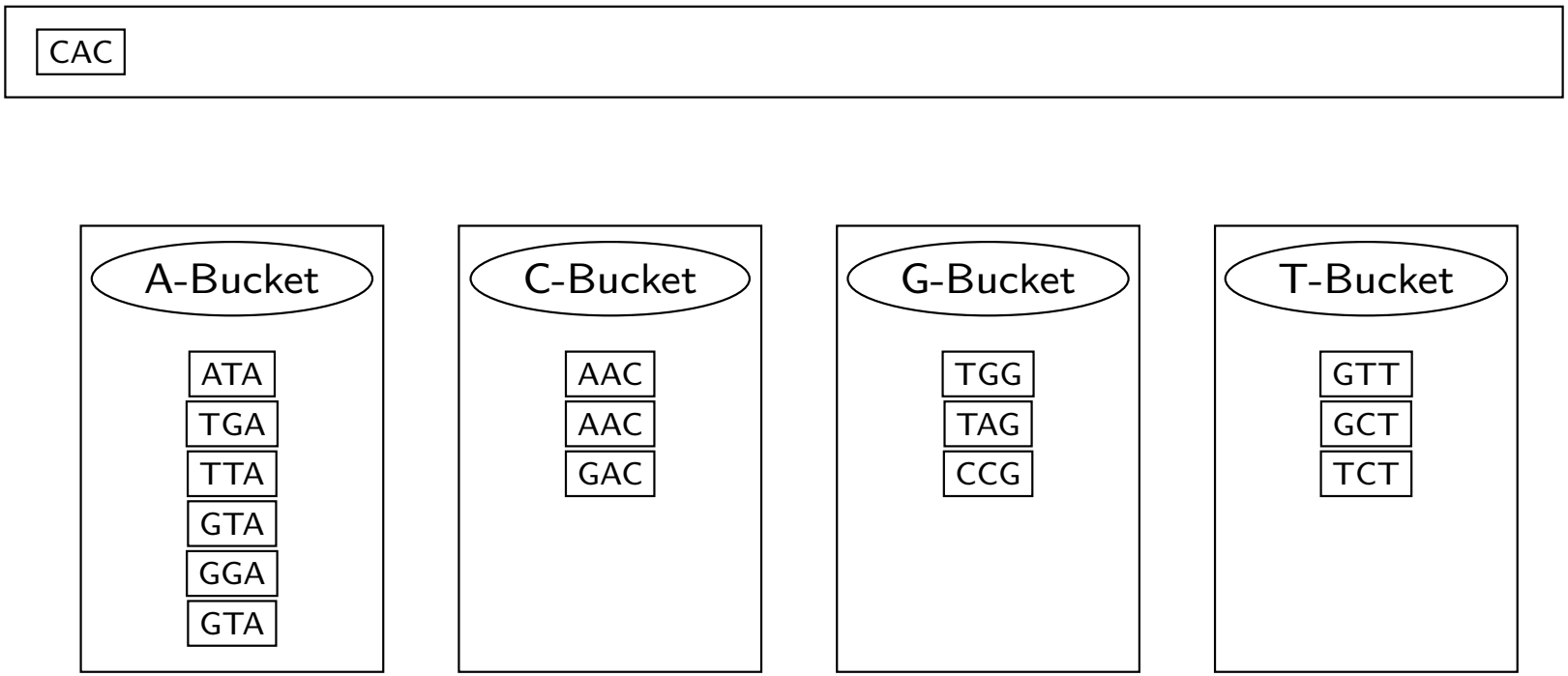
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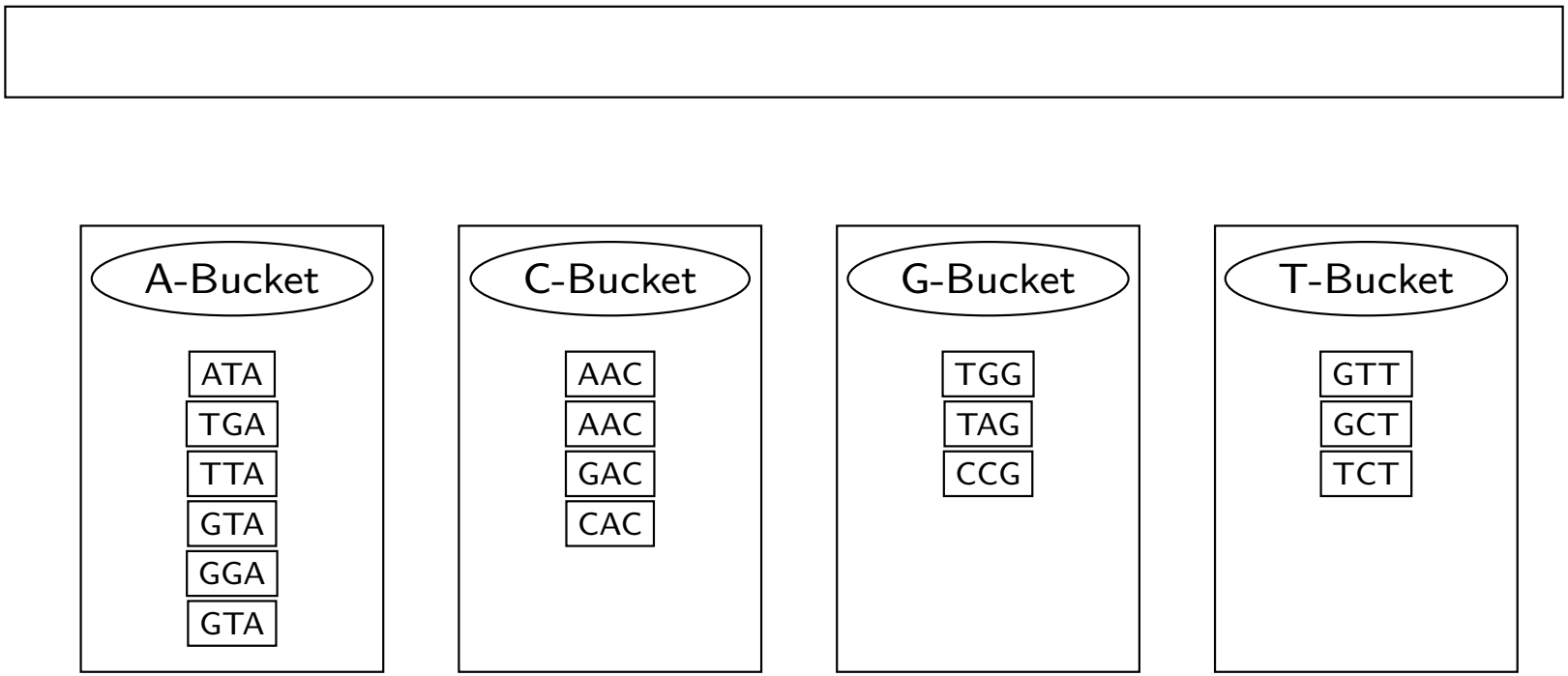
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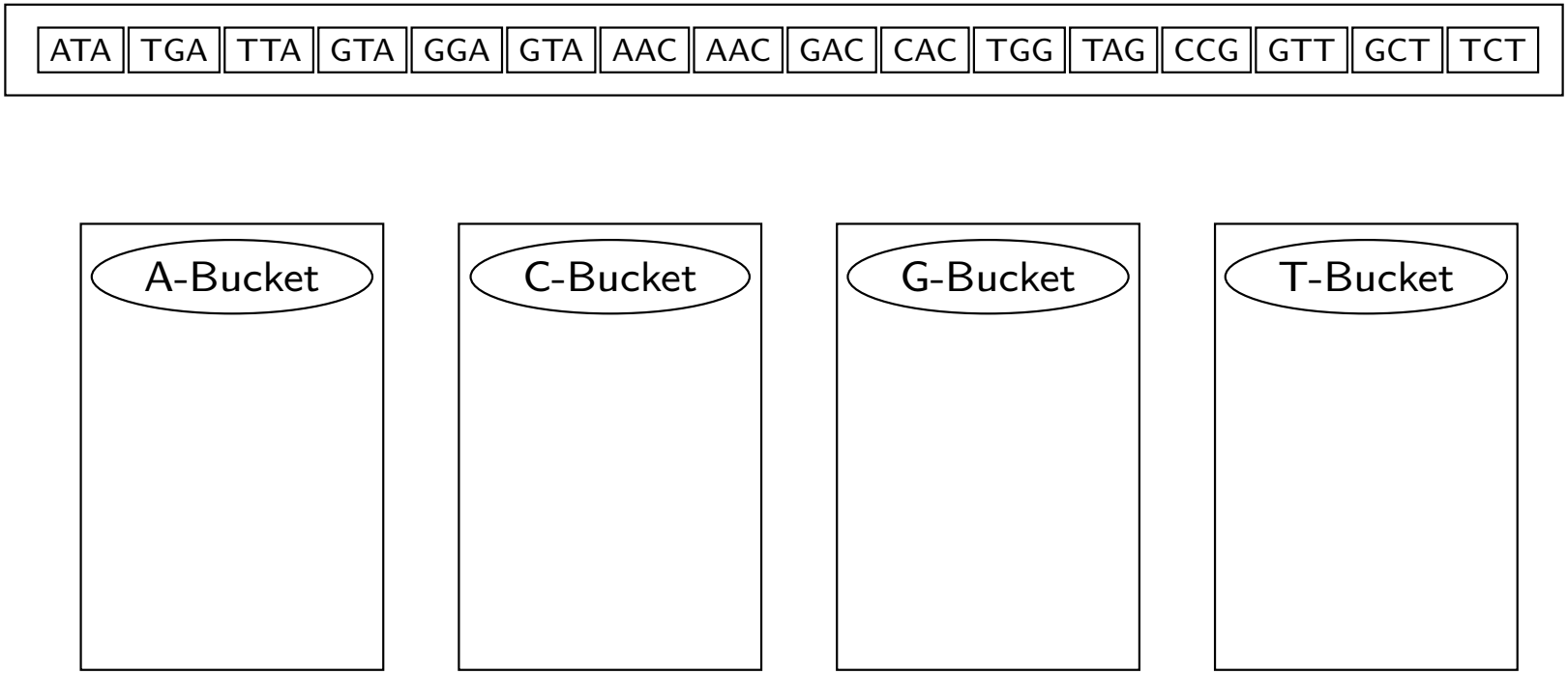
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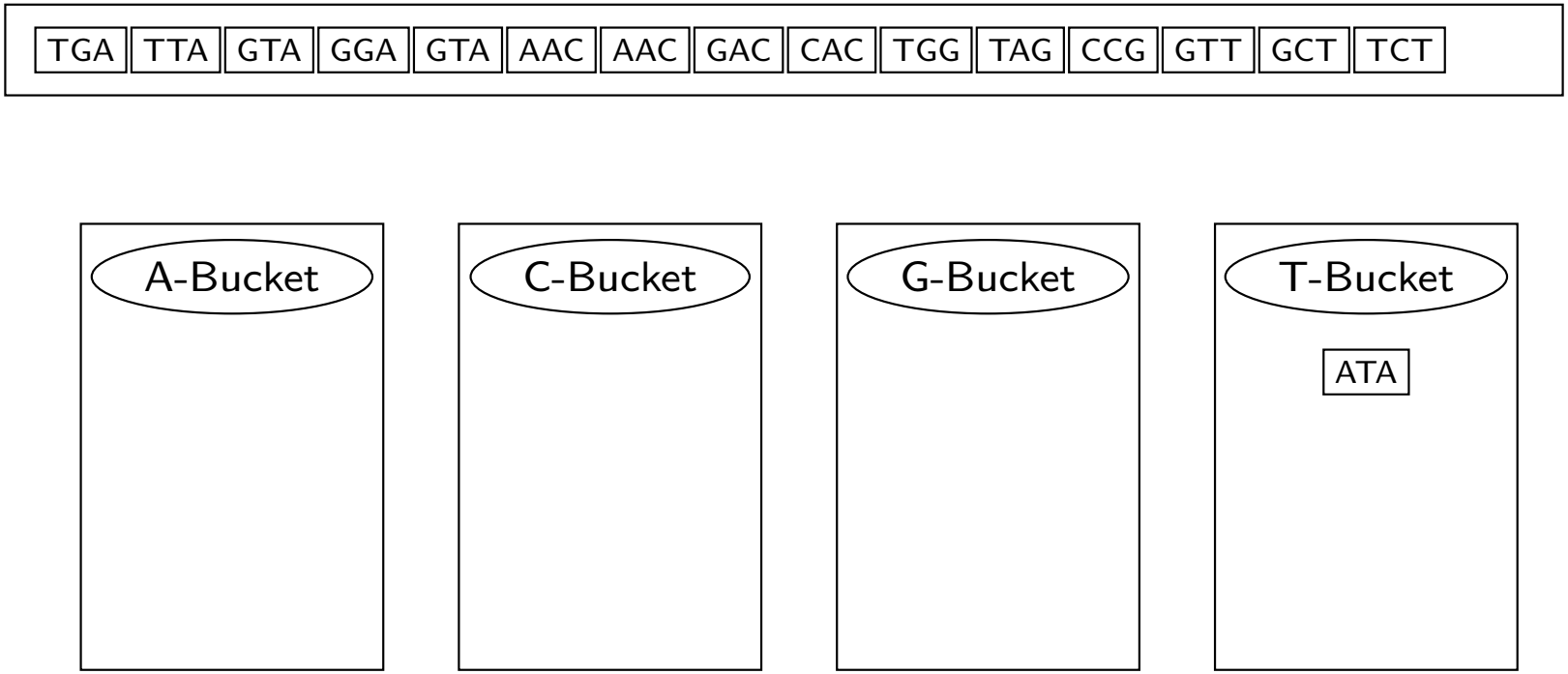
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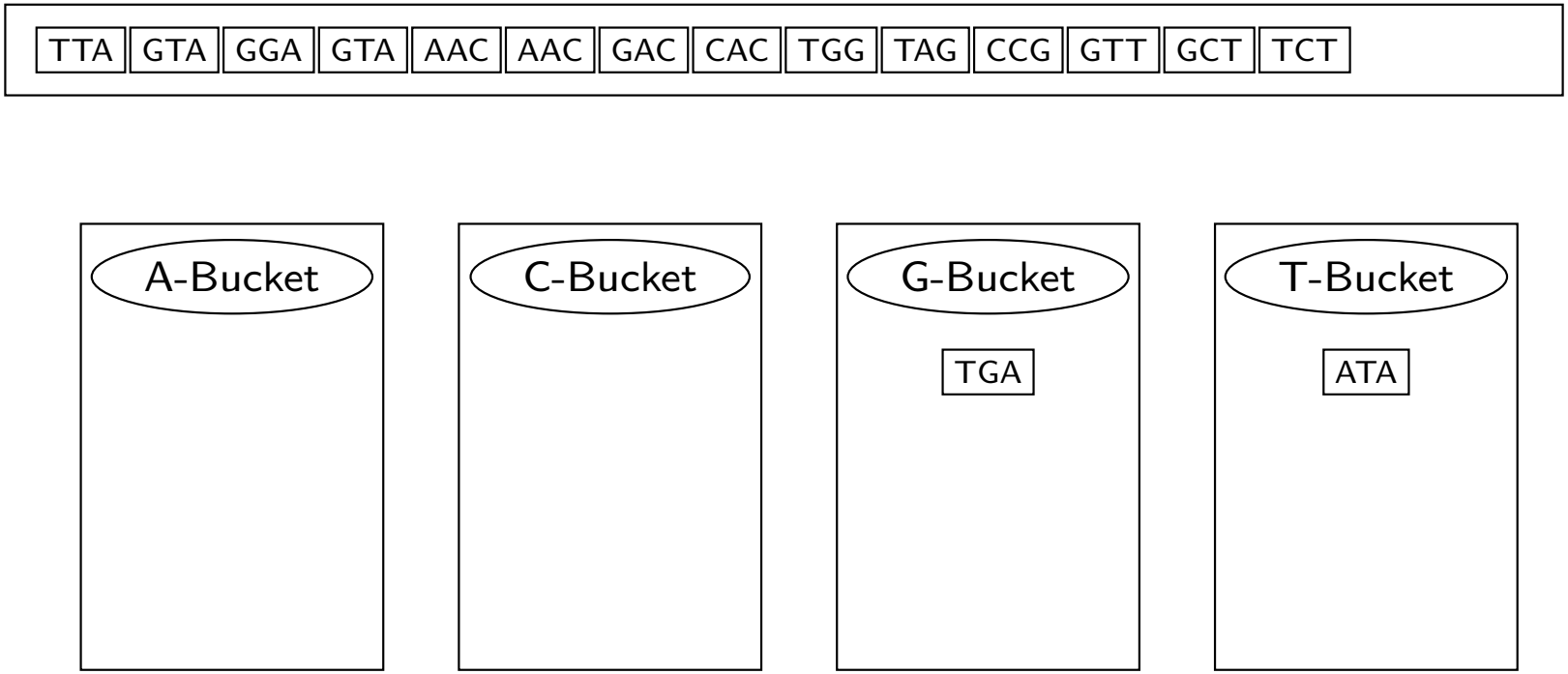
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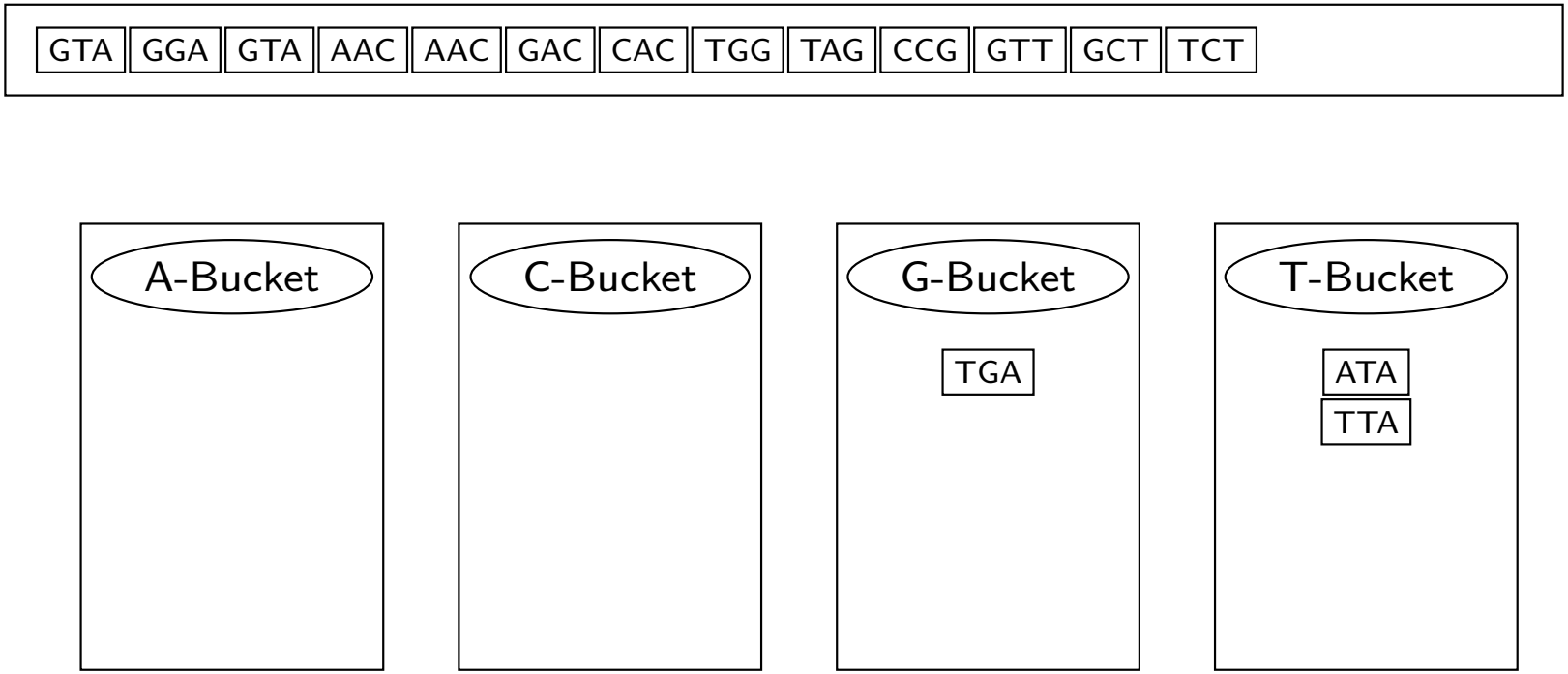
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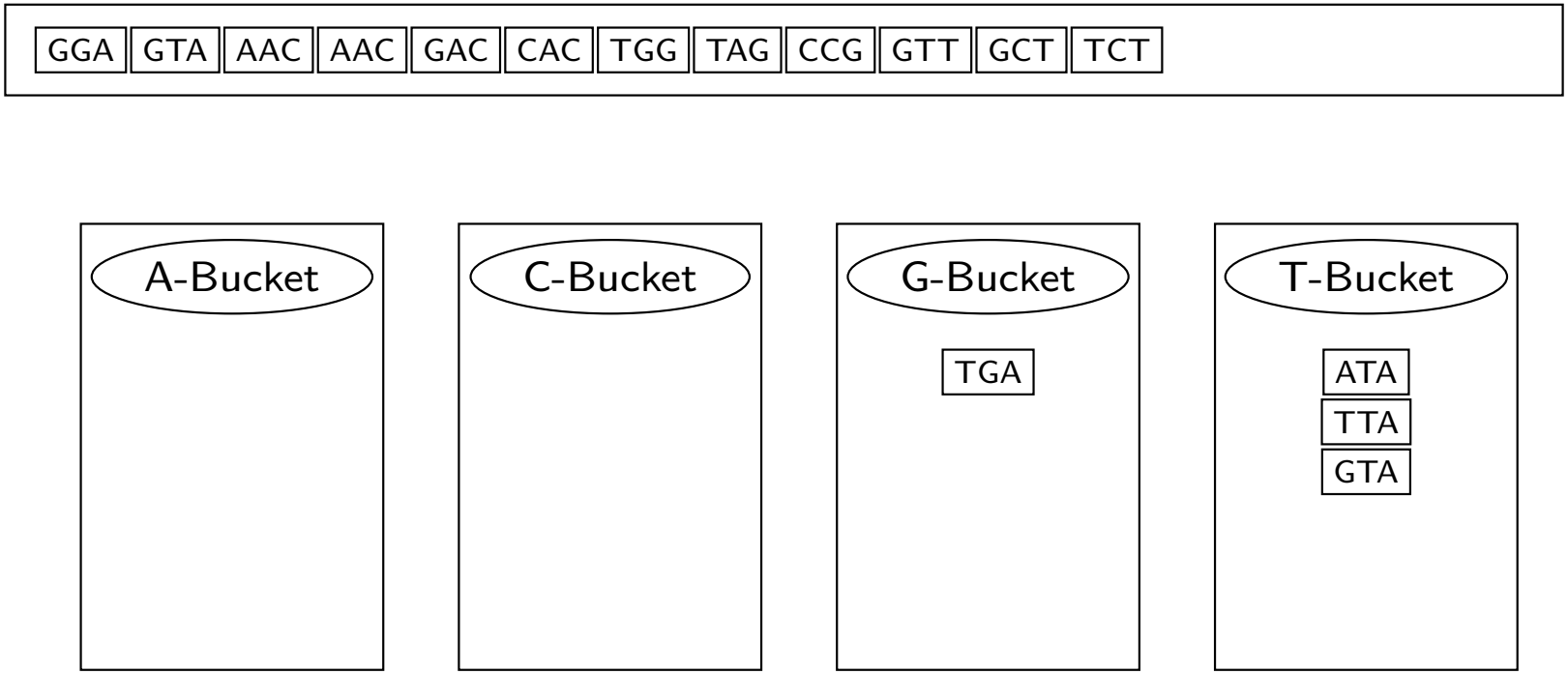
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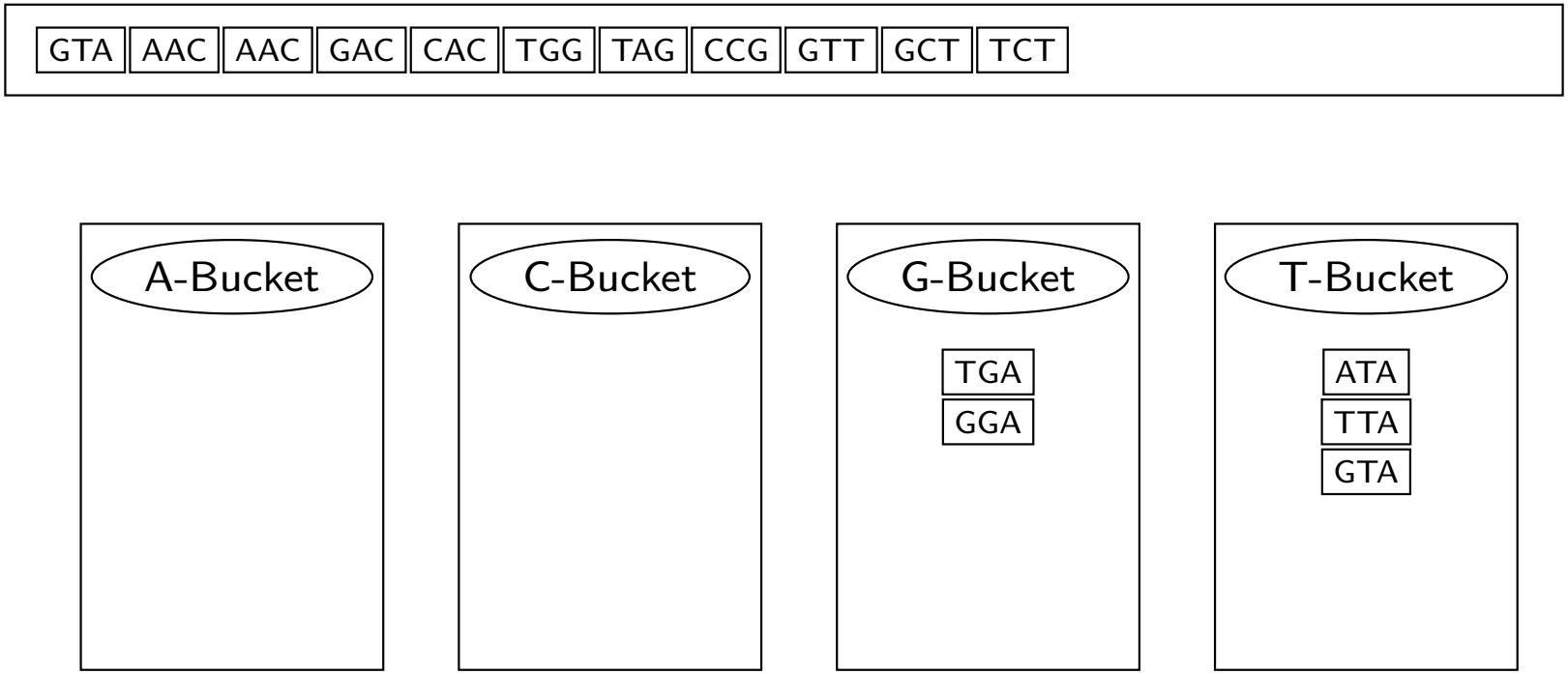
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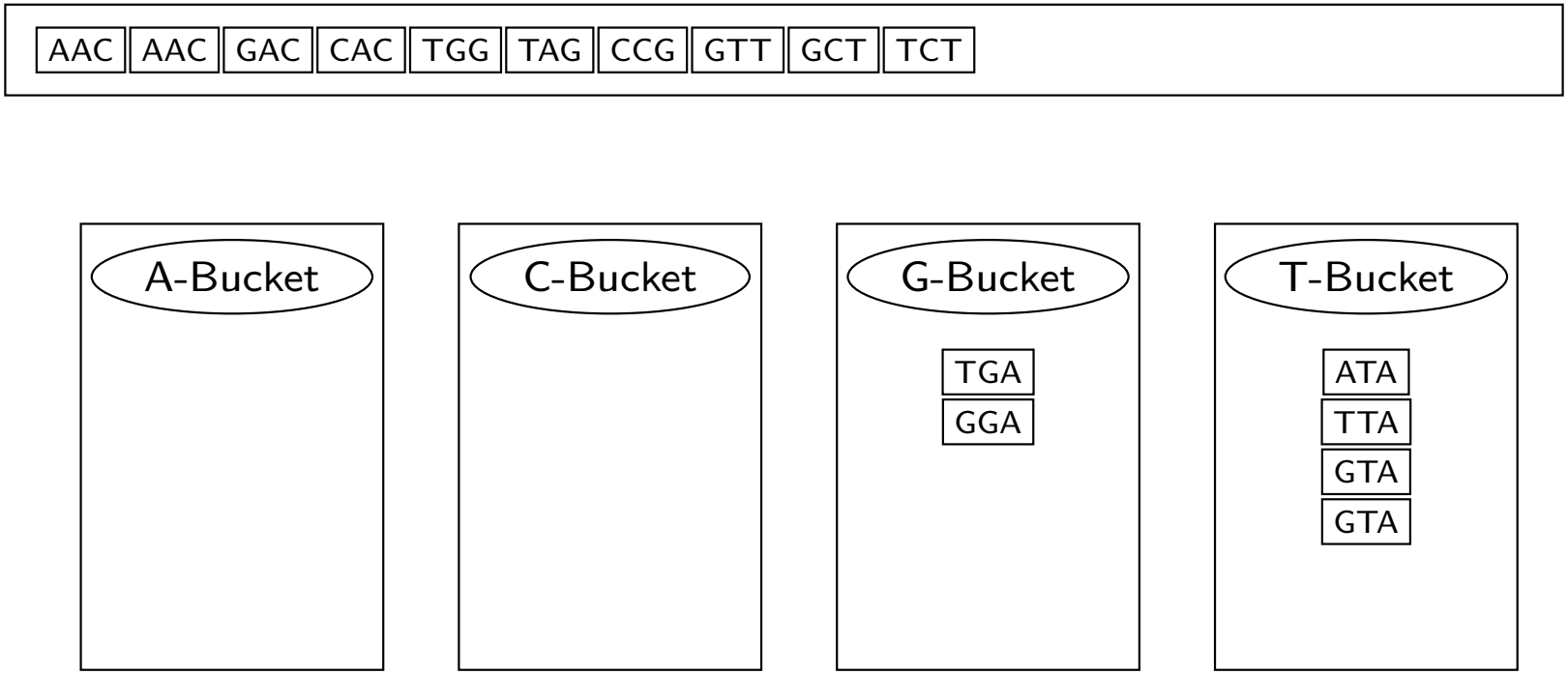
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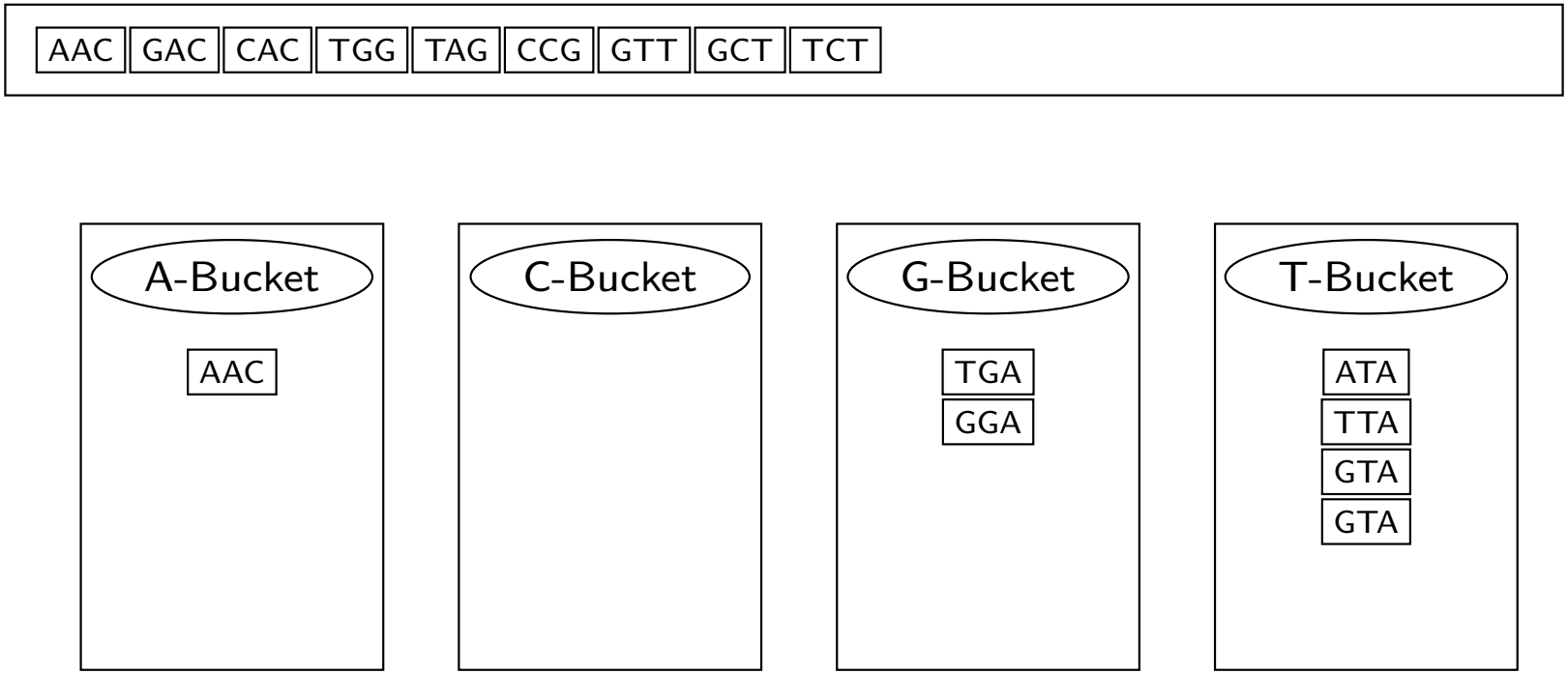
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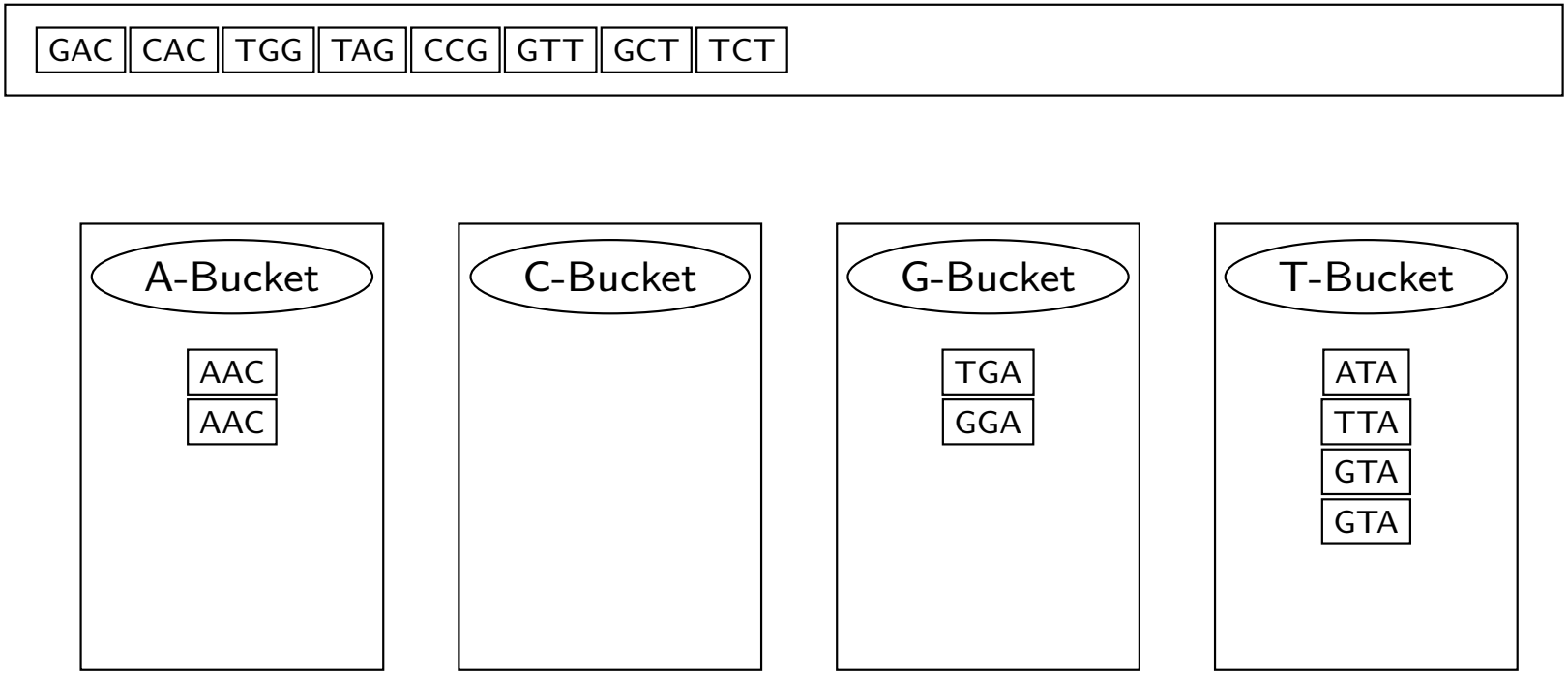
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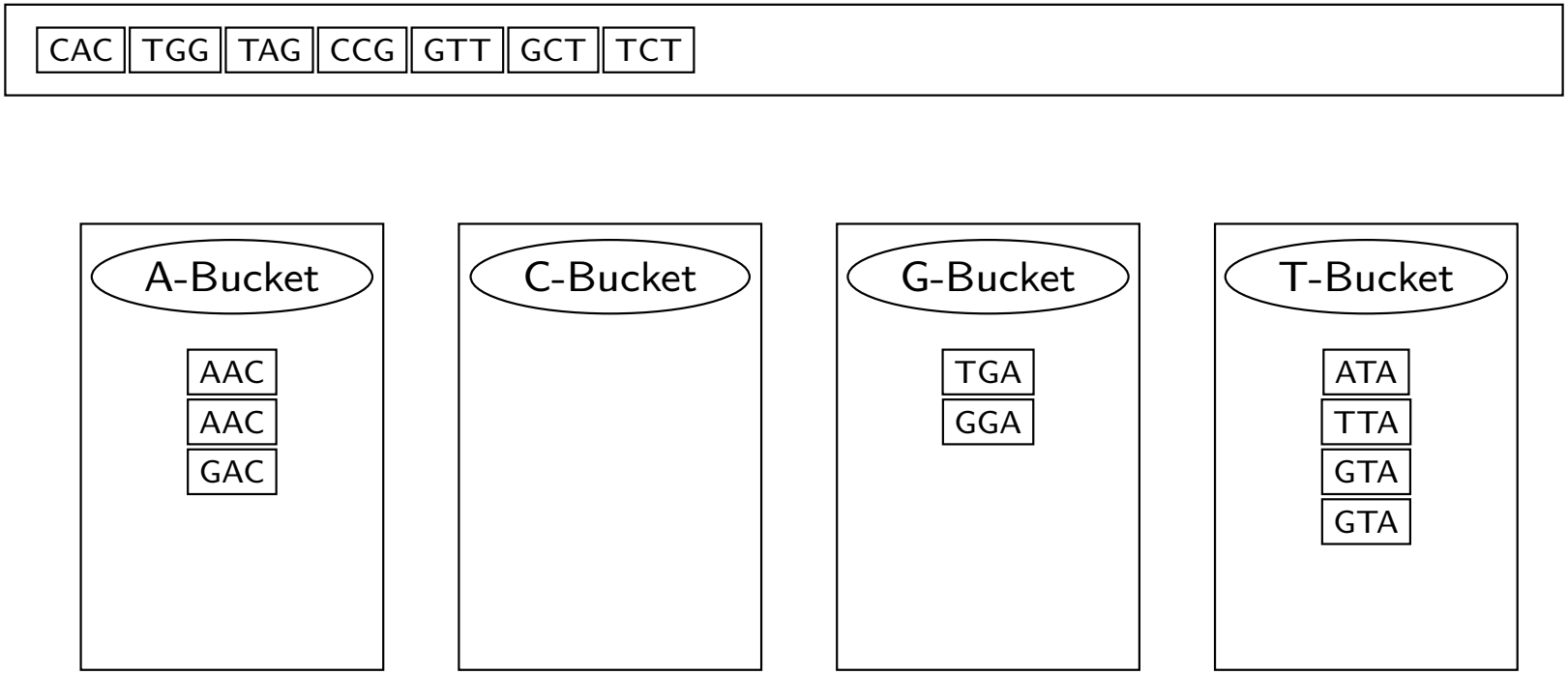
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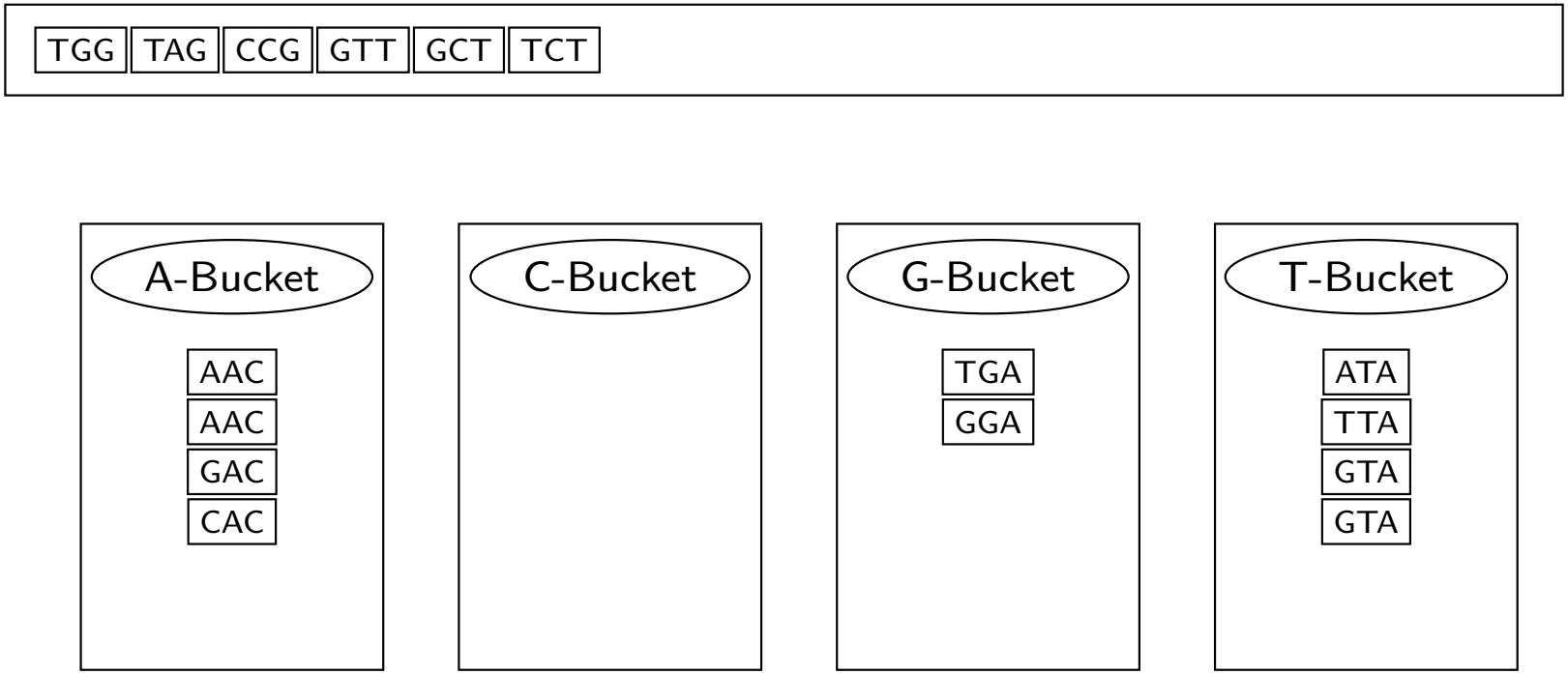
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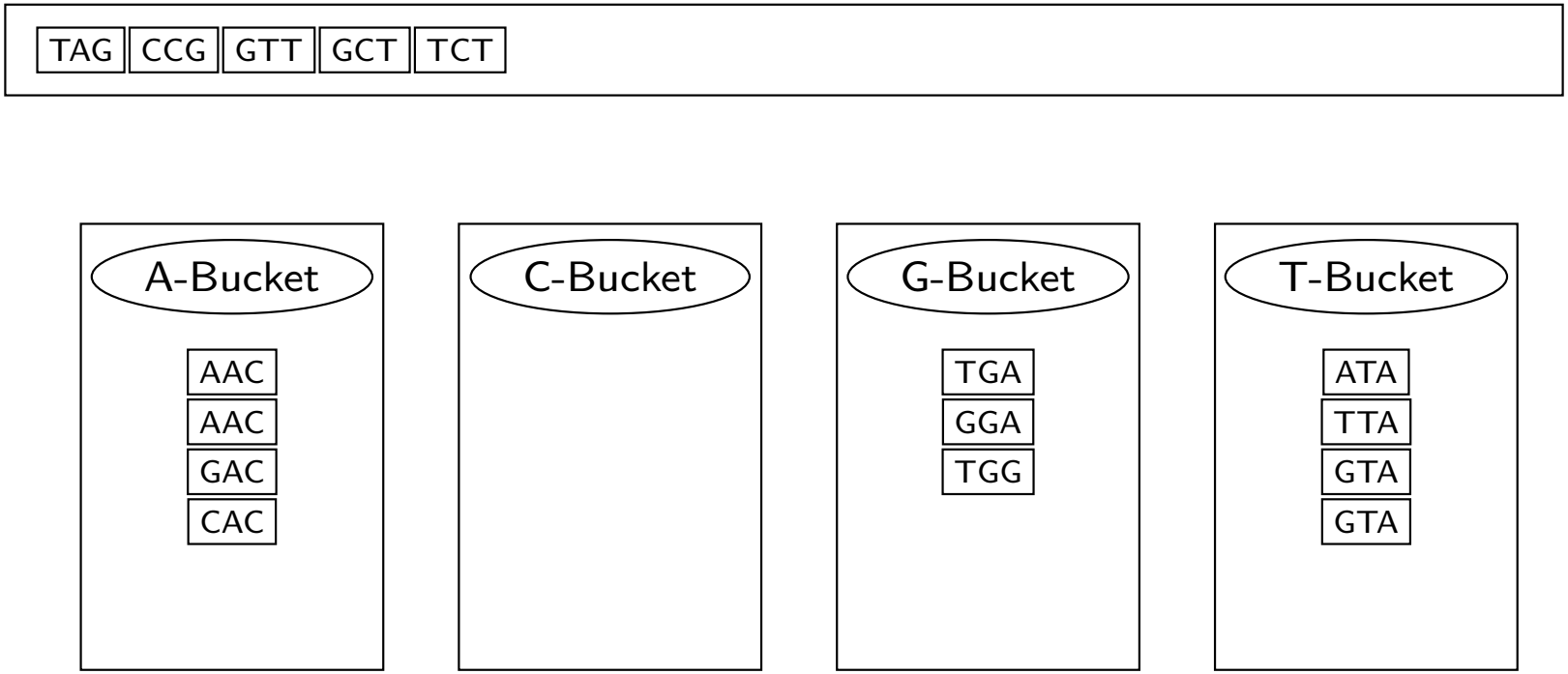
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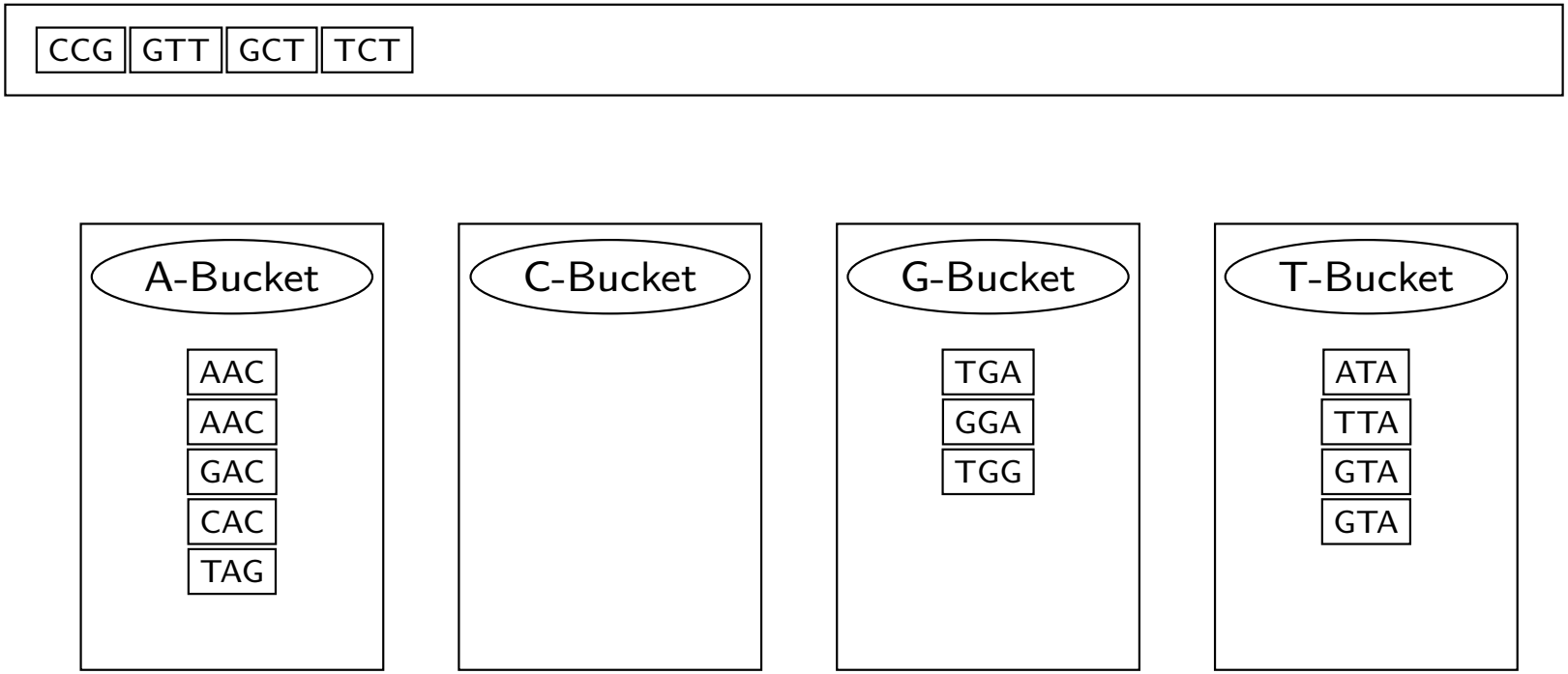
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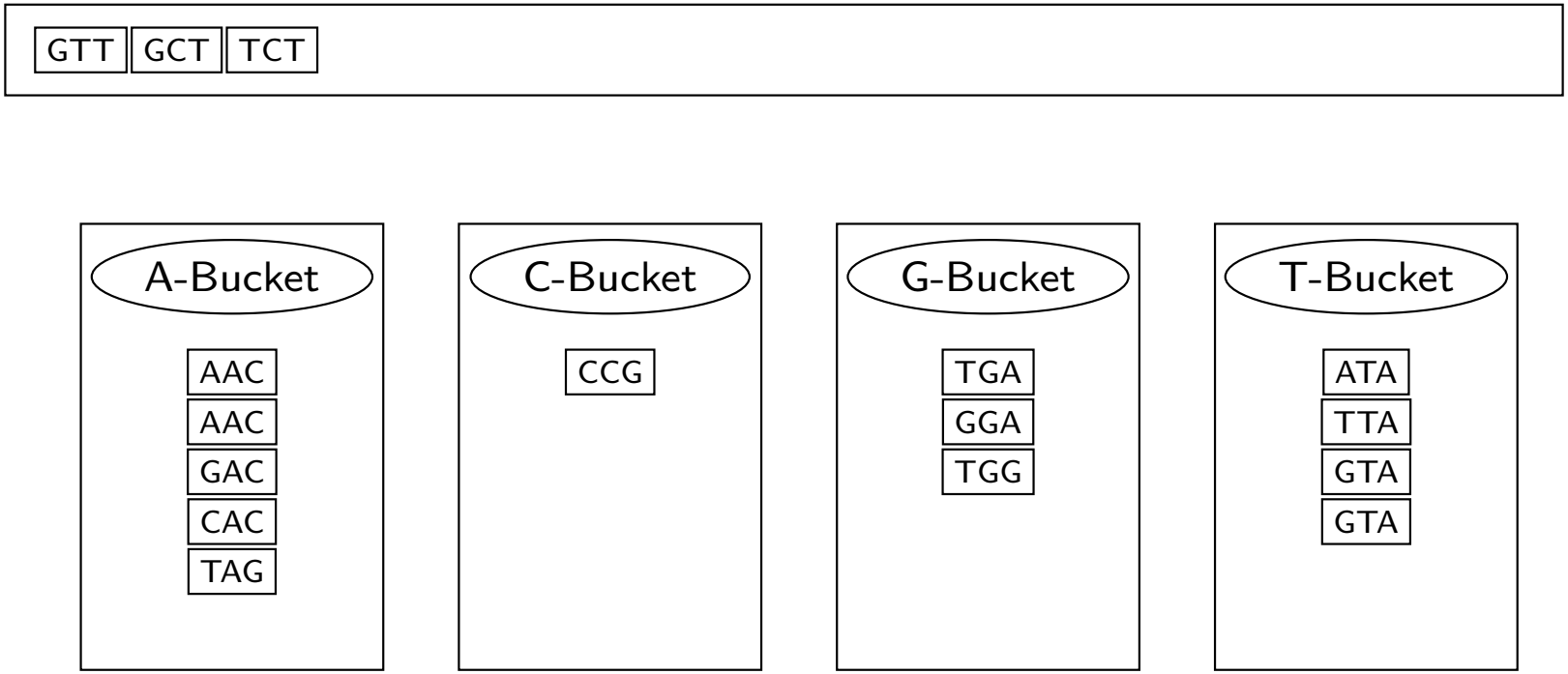
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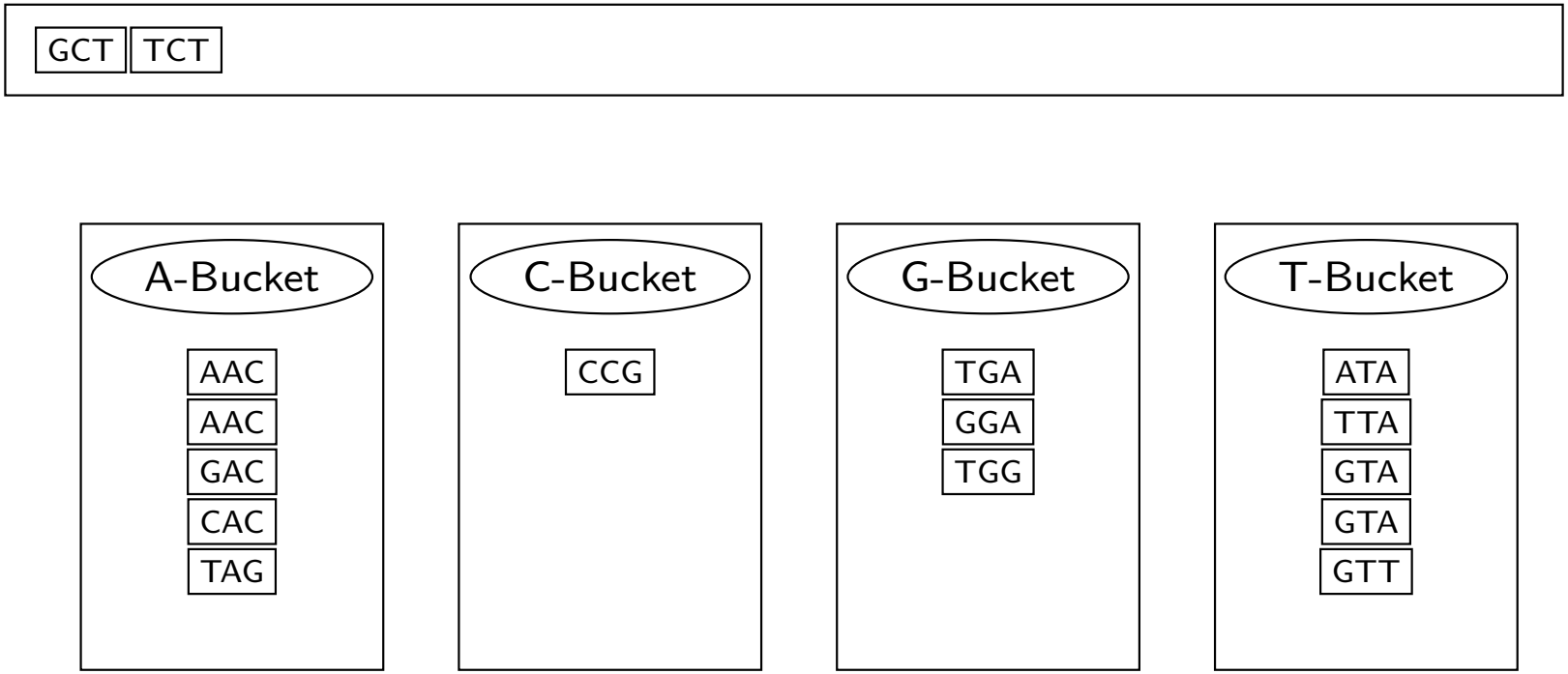
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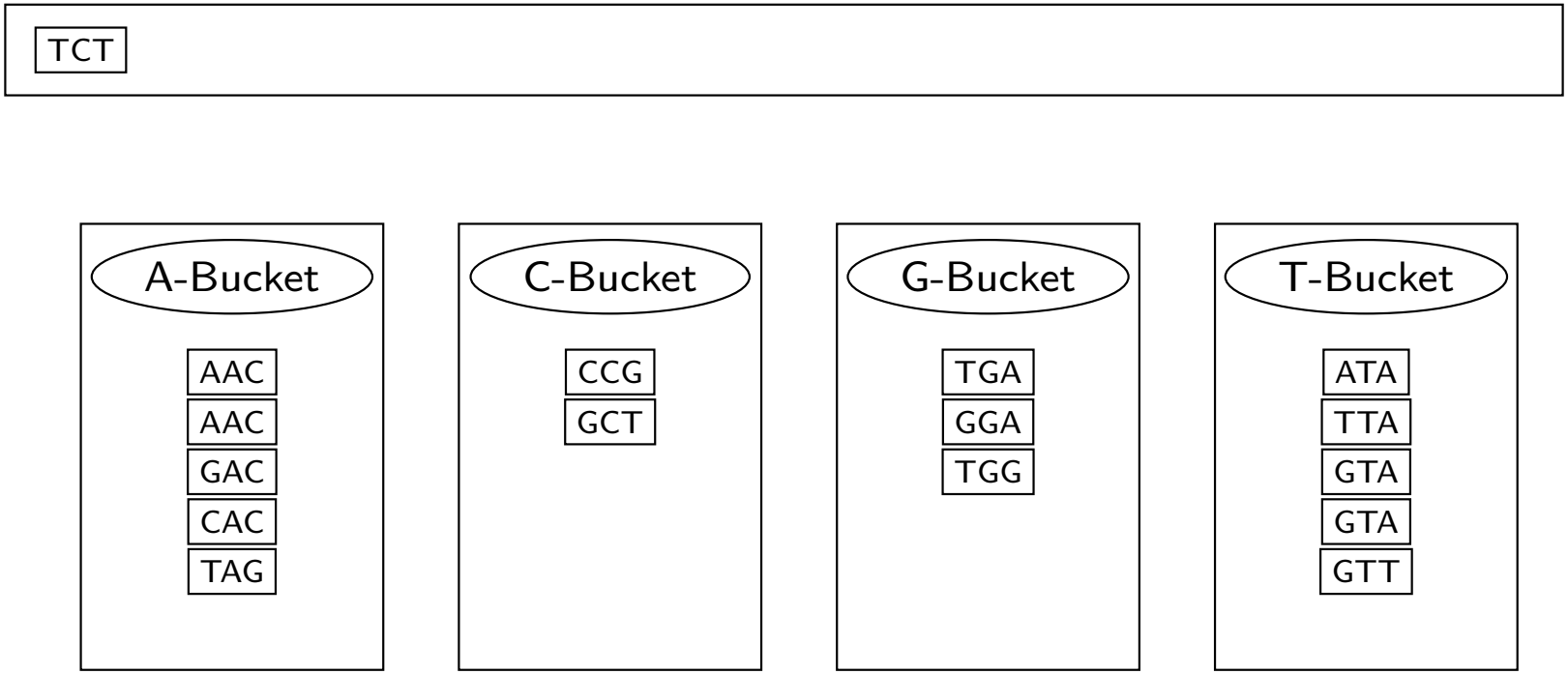
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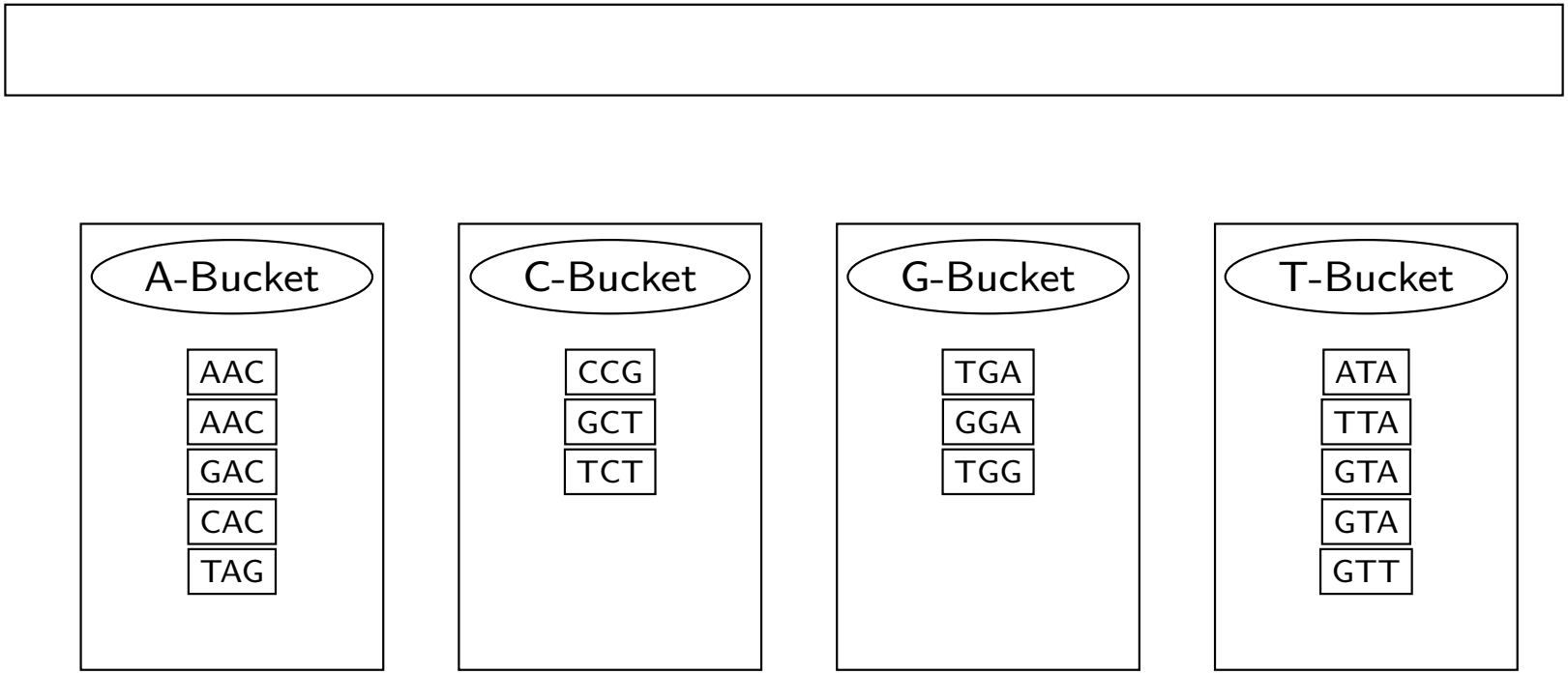
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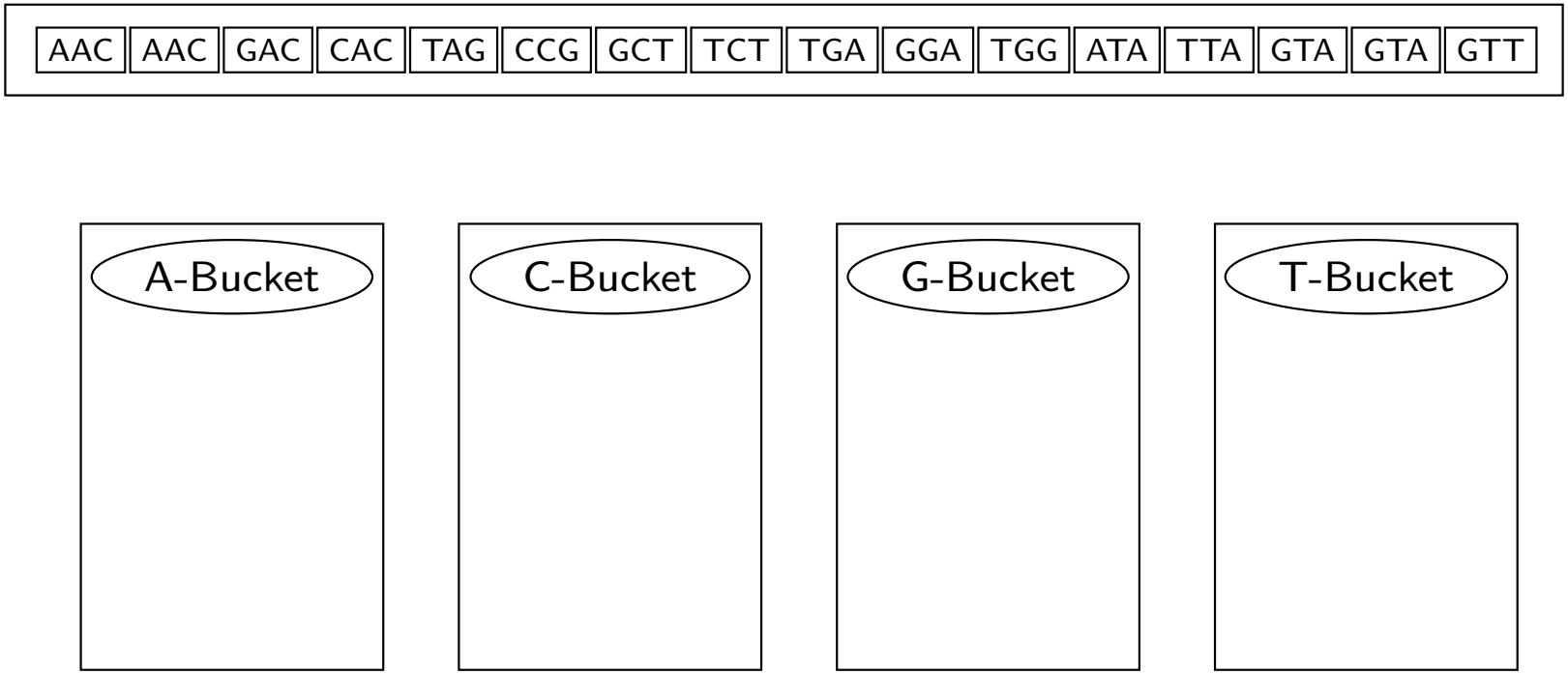
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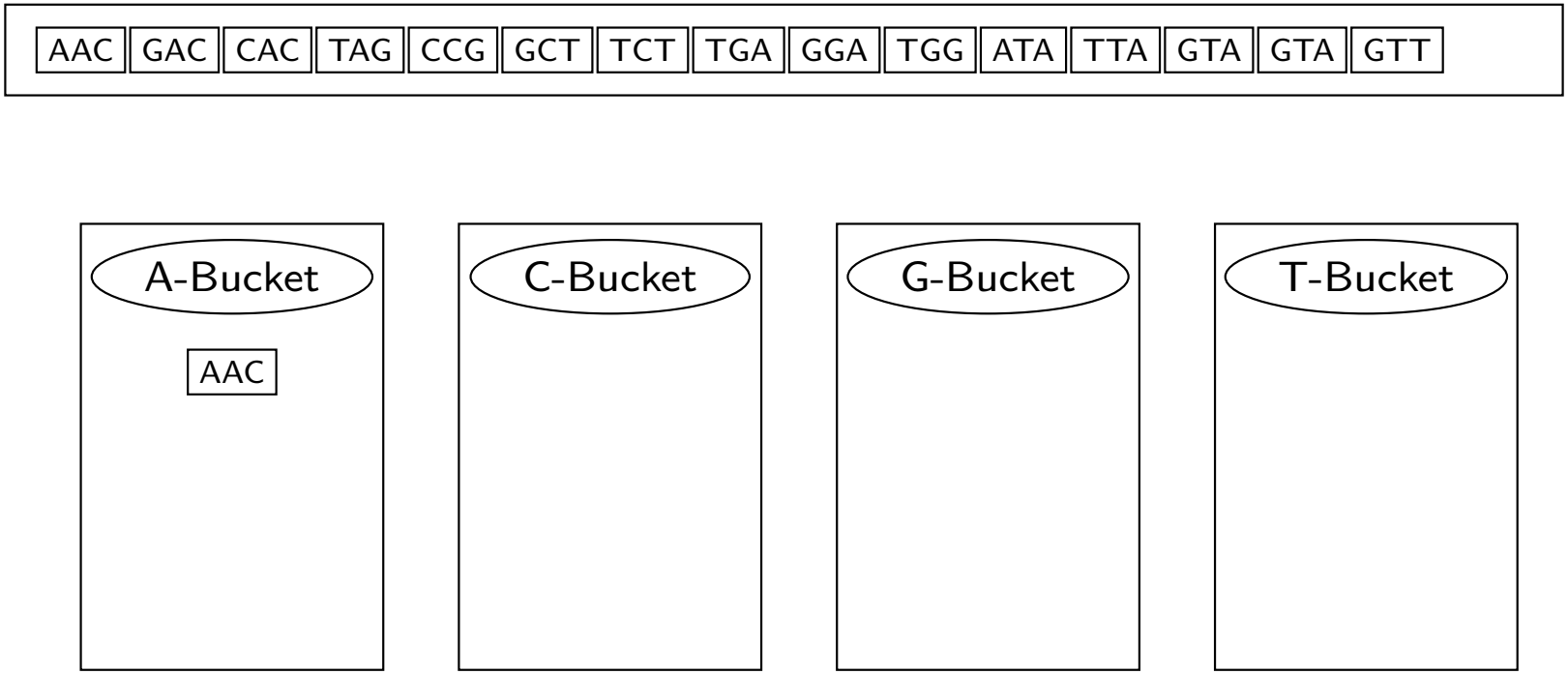
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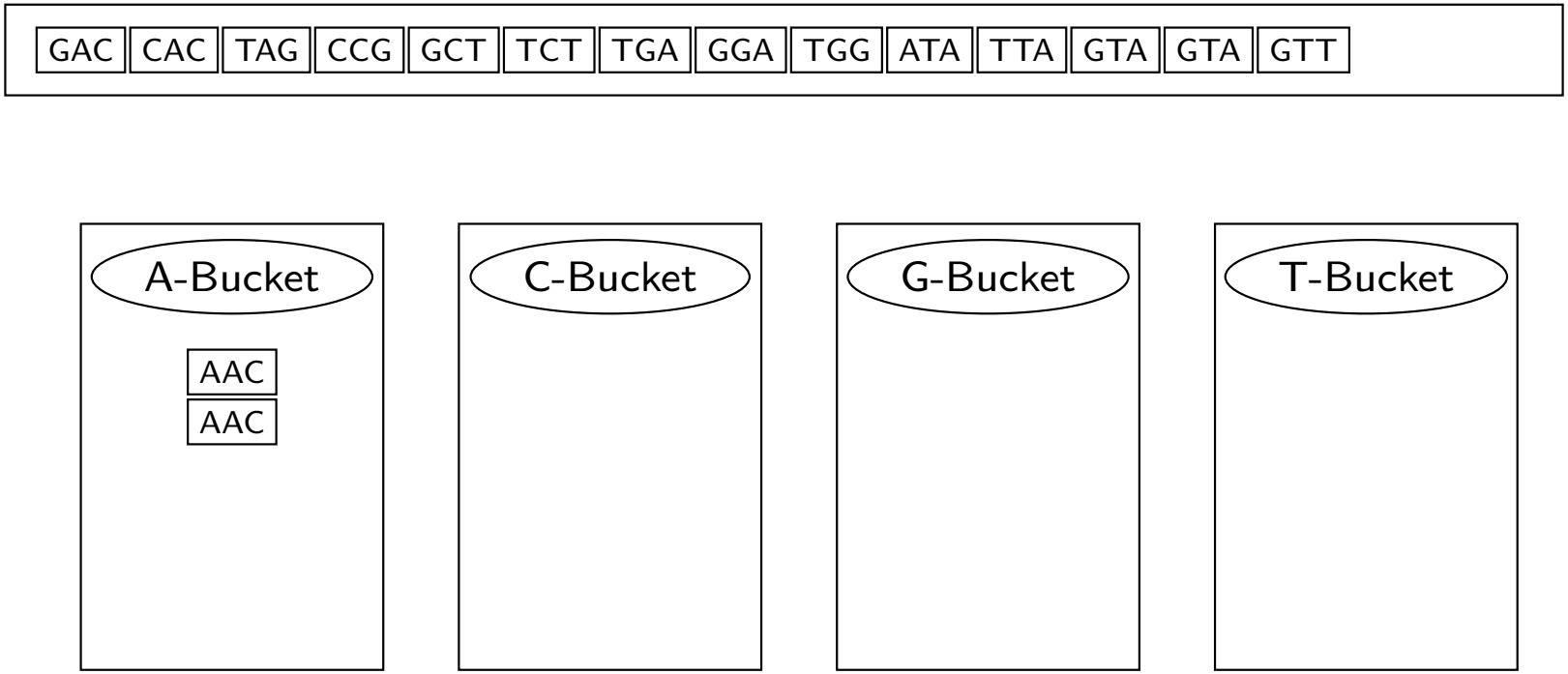
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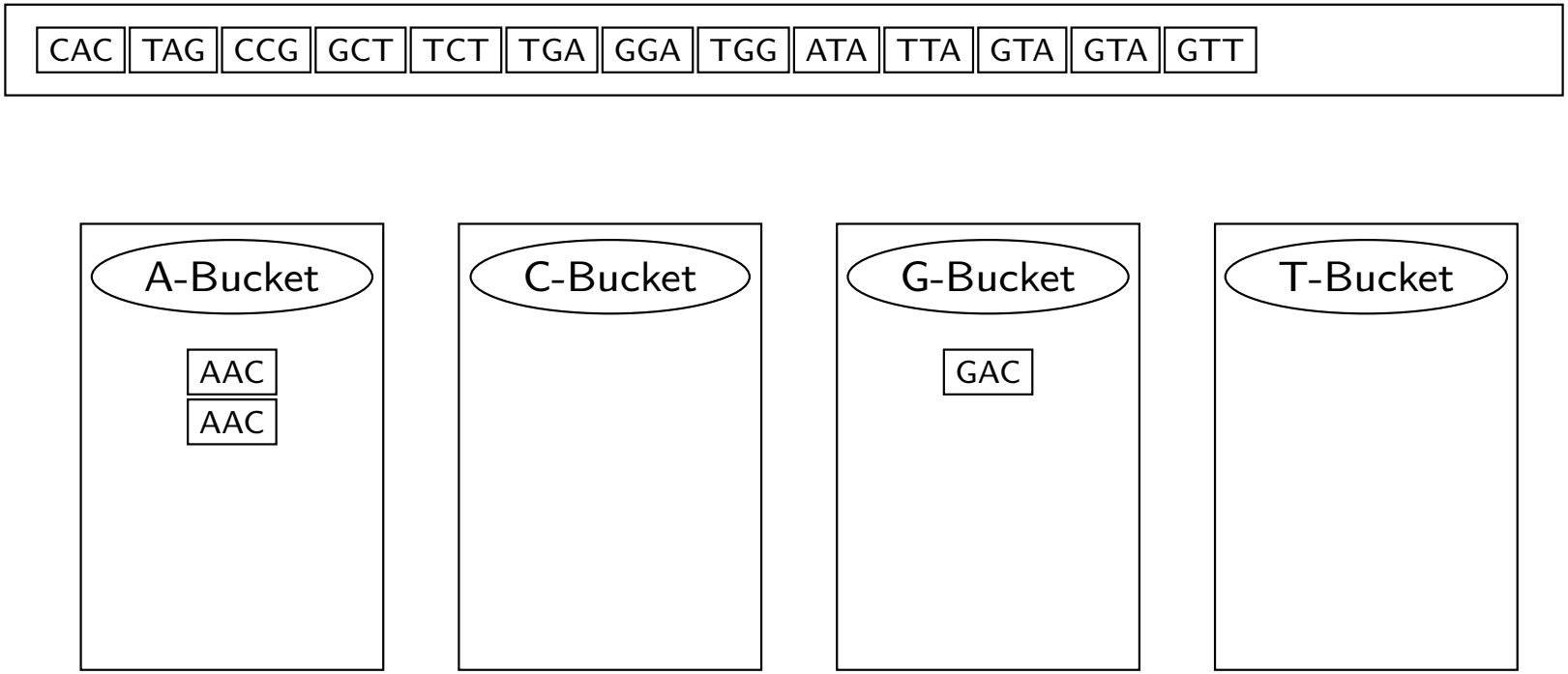
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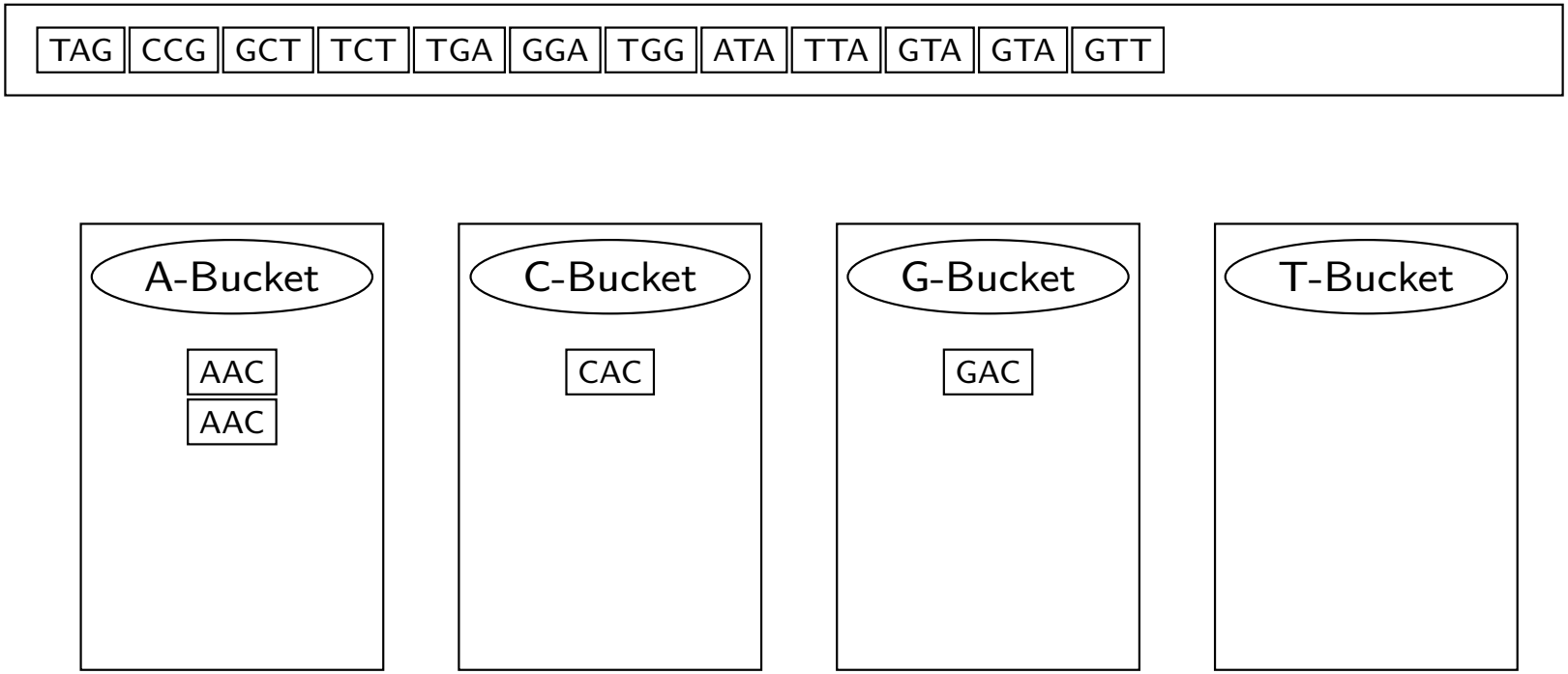
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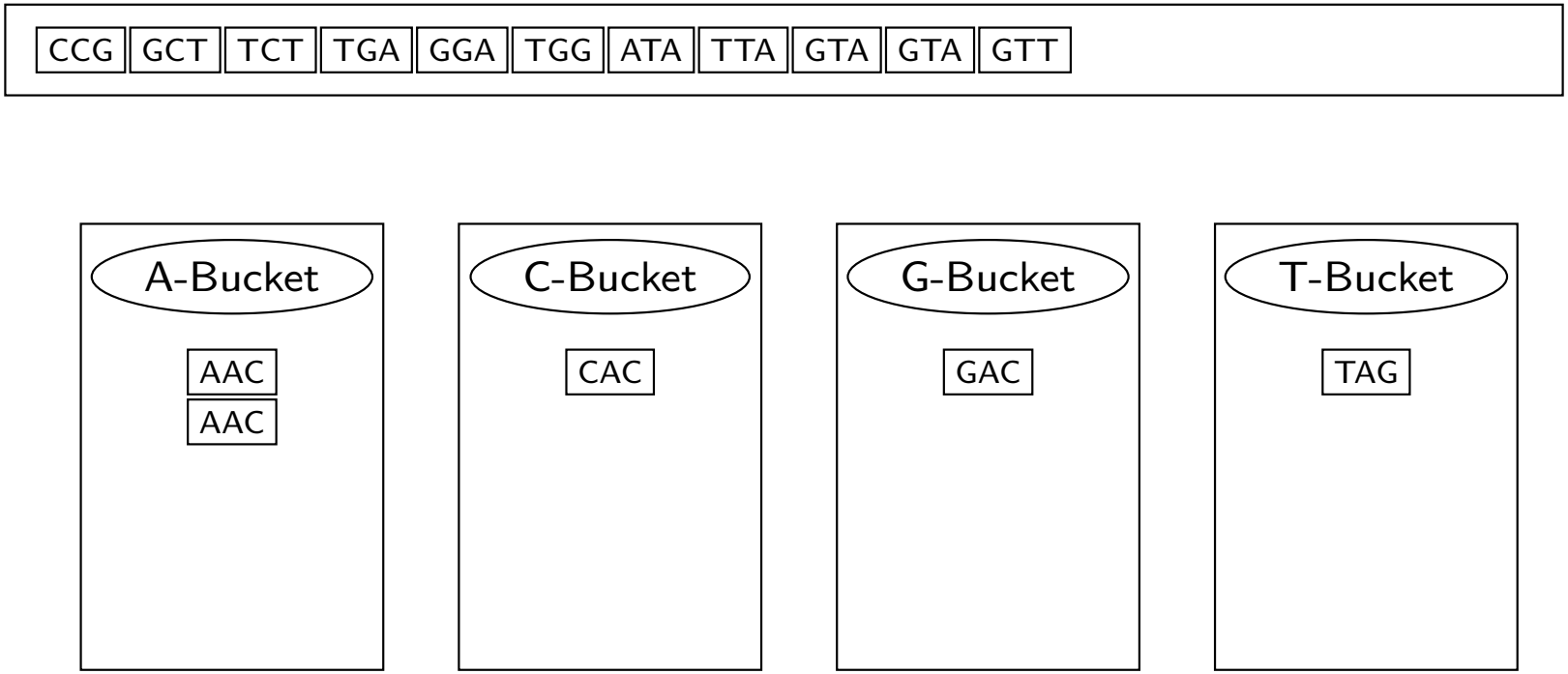
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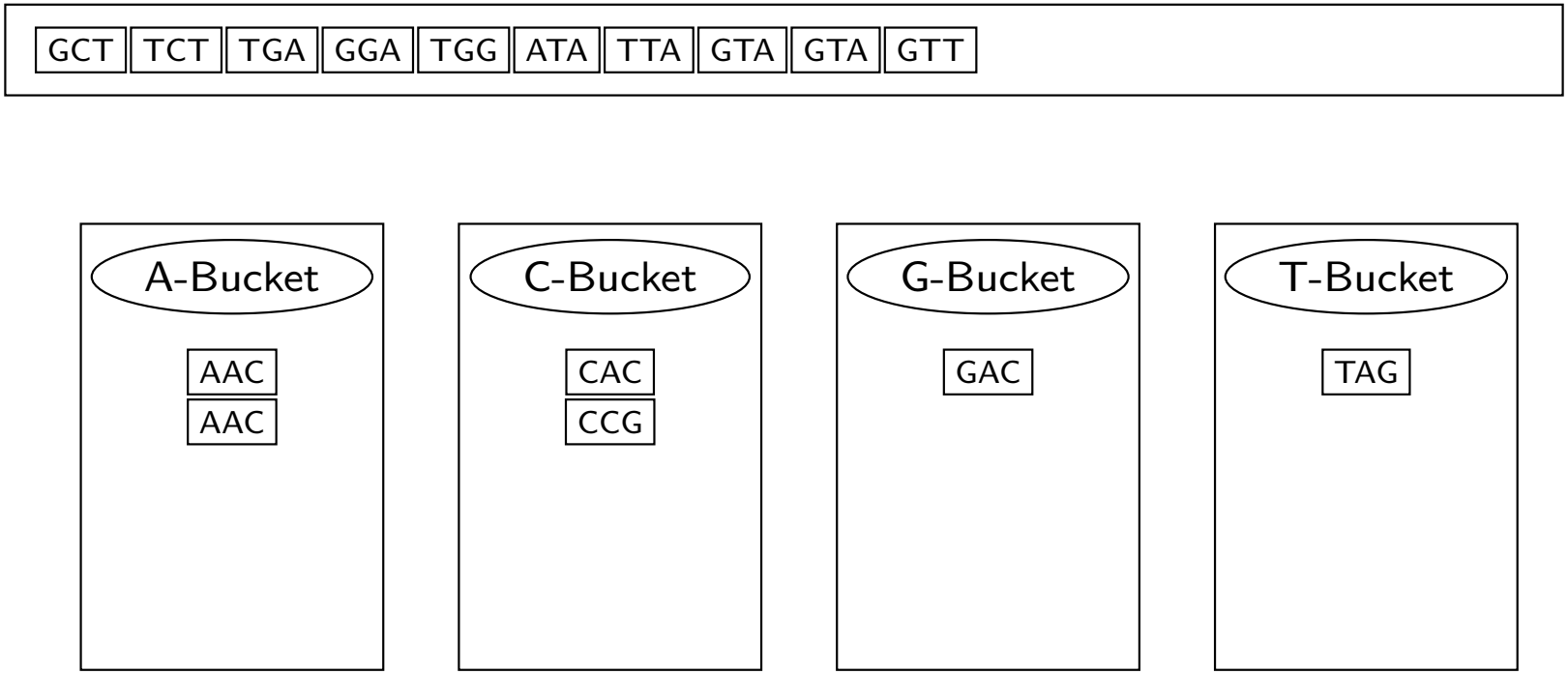
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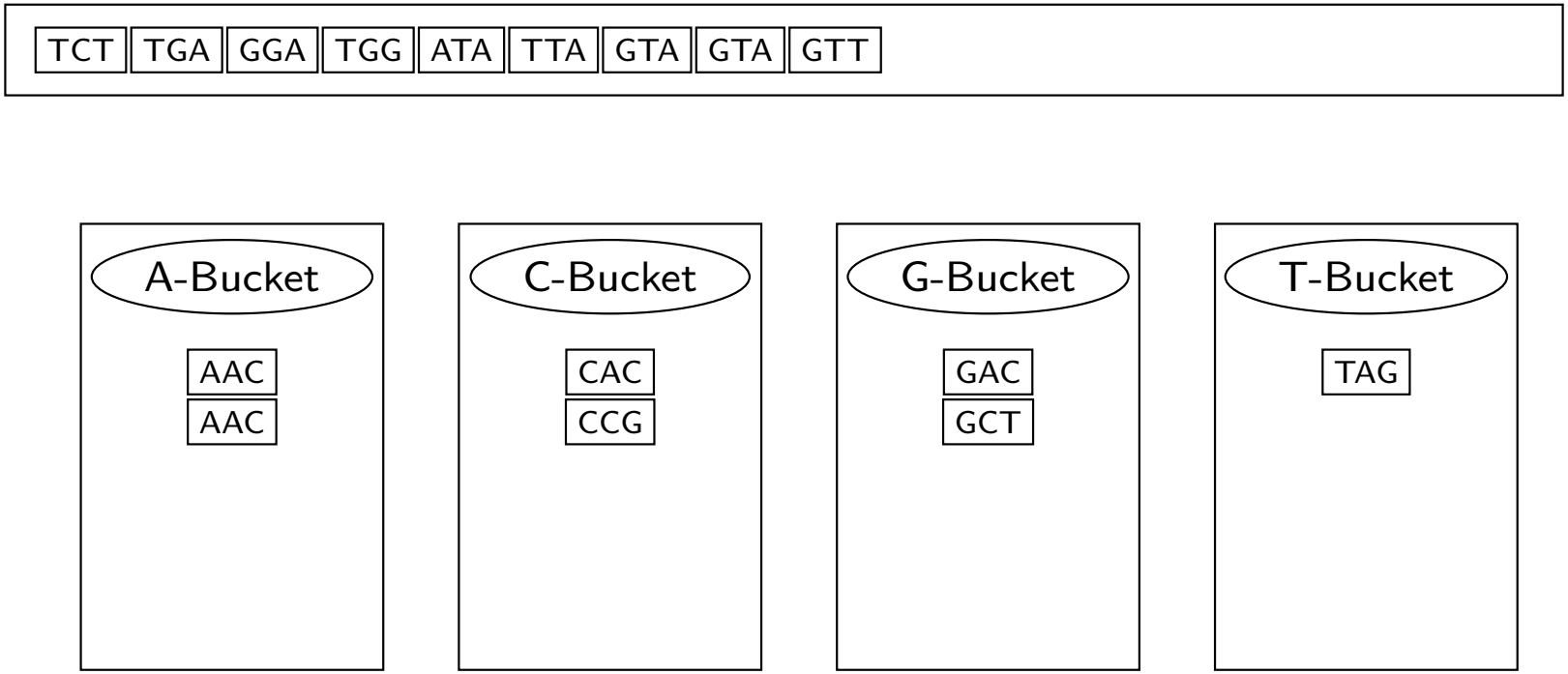
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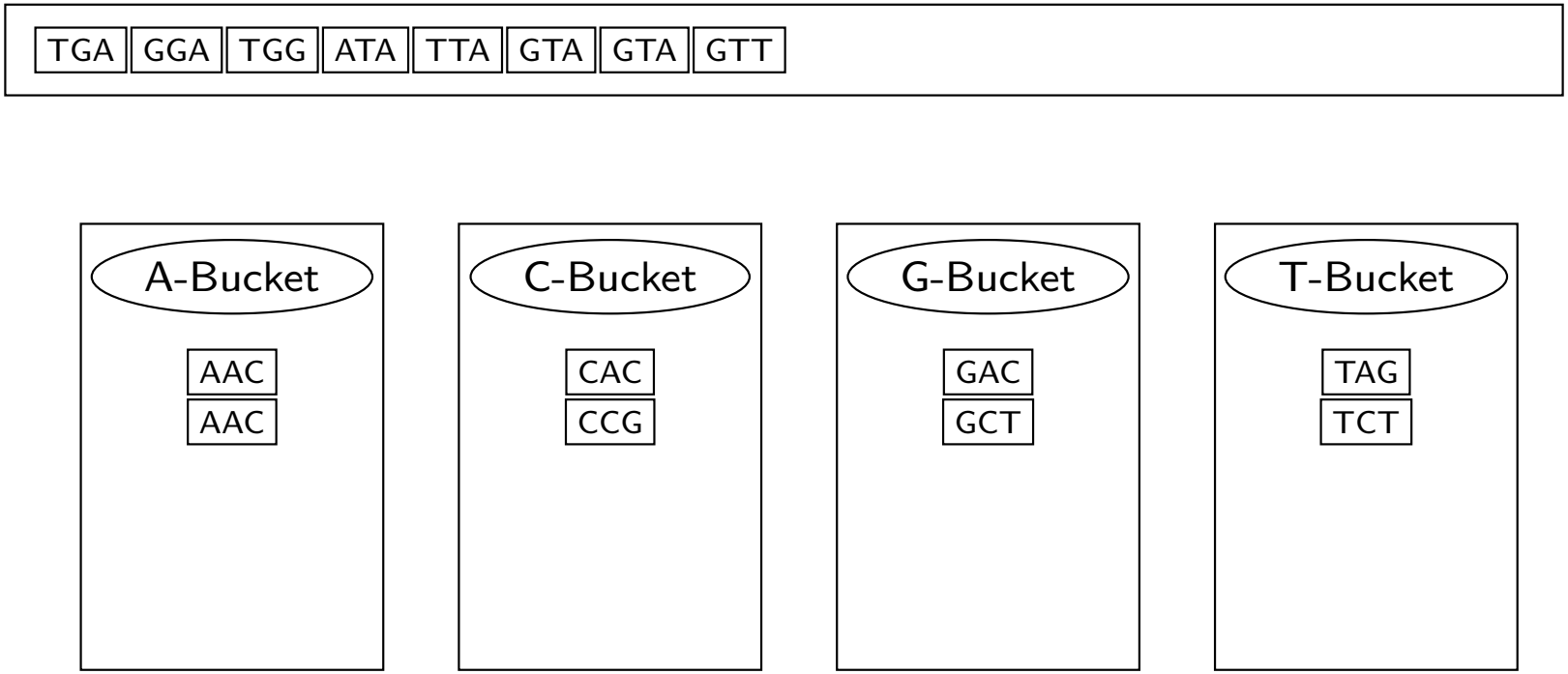
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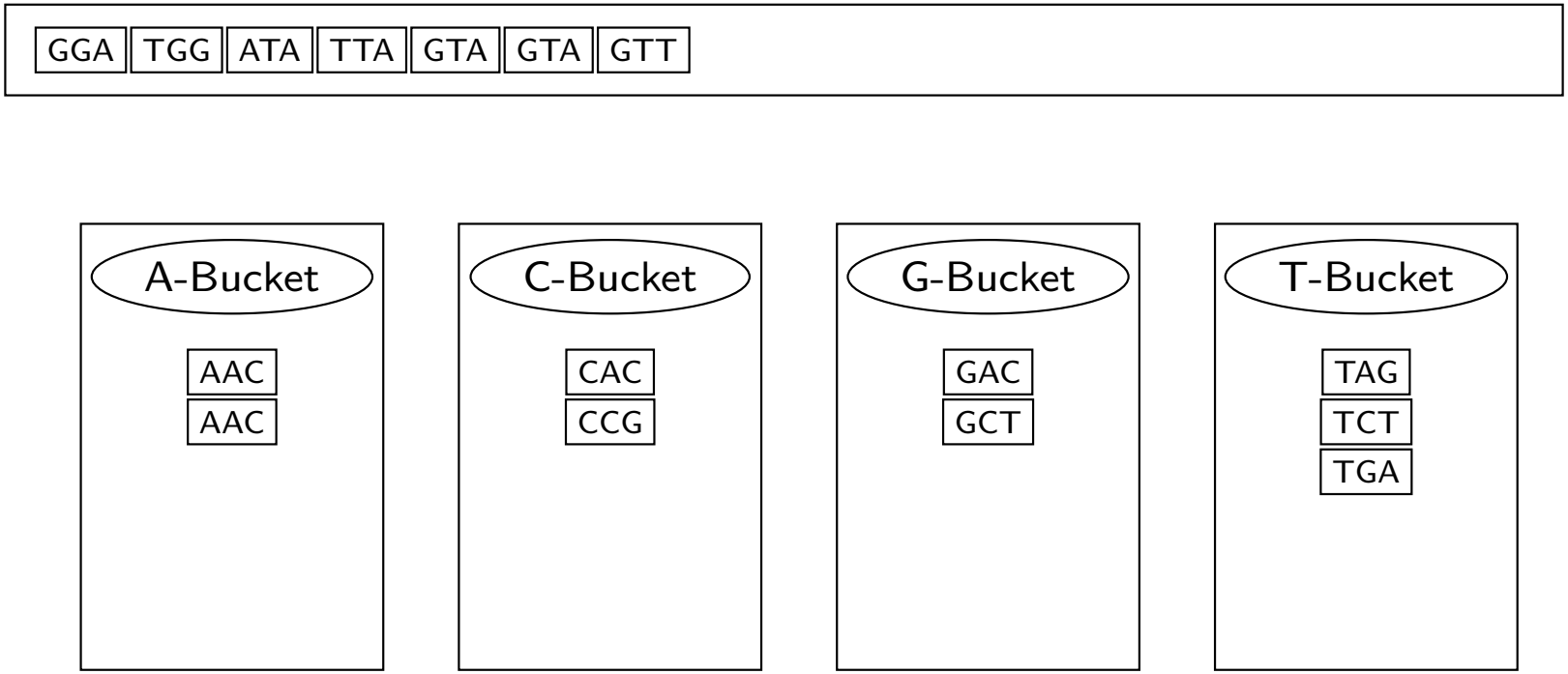
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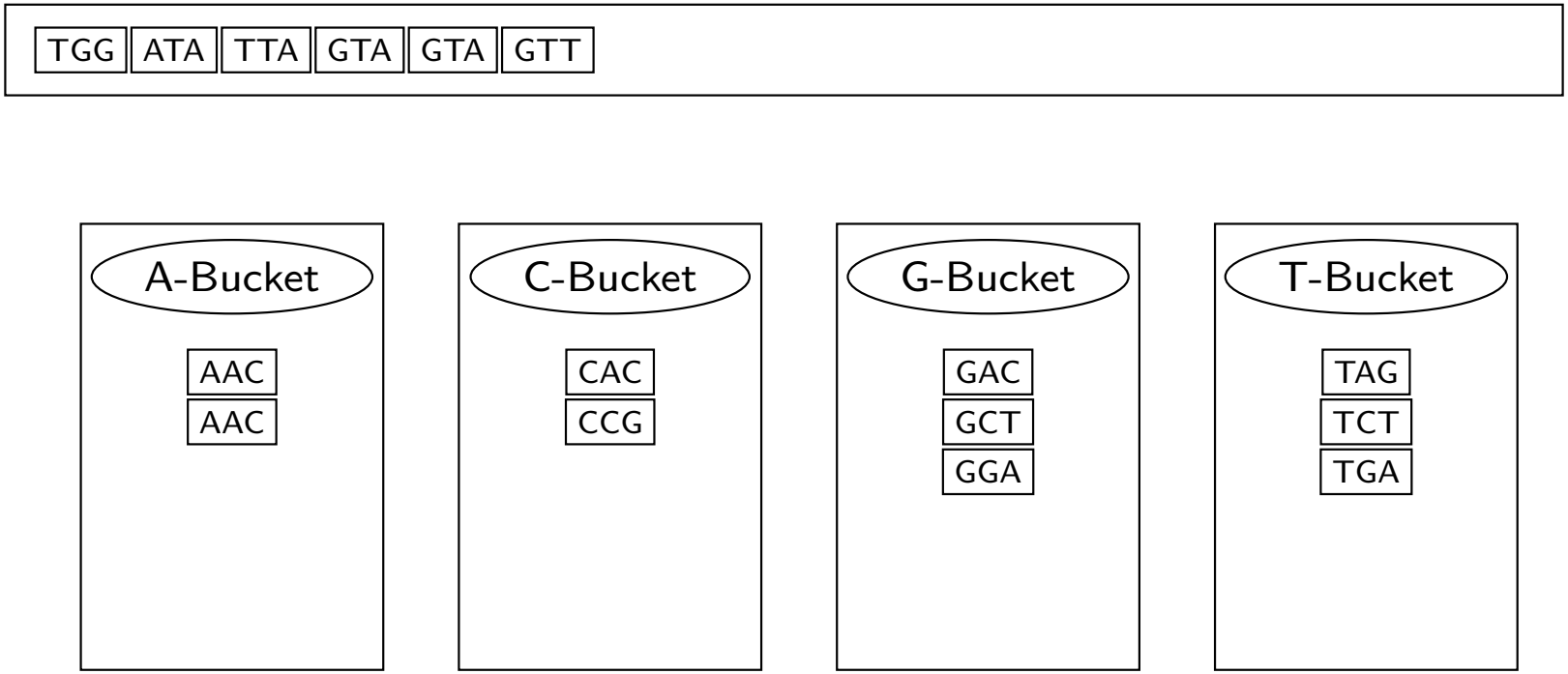
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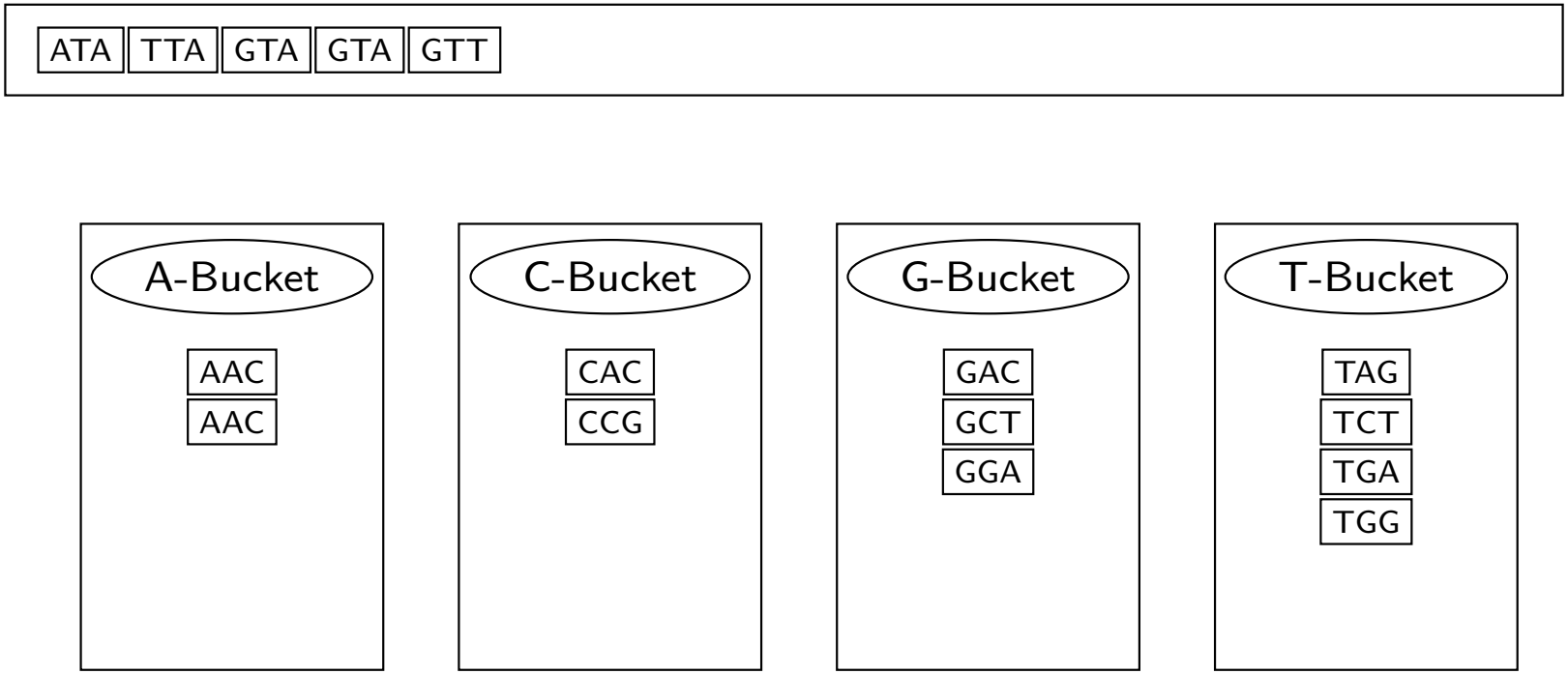
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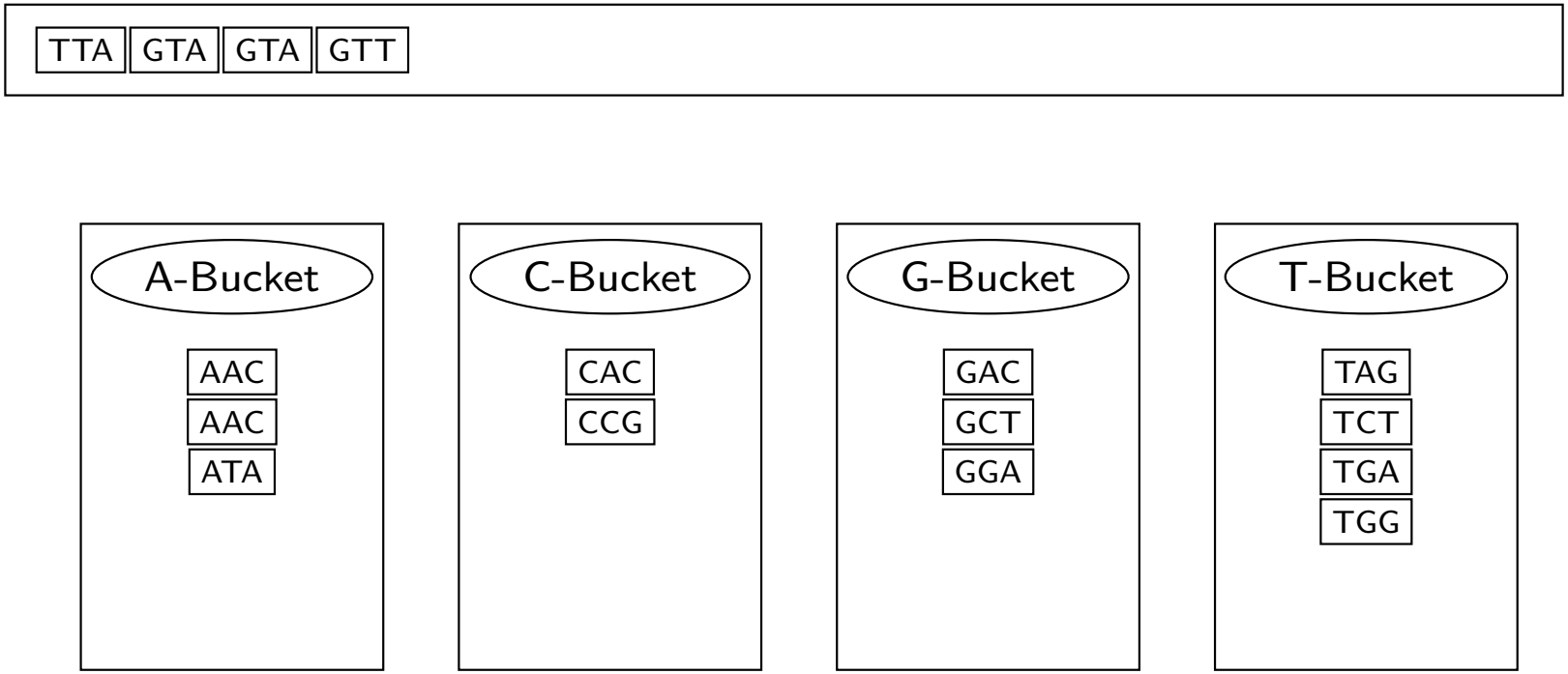
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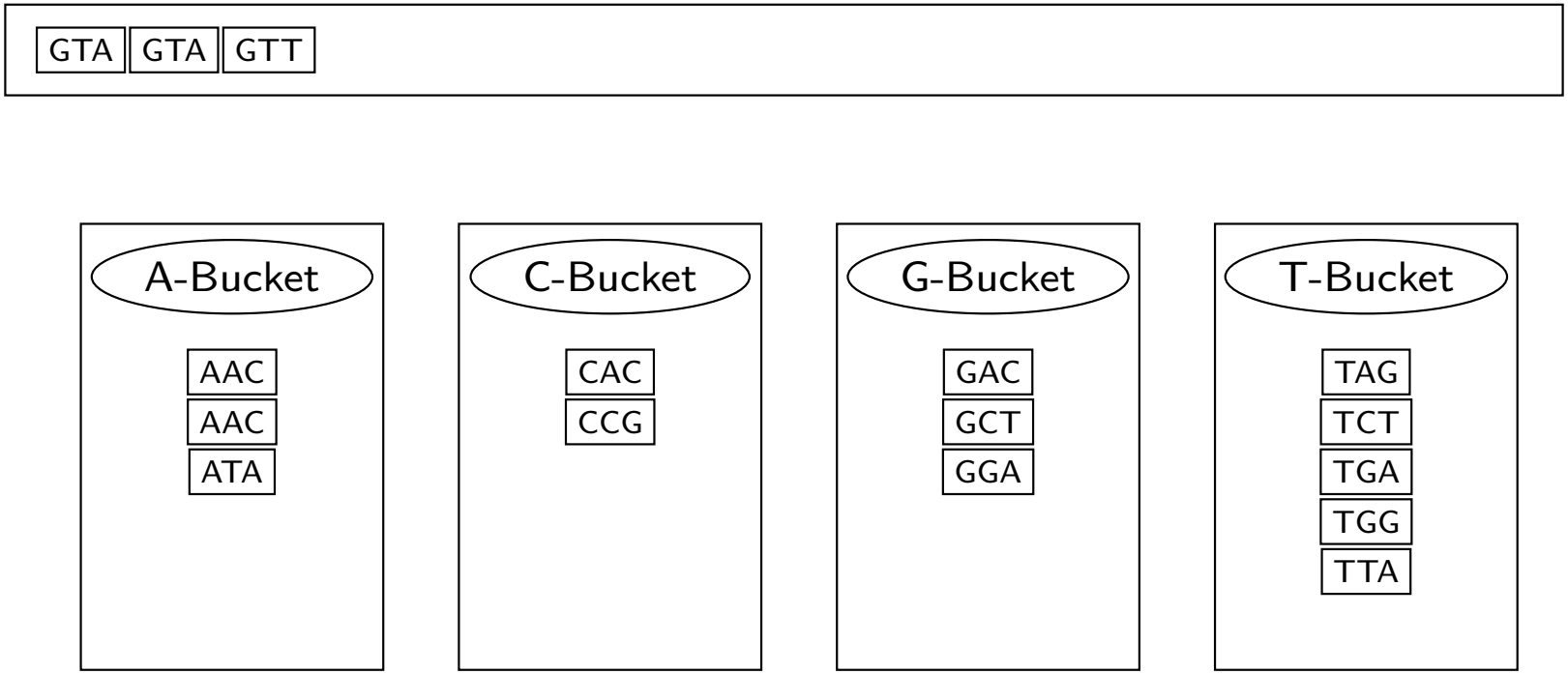
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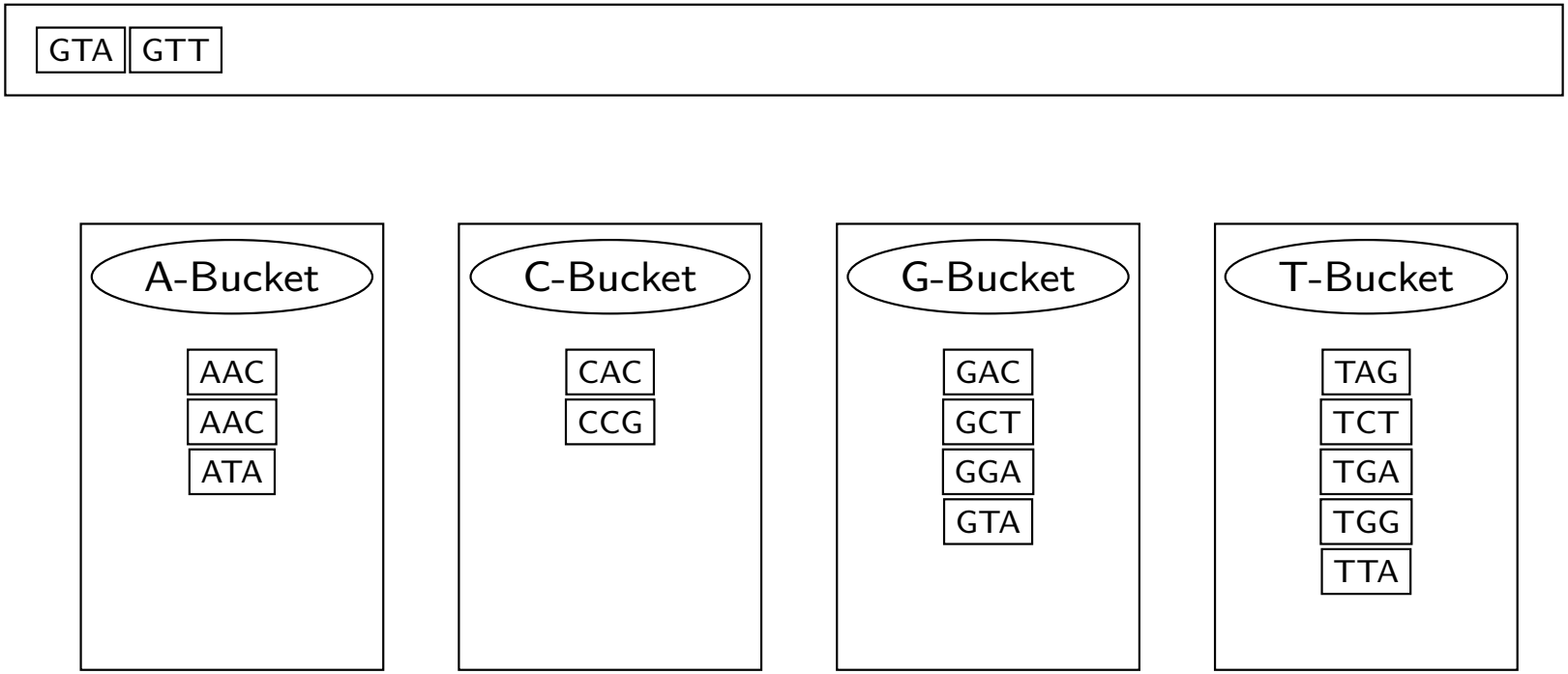
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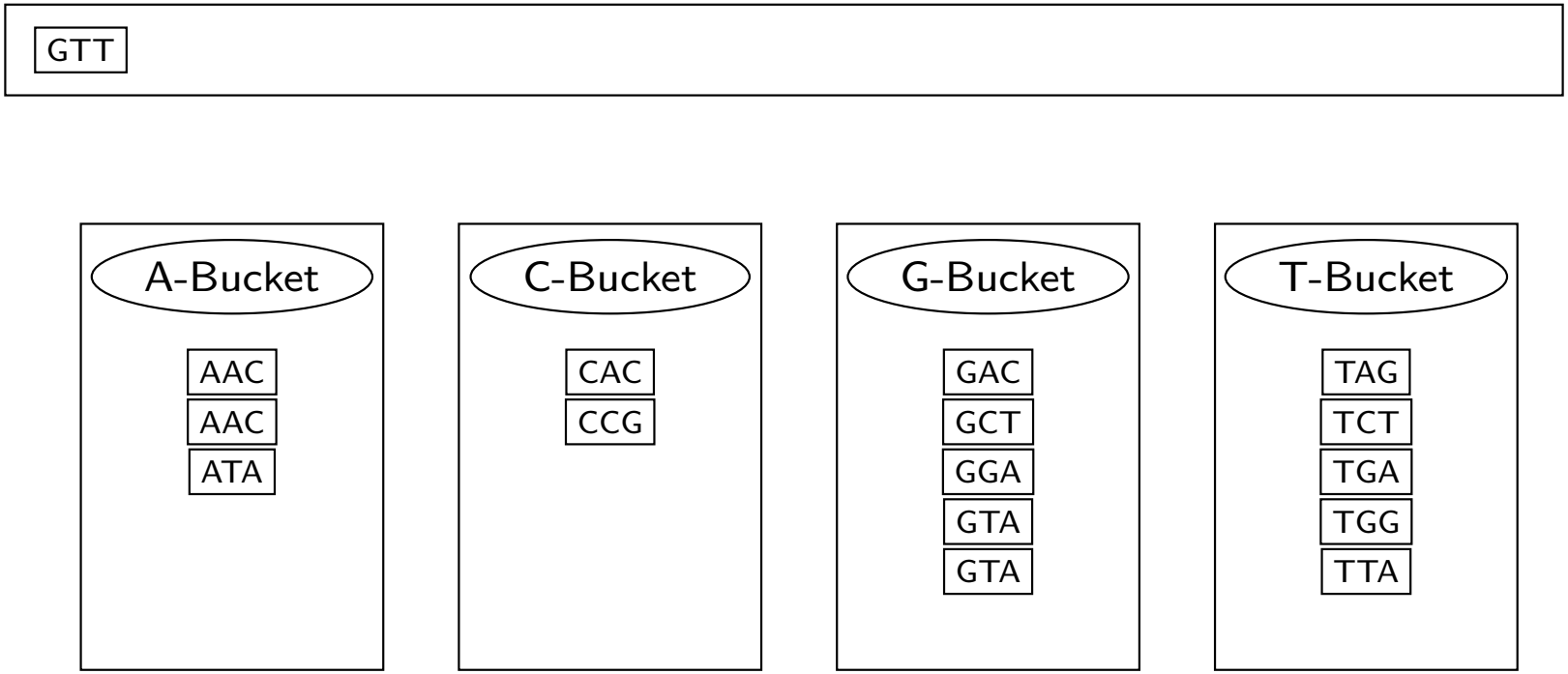
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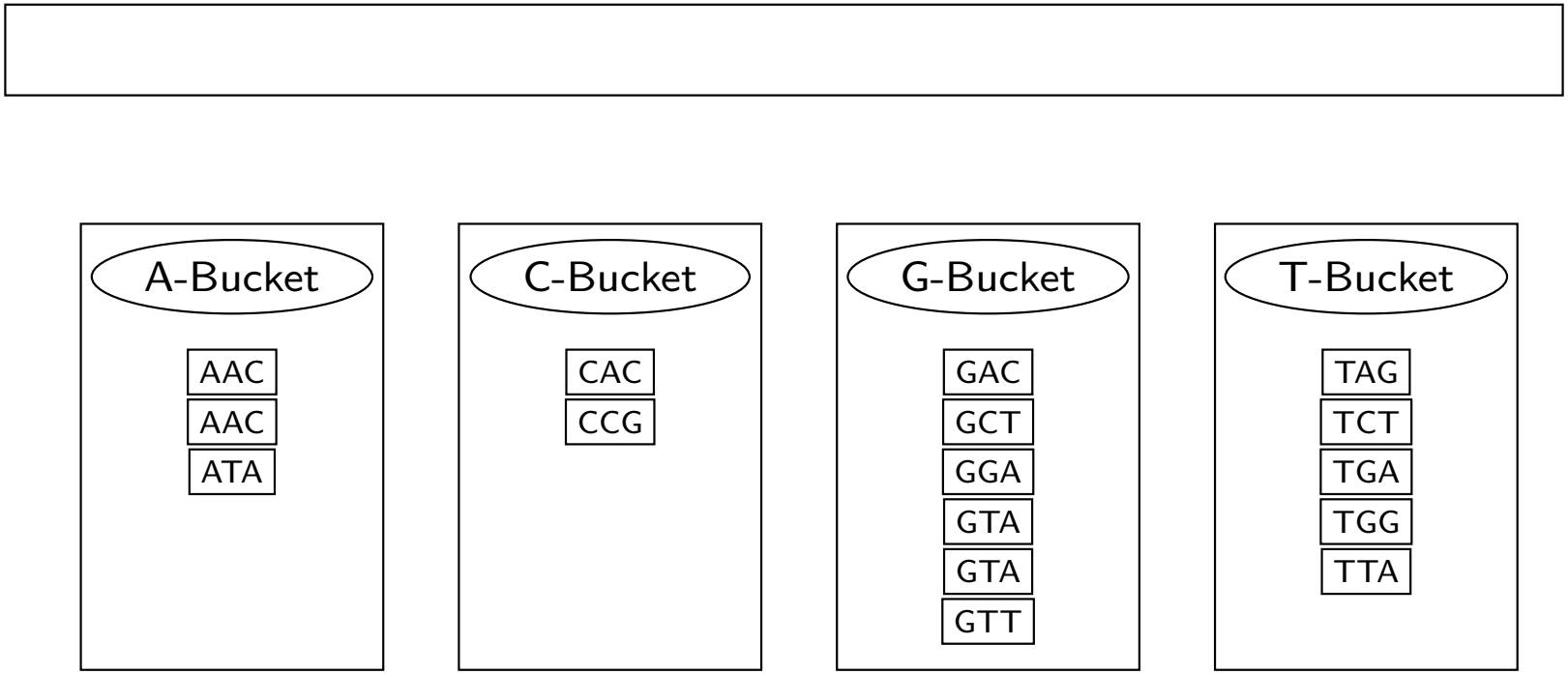
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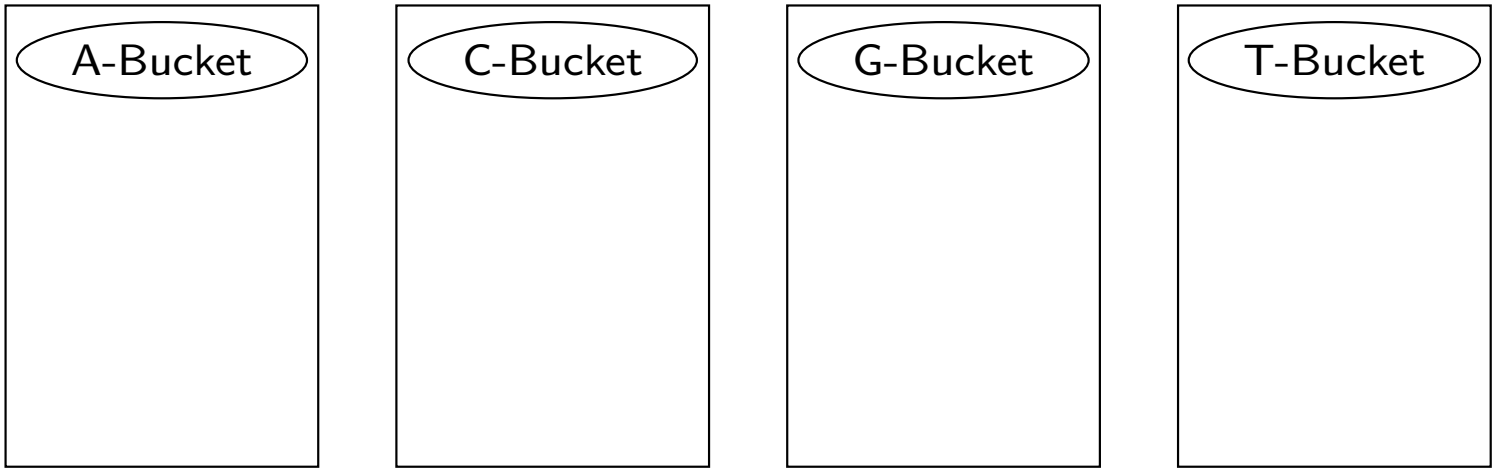
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