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Mohammed Abu-Hadhoud
MBA, PMOC, PgMP®, PMP®, PMI-RMP®, CSE, ITILF, MCPD, MCSD
لا تنسى الاشتراك في قناتنا على اليوتيوب ومشاركة القناة مع اصدقائك
لتعم الفائدة للجميع وانقاذ الاف الناس من التشتت وجزاكم الله خيرا
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مهم جداً
هذا الملف للمراجعة السريعة واخذ الملاحظات عليه فقط ،لانه يحتوي
على اقل من 20٪ مما يتم شرحه في الفيديوهات
الاستعجال والاعتماد عليه فقط سوف يجعلك تخسر كميه معلومات
وخبرات كثيره
يجب عليك مشاهدة فيديو الدرس كاملا
لاتنسى عمل لايك ومشاركة القناة لتعم الفائدة للجميع
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Data Structures

Level 1

Complexity of am Algorithm

Big O

O(n)

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Data Structures
Level 1

Quick Review

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Big O for the following Algorithms:

Algorithm 1

```
char GetLastCharacter(string S1)
{
    return S1[ S1.length() - 1 ];
}
```

O(1)

Algorithm 2

```
char GetLastCharacter2(string S1)
{
  int n =  S1.length() - 1 ;

  for ( int i = 0 ; i <= n ; i++ )
  {
    if ( i == n )
    {
      return S1 [ n ] ;
    }
  }
}
```

O(n)

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Data Structures

Level 1

Calculating Algorithm Complexity O(n)

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Calculating Linear Complexity O(n):

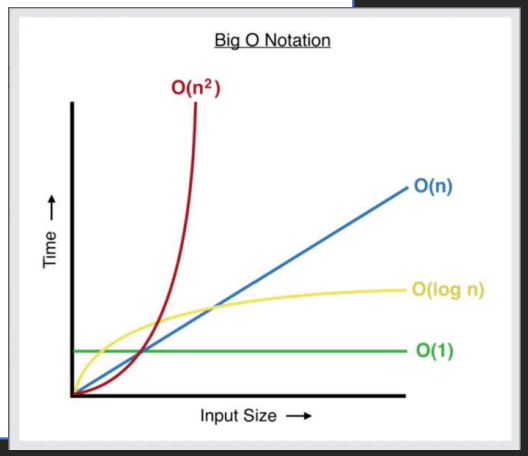
```
char GetLastCharacter2(string S1)
{
   int n = S1.length() - 1 ;

   for ( int i = 0 ; i <= n ; i++ )
   {
      if ( i == n )
      {
         return S1 [ n ] ;
      }
   }
}
```

Number of Steps outside loop = 4

Number of Steps inside loop = 6

Big O= 6 n + 4
Remove Factors
O(n)



- Depends on array size, and relation is Linear Time Function.

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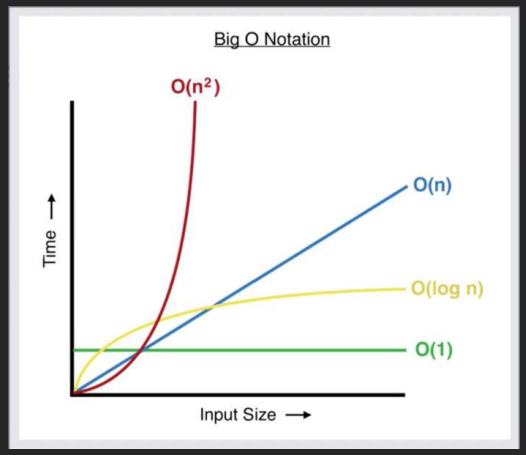
Comparing the two Algorithms



Faster

```
char GetLastCharacter(string S1)
{
    return S1[ S1.length() - 1 ];
}
```

Big O= 4 * O(1)= 4 O(1)
Remove Factor
O(1)

Slower

```
char GetLastCharacter2(string S1)
{
    int n = S1.length() - 1 ;
    for ( int i = 0 ; i <= n ; i++ )
    {
        if ( i == n )
        {
            return S1 [ n ] ;
        }
    }
}
```

Number of Steps outside loop = 4
Number of Steps inside loop = 6

Big O= 6 n + 4
Remove Factors
O(n)

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