

# Code Analysis

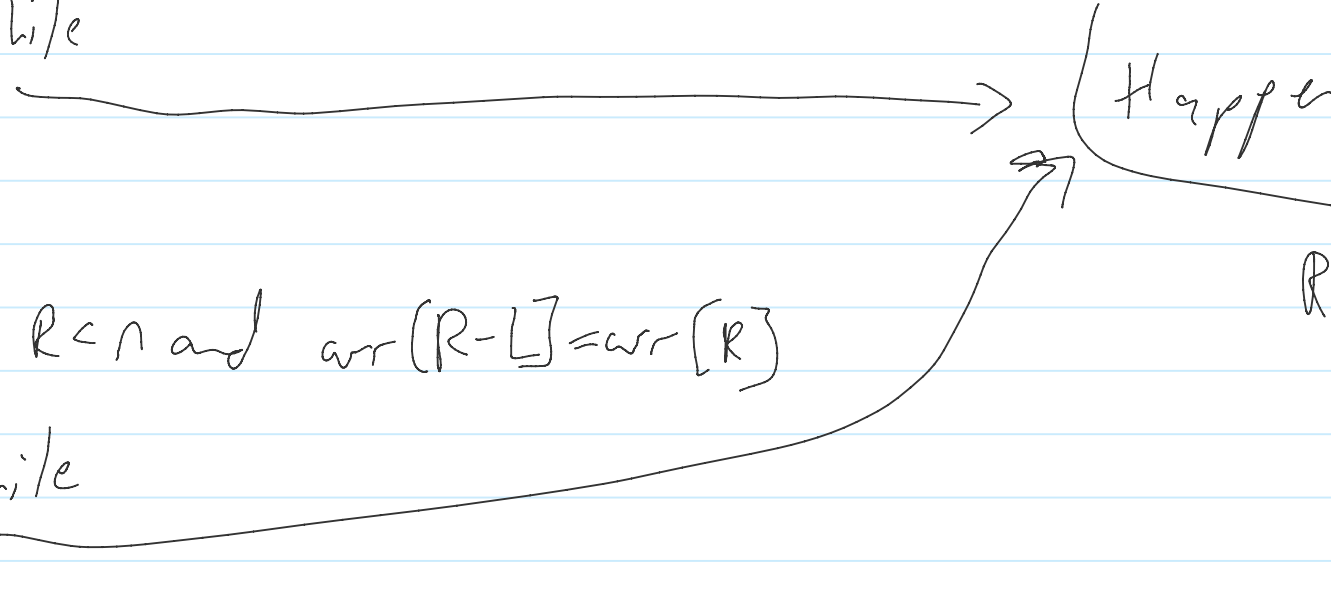
Sunday, February 11, 2018 11:12 PM

$\Sigma$ -algorithm

```
int [n] arr
L = R = 0
for i = 1 to n           n things
  if i > R
    L = R = i
    while R < n and arr[R-L] = arr[R]   n things.
      R++
    end while
    R--
  else
    L = i
    while R < n and arr[R-L] = arr[R]
      R++
    end while
    R--
  end if
```

Happens

R



s at most  $n$  times

could potentially be  
-  $n$

```

    R --
end if
end for

```

$O(N)$

## Prime Sieve

```

for (i = 2 to N)
  if (i is prime)
    for (j = i to N)
      if (j * i > N)
        break
      end if
      mark not prime i * j
    end for
  end if
end for

```

let  $k = i \cdot j$

```

for (k = i * i; k <= N)
  mark not prime of

```

```

for (i = 2 to N)
  for (j = 2 to j * j <= i)
    if (i % j == 0)
      i is not prime
    end if
  end for
end for

```

$O(N \sqrt{N})$

$\sum_{k=1}^n \sum_{i=k}^n \frac{1}{i} \leq \sum_{i=1}^n \frac{1}{i}$

↖  $\frac{1}{2} + \frac{1}{3} + \frac{1}{5} + \frac{1}{7} + \frac{1}{11} \leq$

$$\frac{1}{1} + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{n} = n \sum_{i=1}^n \frac{1}{i}$$

$$n \log(n)$$

$$O(n \log(n))$$

if  $(i \% j == 0)$   
i is not prime

$O(\sqrt{n})$

