

- Euclid's Algorithm can be used to give a recursive definition for  $\text{gcd}(m, n)$
- Observe from the previous notes that:

if  $n > 0$ :

$$\begin{aligned} & \text{gcd}(m, n) \quad r = m \% n \\ & \quad \swarrow \quad \searrow \\ & = \text{gcd}(m, n) \end{aligned}$$

and when  $n = 0$ :

$$\text{gcd}(m, n) = 0 \quad (\text{called the base case})$$

- This gives a recursive definition for  $\text{gcd}$ .

## Recursive Algorithm for gcd function

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gcd(m, n)

if (n == 0)

return m

else

return gcd(n, m % n)

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Pseudo

Code

Python function definition for recursive gcd

def gcd(m, n):

if n == 0:

return m

return gcd(n, m % n)

Python function

definition

- The python code is almost the same as the algorithm given in standard pseudo code.
- Python is often called pseudo code that runs.