Data Structures & Algorithms

Pseudocode

Pseudo code

- High-level description of an algorithm
- More structured than English prose
- Less detailed than a program
- Preferred notation for describing algorithms
- Hides program design issues

Pseudo Code

- Control flow
  - **if** … **then** … [**else** …]
  - **while** … **do** …
  - **repeat** … **until** …
  - **for** … **do** …
  - Indentation replaces braces
- Method declaration

  Algorithm ***method*** (***arg*** [, ***arg***…])

  Input …

  Output …
- Method call
  - ***method*** (***arg*** [, ***arg***…])
- Return value
  - **return** ***expression***
- Expressions:
  - ←Assignment
  - = Equality testing
  - n^2 Superscripts and other mathematical formatting allowed

Pseudo Code Example

Algorithm 2: Division

```
1  function divide (x, y);
   Input: Two n-bit integers x and y, where y ≥ 1
   Output: The quotient and remainder of x divided by y
2  if x = 0 then
3      return (q, r) = (0, 0)
4  else
5      set (q, r) = divide(⌊x/2⌋, y);
6      q = 2 × q, r = 2 × r;
7      if x is odd then
8          r = r + 1
9      end
10     if r ≥ y then
11         r = r − y, q = q + 1
12     end
13     return (q, r)
14 end
```