



Fun with ADTs!!!

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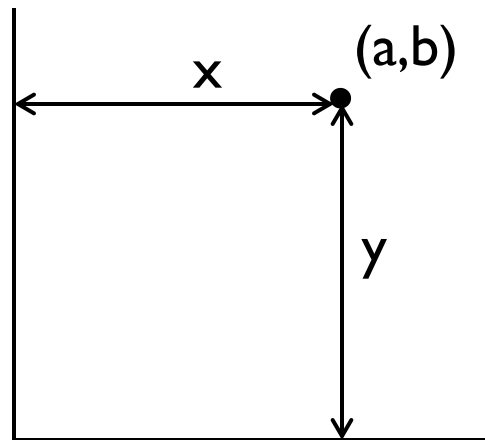
CSE 331 Section

Jan 26, 2012

The Quest(?)

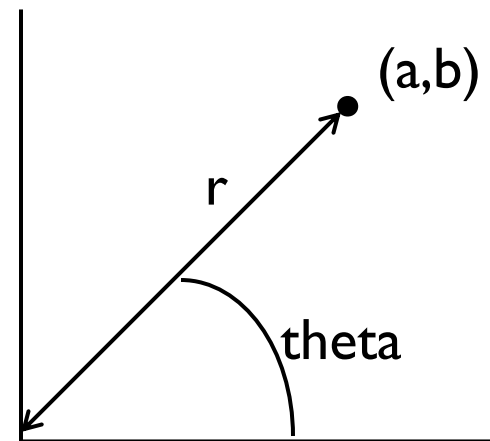
- Implement a `ComplexNumber` class
- Represents number $a+bi$
- Possible representations:

(x, y)



Cartesian coordinates

(theta, r)



Polar coordinates

Write specs

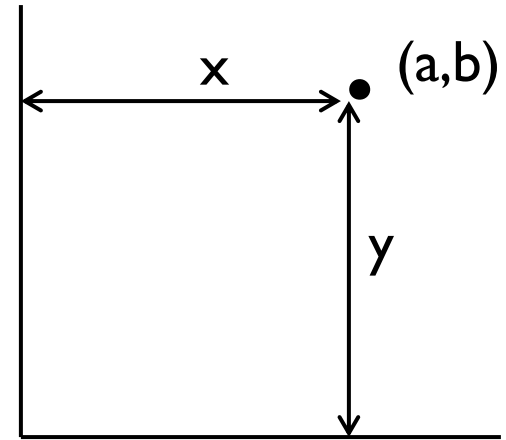
- What operations should `ComplexNumber` have?
 - Creators/producers
 - Mutators
 - Observers

Write specs

- What operations should `ComplexNumber` have?
 - Creators/producers
 - Mutators
 - Observers
- <http://www.cs.washington.edu/education/courses/cse331/12wi/section/ComplexNumber/ComplexNumber.html>

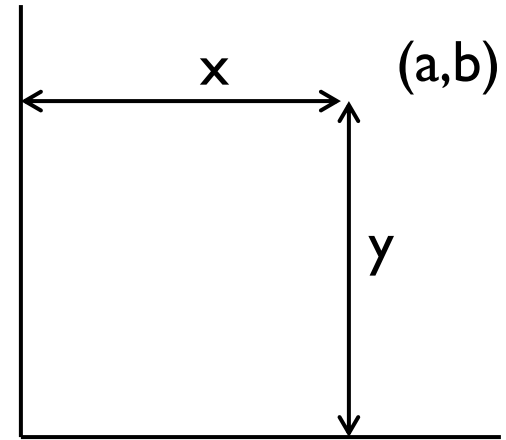
Implementation #1: Cartesian

- (x,y) coordinates
 - $\mathbf{x} + y\mathbf{i}$
- What is the AF?
- What is the RI?



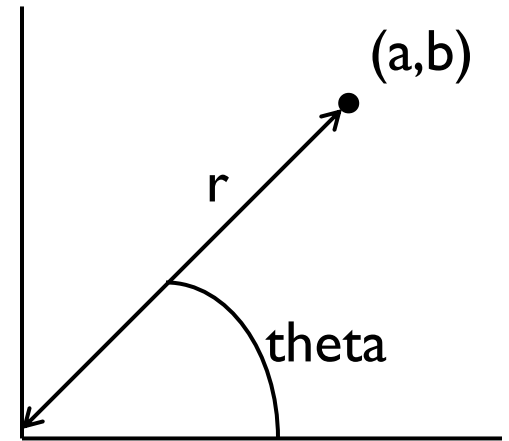
Implementation #1: Cartesian

- (x,y) coordinates
 - $x + yi$
- What is the AF?
- What is the RI?
 - RI is `true` – object cannot be in an invalid state!
- <http://www.cs.washington.edu/education/courses/cse331/12wi/section/ComplexNumber/v1/ComplexNumber.java>



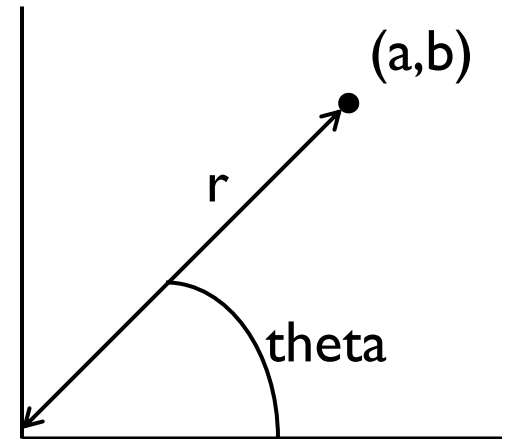
Implementation #2: Polar

- (theta, r)
 - $a: \text{rad} * \cos(\text{theta})$
 - $b: \text{rad} * \sin(\text{theta})$
- What is the AF?
- What is the RI?
- What should go in checkRep()?



Implementation #2: Polar

- (theta, r)
 - `a: rad * cos(theta)`
 - `b: rad * sin(theta)`
- What is the AF?
- What is the RI?
- What should go in `checkRep()`?



- <http://www.cs.washington.edu/education/courses/cse331/12wi/section/ComplexNumber/v2/ComplexNumber.java>