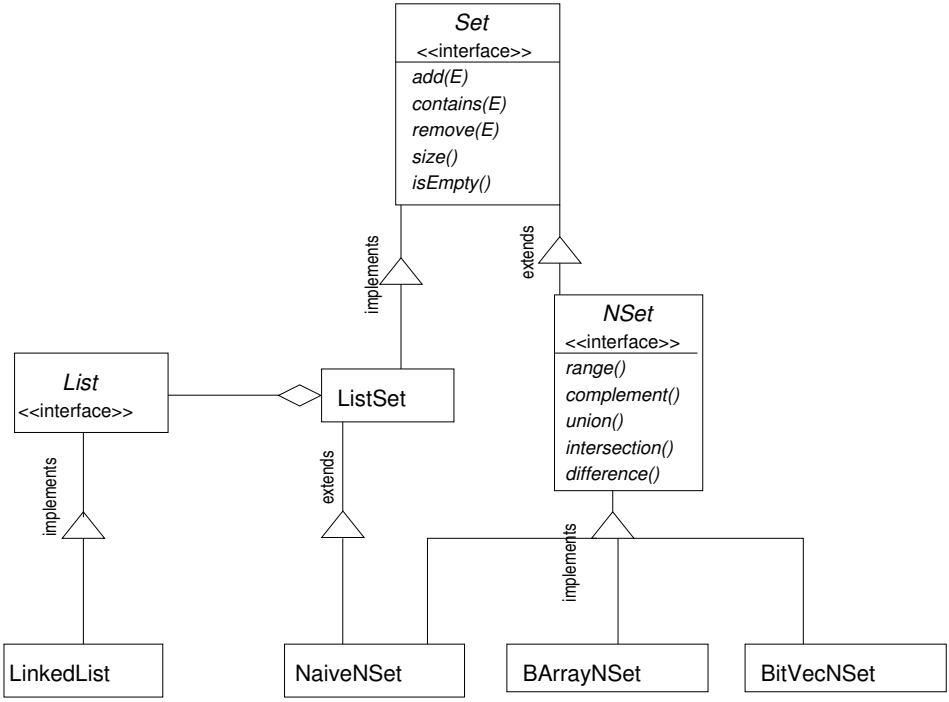
Chapter 3, Case Studies:

- Linear-time sorting algorithms (last week Monday and Wednesday)
- Disjoint sets and array forests (last week Friday)
- Priority queues (Monday and Today)
- N-sets and bit vectors (**Today**)
- (Start graphs Friday)

Today:

- Problem statement
- Abstractions and insights
- Project tips


Set
<<interface>>
add(E)
contains(E)
remove(E)
size()
isEmpty()
implements
extends
NSet
<<interface>>
range()
complement()
union()
intersection()
difference()
List
<<interface>>
ListSet
implements
extends
implements
LinkedList
NaiveNSet
BArrayNSet
BitVecNSet

$$\{1, 3, 4, 11\} \subseteq [0, 16)$$

F	T	F	T	T	F	F	F	F	F	F	T	F	F	F	F

Bitwise AND	&	result bit is set if both operand bits are set	0100110 & 1101011 0100010
Bitwise OR	|	result bit is set if at least one operand bit is set	0100110 | 1101011 1101111
Bitwise XOR	^	result bit is set if exactly one operand bit is set	0100110 ^ 1101011 1001101
Bitwise NEG	~	flip each bit of the operand	~ 1101011 0010100

Coming up: (all end-of-day)

Do **linear sorting** *project (suggested by this past Monday)*
Do **heaps and priority queue** *project (suggested by Mon, Feb 13)*
Do **bit vector and N-set** *project (suggested by Wed, Feb 15)*

Due **Thursday***:*
Read Section 3.4
Do Exercises 3.(26 & 27).
Take N-sets quiz

Due **Wed, Feb 15** *(but spread it out):*
Read Section 4.(1–3)
Do Exercises 4.(26-29).
Take graph quiz