Patterns as solutions to problems

- A design pattern is the solution to a problem in a context
  - Has a name that helps in remembering/understanding
  - Has forces that describe the situations in which applicable
    - Should supply pros/cons in using the pattern
  - Has a description that summarizes purpose

- Adapter
  - You have a class that’s close to what you want, but the interface isn’t quite right, or some functionality is missing
  - Use an *adapter*, adapt the existing class to a new interface
  - Also known as *wrapper*, similar to Proxy but changes interface/adds functionality
What about words in kwic program?

- Current version of Word stores string and line number
- Current version of WordWrap stores string and counter
  - Is there a way to avoid the duplication?
  - Where is the source of the characters in these words?
  - What’s the minimal # characters we can store and still have everything in memory (for speed)

- What’s the new interface that Word exports that string doesn’t?
  - What can we do with a Word?
- What does WordWrap do that Word/string doesn’t?
  - Why is there a string stored in WordWrap? Alternatives?
Proxy class in doing kwic

- A string is created for every word, is there an alternative?
  - Store all characters in a file in memory
  - String is an offset and length that “points” to chars
    - Proxy(0,1); Proxy(2,4);
  - String is two pointers (or iterators!) that point to first and last character
    - Proxy(&a[0],&a[1]), Proxy(&a[2],&a[5]);
  - Other alternatives?
- What is the purpose of this proxy?
  - Walks and talks like a string, but uses less memory
  - Surrogate that controls access to the real thing
What does a String Proxy need?

- **Should it do everything that a string does?**
  - Application specific string? Generalizable proxy?
  - Make it simple

- **Overloaded < operator, overloaded == operator, why?**
  - Do we need <=, >=, !=? Do we need == if we have <

- **Should a string proxy be printable? When is this helpful?**
  - What do we do to be printable

- **Should it export a “real string” if asked?**
  - Can we make it impossible to get to the “real” string?
  - Is this a good idea?