Project 3, due March 14, 2003

Google Web APIs

- Information and download at:
- You will need a Google account to make
  Google queries
  - register at the above URL
  - we will provide a dummy implementation if
    you don’t want to do this
  - Only 1000 queries per day

GoogleSearchResultElement

- Selected methods:
  public java.lang.String getURL();
  public java.lang.String getTitle();
  public java.lang.String getSnippet();
  public java.lang.String getDirectoryTitle();
  public java.lang.String getSummary();
  public java.lang.String getHostName();

Sort of a hack

- It is sort of a hack to write a Map adaptor
  for the Google APIs
- But there is no standard Function interface
- Allows passing of GoogleMap to code that
  expects a Map
- Won’t work if code tries to enumerate the
  keys of the Map

GoogleMap

- implements
  Map<String,
  Iterator<GoogleSearchResultElement>;
- Properties:
  - read-only
  - can’t enumerate keys or search for values
  - Singleton

Project 3 uses

- Google Web API
  - allows programs to make Google queries
- GJ
- Design patterns
Lazy Google queries

- A normal google query only returns at most 10 elements at a time
  - don’t change this
- Iterator might be used to enumerate 1, 5, 15 or 50 elements
- Cache google query results
  - make new request when you need the next 10 elements

LazyList<Value>

- implements List<Value>
- has a LazyList(Iterator<Value> i) constructor
- Implements at least:
  - Value get(int pos)
  - Iterator<Value> iterator()
- Can throw UnsupportedOperationException for others

LazyList behavior

- Iterator passed to constructor is base iterator
- May not request any elements from base iterator unless element is required for operation on LazyList

CachedGoogleMap

- implements Map<String, Iterator<GoogleSearchResultElement>>
- Same behavior as CachedGoogleMap
- But caches/shares results from previous operations
  - using a LazyList
- Implementation hint: Use a
  - Map<String, LazyList<GoogleSearchResultElement>>

Project rules

- Expect Generic Polymorphism to be used
- No warnings from GJ compiler
- No casts or instanceof in source code

Some cases to check

- Queries that only return a small number of pages
  - e.g., asdfghjklqwrt
- Queries that return no pages
  - e.g., qazwsxedcrfvgtb12