Object Decomposition and Map / HashMap

How hard was third code review assignment?

A) Easy

B) Moderate

C) Challenging

D) Unreasonable

How long did third assignment take?

A) Less than 2 hours

B) 2 to 4 hours

C) 4 to 6 hours

D) 6 to 8 hours

E) More than 8 hours

Object-oriented Decomposition

- **Break large problem into logical pieces (data + code)**
- **Implement those pieces as classes**

- **A (good) class can be:**
  - A collection of data and routines that share a cohesive, well defined responsibility
  - A collection of routines that provide a cohesive set of services even if no common data is involved.

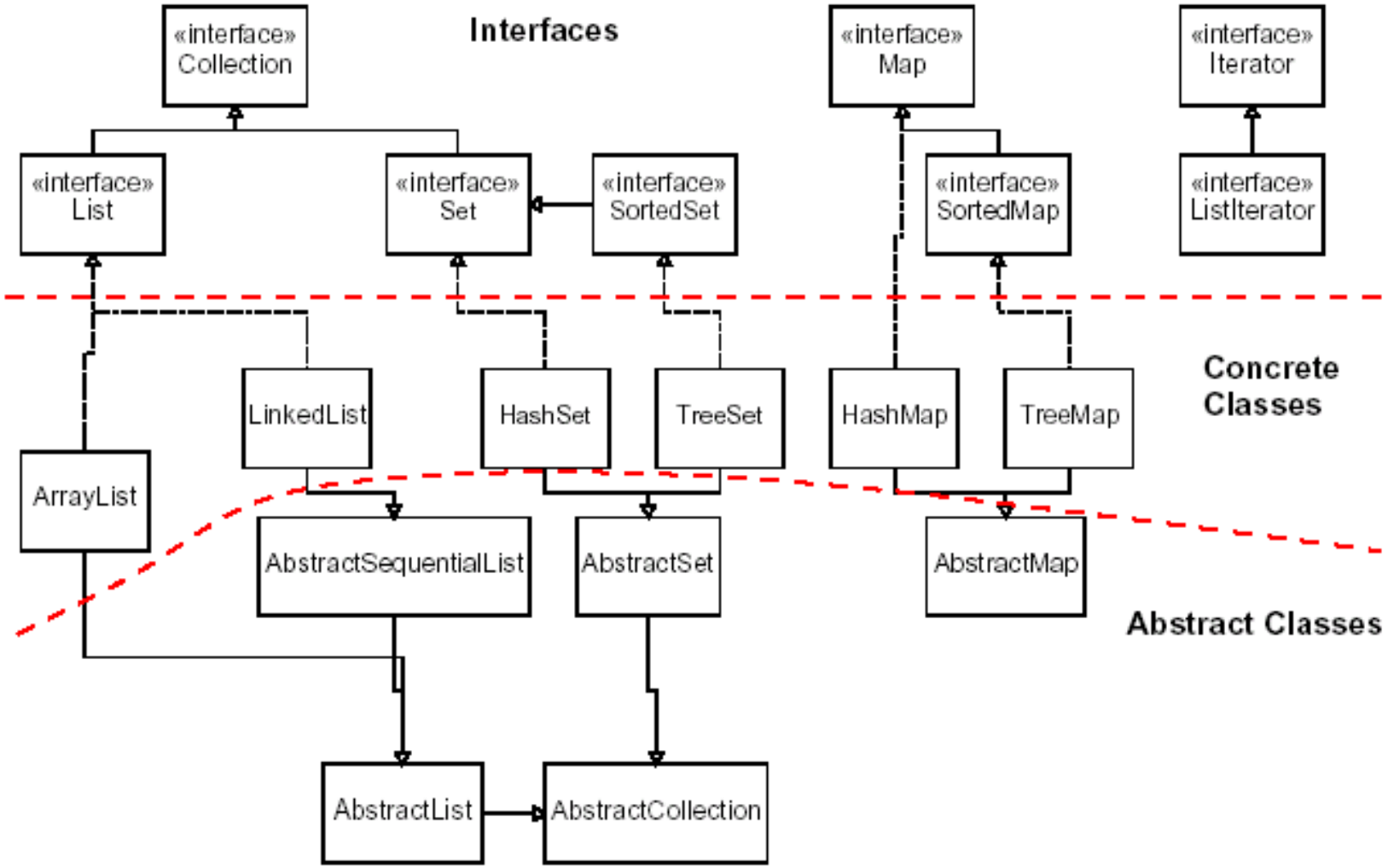
JSON format

- **Direction:**
  - directionName: String
  - room: String // a Room's name
- **Room:**
  - name: String
  - description: String
  - directions: Direction []
- **Layout:**
  - startingRoom: String // a Room's name
  - rooms: Room []

```
{
  "startingRoom": "MatthewsStreet",
  "rooms": [
    {
      "name": "MatthewsStreet",
      "description": "You are on Matthews, outside the Siebel Center",
      "items": ["coin"],
      "directions": [
        {
          "directionName": "East",
          "room": "SiebelEntry"
        }
      ]
    },
    {
      "name": "SiebelEntry",
      "description": "You are in the west entry of Siebel Center.  You can see the
elevator, the ACM office, and hallways to the north and east.",
      "directions": [
        {
          "directionName": "West",
          "room": "MatthewsStreet"
        },
        {
          "directionName": "Northeast",
          "room": "AcmOffice"
        },
        {
          "directionName": "North",
```

What all does this code need to do?

Java Collection Framework



Map

- Allows lookups from one kind of object to find another object

```
Map<KeyType, ValueType> myMap =
        HashMap<KeyType, ValueType>();

KeyType key = …;
ValueType value = …;
myMap.put(key, value);
ValueType lookup = myMap.get(key);
assert lookup == value;
```

Map Interface

`put(k,v)`	Associate `v` with `k`
`get(k)`	The value associated with `k`
`size()`	The number of pairs
`isEmpty()`	Whether it is empty
`remove(k)`	Remove the mapping for `k`
`clear()`	Remove all mappings
`containsKey(k)`	Whether contains a mapping for `k`
`containsValue(v)`	Whether contains a mapping to `v`

Command Line Arguments

- **Set via Run->Edit Configuration**