The Learning House

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Java Object-Oriented Concepts

Lesson 6 - Data Encoding and Decoding

SOFTWARE GUILD

Objectives

- Understand how to represent data in memory
- Understand how to represent data in a file
- Design a file format for an object
- Understand the algorithm for encoding and decoding data to and from memory and disk

Storage and Representation

- Two options for storage: in memory or on disk of some sort
- In-memory data is represented as objects or primitives
- File data is represented as text
  - We must translate non-text data to and from text as we move data from memory to disk and vice versa

File Format

- A good file format should allow:
  - o Easy detection of record start and end
  - o Easy detection of property start and end
  - o Isolation of malformed records from well-formed records
  - o Easy parsing

File Format (2)

- One record per line
- Individual properties separated by a token
- Example:

```
0001::John::Doe::Java-Jan2014
0002::Joe::Smith::Java-Apr2014
```

Encoding

- Create a string consisting of each student field separated by the token (:: in our case)
- Write the string out as one line to the file
- Repeat for each student

Decoding

- Read a line from the file into a String
- Split the string on the delimiter (::)
- Create a new Student object
- Set all the fields on the Student object in the order read from the file
- Put the new Student object into a Collection or Map
- Repeat for all lines in the file