Introduction

HCDE 530 - Computational Concepts in HCDE

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Computational Concepts in HCDE

- Introduces basic computational concepts and programming skills needed to work with interactive systems in HCDE. Draws on topics such as log analysis, visualization, prototyping, and data mining. Students analyze data to inform user research and design.

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HCDE 530
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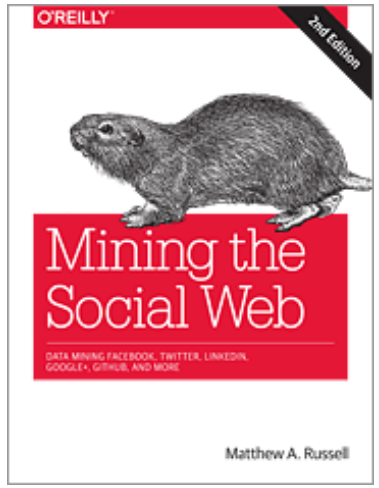
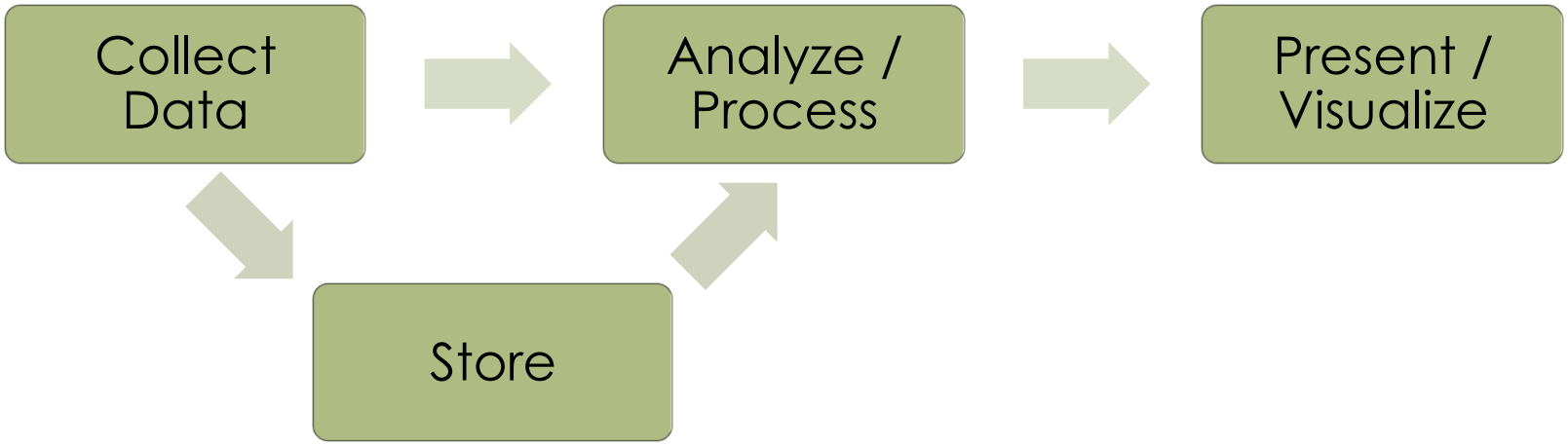


- A "skill building" course
  - Hands on practice
- Situated
  - Social Media Data Mining & Analysis
- Two Basic "Threads"
  - Collection and storage
  - Analysis and presentation

HCDE 530
Computational Concepts in HCDE

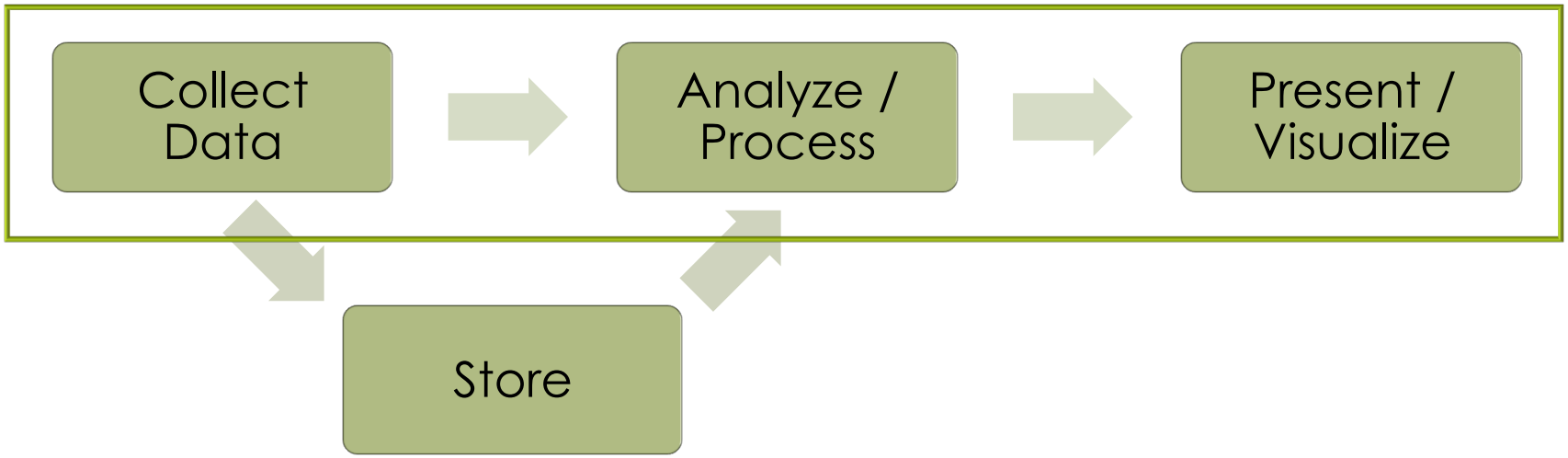
- Coding is *hard*
  - This won't make you a "developer"
  - Never coded before? – You will work your tail off – but you can still do well
- Instill inquisitiveness
  - Code not just as the system, but a support for understanding
  - Use code to explore, analyze, present aspects of social media systems
  - "How can I get 'this' to work?"

Overview – processing pipeline



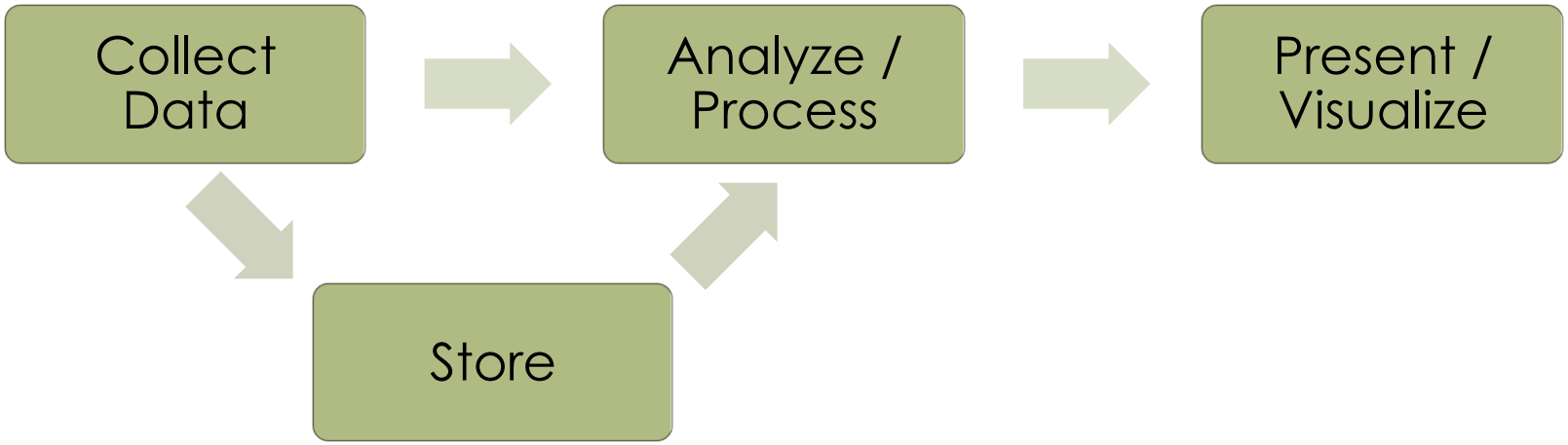
- High level view, three basic steps

Overview – processing pipeline



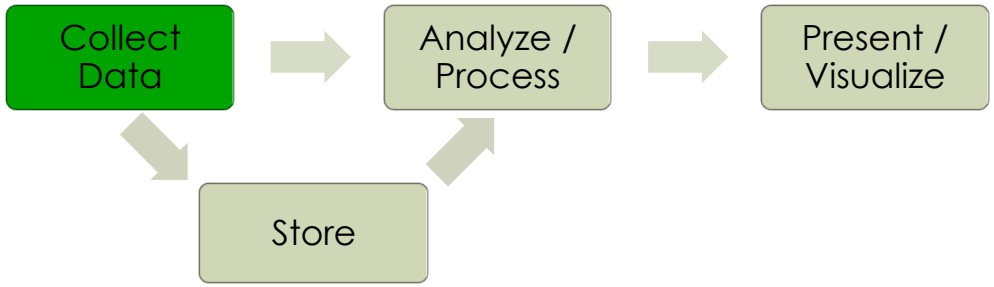
- High level view, three basic steps
  - "Real-time" processing – just the top

Overview – processing pipeline



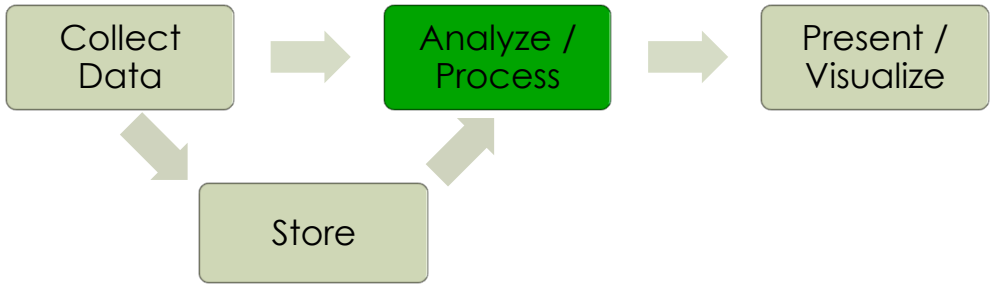
- High level view, three basic steps
  - "Real-time" processing – just the top
  - Off line or more in-depth analysis requires storage

Processing Pipeline - Collection



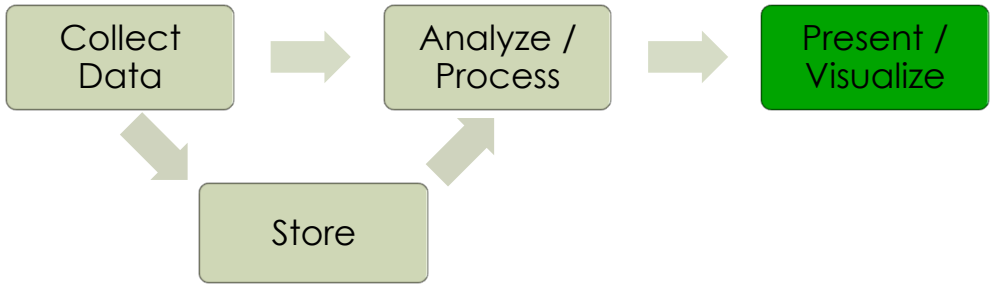
- What could we collect?
  - Tweets – text of status messages
  - Profile – meta data and self description
  - Friends – who a person follows
  - Followers – who is following this person

Processing Pipeline - Analysis



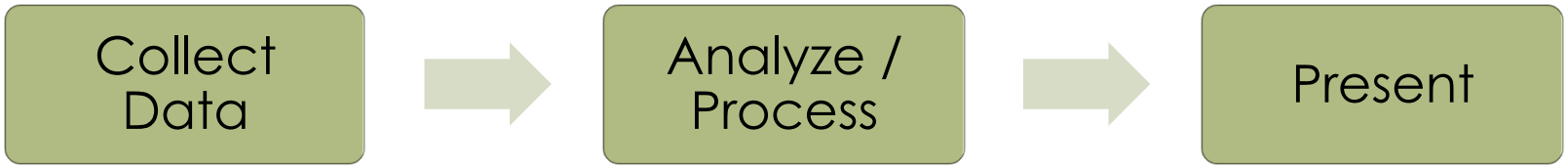
- How could we analyze these?
  - Lexical analysis – words (tokens)
  - Semantic analysis – sentiment (whole tweets)
  - Graph analysis
    - Mine "relations" – friends, followers, common hash tags, common URLs

Processing Pipeline - Presentation



- How might we present the results?
  - Text similarity measures, frequency
    - Charts, scores
  - Graph Visualizations
    - Social Networks
    - Connected

Example



- Collect
  - Tweets about the Madonna/Elton John (Golden Globes)
- Process
  - Retweets
- Present
  - Simplified graph of who retweeted whom

Course Progression

- Weeks 1 - 3
  - Introduction to Python
  - Connecting to storage (DB)
- Weeks 4 - 10
  - Techniques for “Collection” (and storage)
  - Techniques for “Analysis”
  - Programmatic "Presentation"
  - Optional: Examples – research papers

Course Project

- Challenge you to put it all together end-to-end
- Teams
  - 4 Students, self-selected teams (due Thursday January 18th)
- Proposal
  - Due – Thursday February 1st
    - Reviewed & returned by Thursday February 8th
- Project Products
  - In class presentation: Thursday March 8th
  - Project written report: Due Monday March 12th

Expectations (How to do well in the class)

- Try the examples
  - Read the code, run the code
- Explore, Search & Share
  - When you get stuck, search the web
  - Share questions & discoveries on the class email list
  - Come to Office Hours
- Participate
  - Come to class
  - Try the samples
  - Bring your laptop to class