What is data?

Data Definition

- **Definition of data**

- 1: factual information (such as measurements or statistics) used as a ***basis for reasoning, discussion, or calculation***

- 2: information in digital form that ***can be transmitted or processed***

- 3: information output by a sensing device or organ that includes both useful and irrelevant or redundant information and ***must be processed to be meaningful***

- Definition provided by Merriam-Webster dictionary https://www.merriam-webster.com/dictionary/data

Data

- Data are the details
  - The bits

  - MAD202 <- this is a course code
  - WEB110 <– this is also a course code
  - MAD100 <- this is also a course code

  - Bob
  - Bill
  - Gord
  - George

These are names

Information

- Making sense of the data

- MAD202 and Bill together *means* that Bill is registered in MAD202

- Bill, Bob, Gord and George *means* we have four students in the course

..basis for reasoning, discussion, or calculation

- Used to make decision

- Do we have enough students registered?

- How much money did we earn in 2009?

- Which customers live in Ontario?

...can be transmitted or processed

- We often want to send data so that others can use this

- But they have to know what the data represents. For example:

- 1.21 <- data

- But what does it represent?

- The cost of an ice cream cone?

- The cost of a song on iTunes?

- The amount of money in your bank account?

...can be transmitted or processed

- So we need to format it – or label the data in a way that someone using it understands what is what

- Think of a table without headings - it is just a mishmash of data
  - We could probably guess at what the information represents

- We need to markup or establish what the data represents
  - Popular methods for marking up or identifying data that is sent via the web
  - JSON
  - XML

..must be processed to be meaningful

- We need to be able to do something with the data

- We identify it and then we take a dive into it
  - We sort it
  - We retrieve only what we want
  - We display portions or use it in calculations
  - We use it to get meaning from other pieces of information