Assignment 2

MicroSoft Azure

Data

- Go to:
- https://earthquake.usgs.gov/earthquakes/feed/v1.0/csv.php

- On right of page:
  - Get past 30 days, All Earthquakes
  - Save as a “CSV” file
  - Import into a SQL (relational table) on Cloud database
  - This may be done either programmatically (in code) or by hand

Assignment

- Use:
  - MicroSoft Azure
- Get earthquake data set (CSV, previous slide)
- Import into any RDB (relational data base, SQL)
  - You may use any SQL RDB you wish: SQL lite, MySQL, MariaDB, many others
- Understand, may need to “clean” data (missing, or bad)
- Create web interface to create queries into the data
- Some my be more involved, following…

Assignment

- Some types of information discovery:
  - What were largest 5 (N) quakes?
  - What quakes occurred within 500 km of Arlington, Texas
  - For the date range January 20 through 26 (or variable..) how many quakes greater than 3 on Richter scale
  - In most recent 3 days, how many quakes (Richter scale): 1 to 2, 2 to 3, 3 to 4, up to 7?
  - Are quakes more common within 1000 km of Anchorage (61 N, 150 W) than Dallas (32.8 N, 96.8 W)?
  - Where did largest quake occur within 200 km of Dallas?

Data

- We need to “understand” the data
- What does raw data “mean” (attributes, etc.)
- Are there errors
  - Missing data
  - Bad data, wrong information (probably)
  - Incorrect, or additional entries…

Data

- Start with some science (geo) data
- Earthquakes
  - USGS (and others) have data (information) on public web site

  - Natural (earth is changing, shifting, cooling…)
  - Some can be very bad (damaging)

User Interface

- Want a user to be able to understand by utilizing web
- WWW – web, web forms, browser

- Majority of humans, many animals know how to use forms
- On a browser

- All “logic”, data, etc on “servers” (Cloud service)

Earthquakes (Terremoto)

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Earthquakes (Terremoto)

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Earthquakes (Tsunami)

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Earthquakes (Tsunami)

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Earthquakes (Tsunami)

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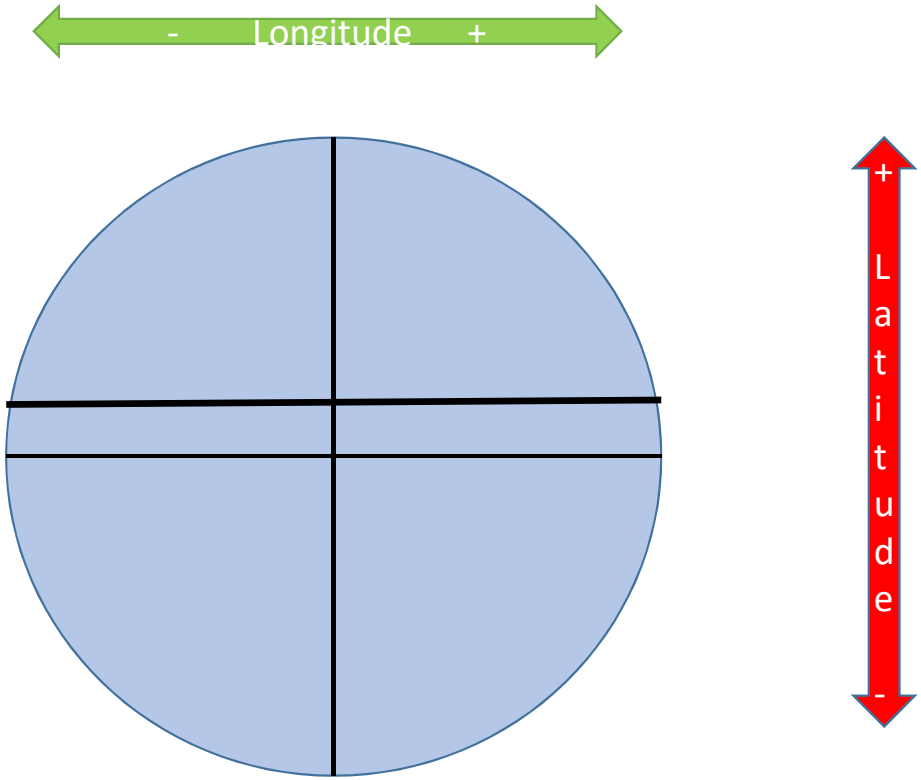
World

- 

World

- Latitude
- The equator is the in the middle, location 0,
- about 40 Thousand KM diameter,
- So, 1 degree is about 111 km, on the equator
- N is +, S is – (or use “N”, “S”)
- Longitude
- Greenwich, England (GB) is location 0
- E is +, W is – (E, W)

World

- We are now at (about)
- 32.729641, -97.110566

World

- We are now at (about)
- 32.729641, -97.110566

- How many quakes within about 200 KM?
- Largest quake in last week within 500 KM?

- Where is closest quake with mag > 6? When?

World

- More interesting (complex)

- Combinations of:
  - Magnitude
  - Location
  - Time, date
  - Maybe depth

Cloud

- Need to understand data
- Maybe clean up data
- What would you like to ask (queries)
- How
  - Through a web form (interface)
- Are results correct?

Cloud

- End