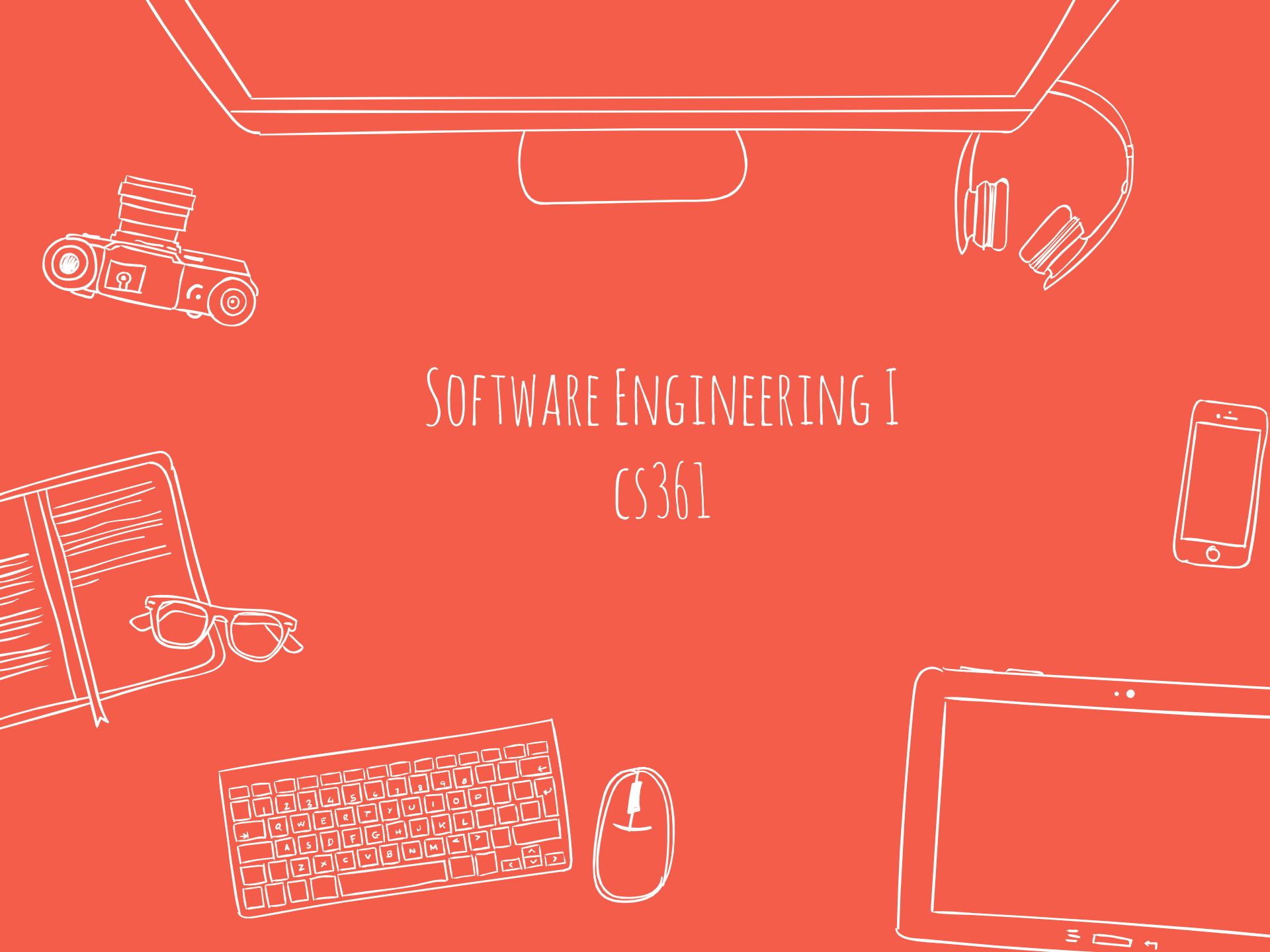
Software Engineering I

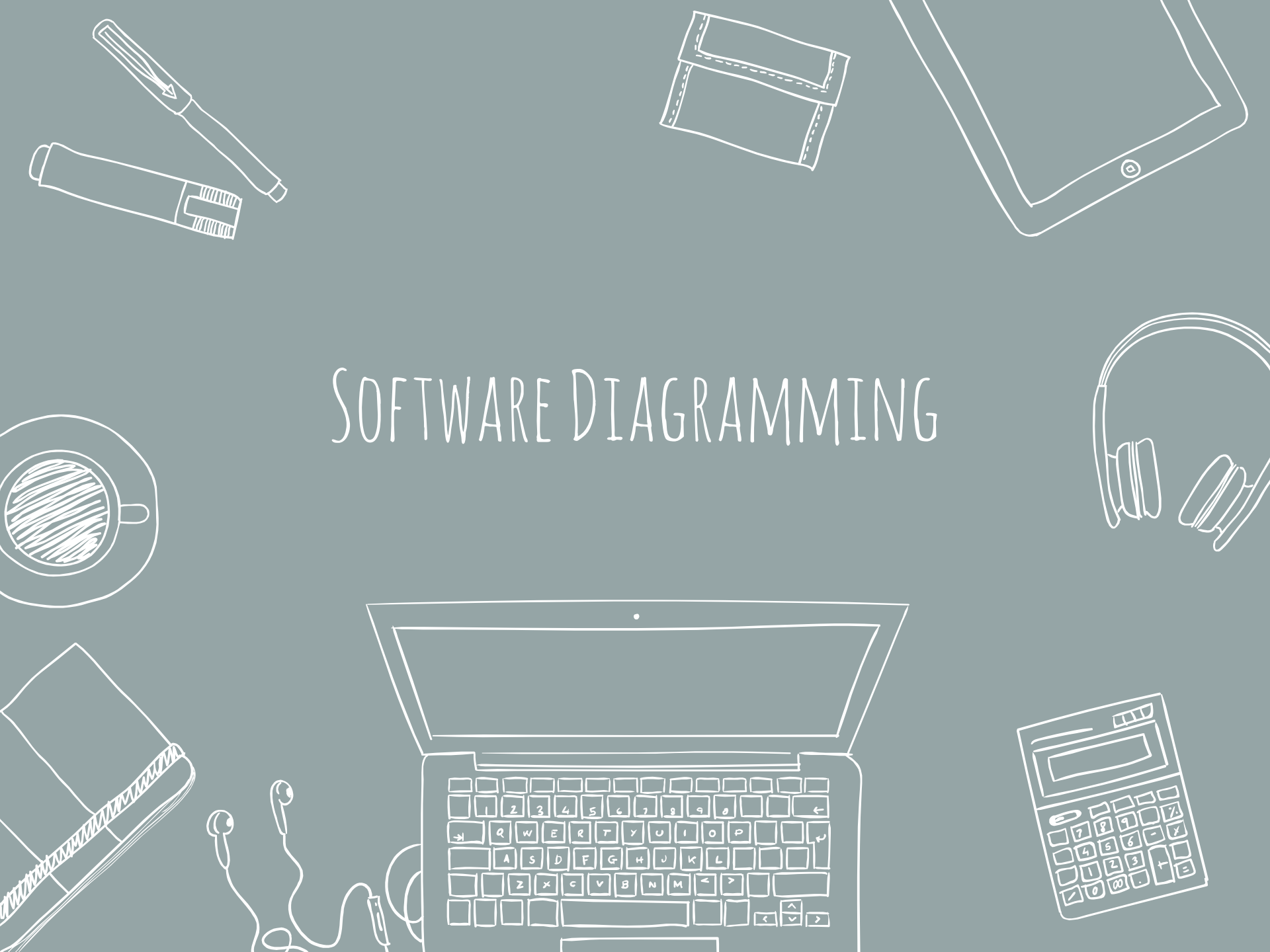
CS361



Announcements

- Review Assignment 2
- http://web.engr.oregonstate.edu/~hiltonm/classes/cs361/assignment2.html

Software Diagramming

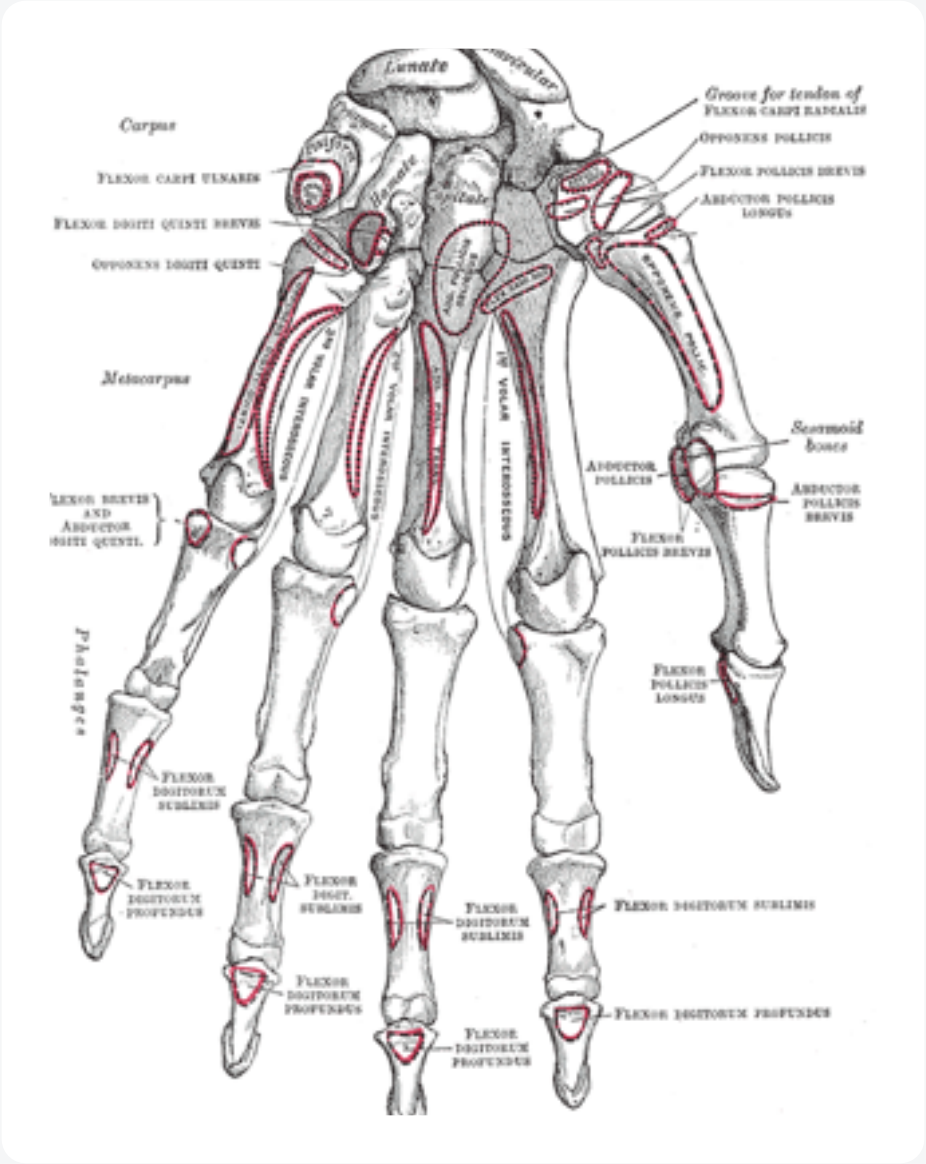


Diagrams

Are often useful when you need to:

Communicate,
Visualize or
Analyze

something, especially something with some structure.



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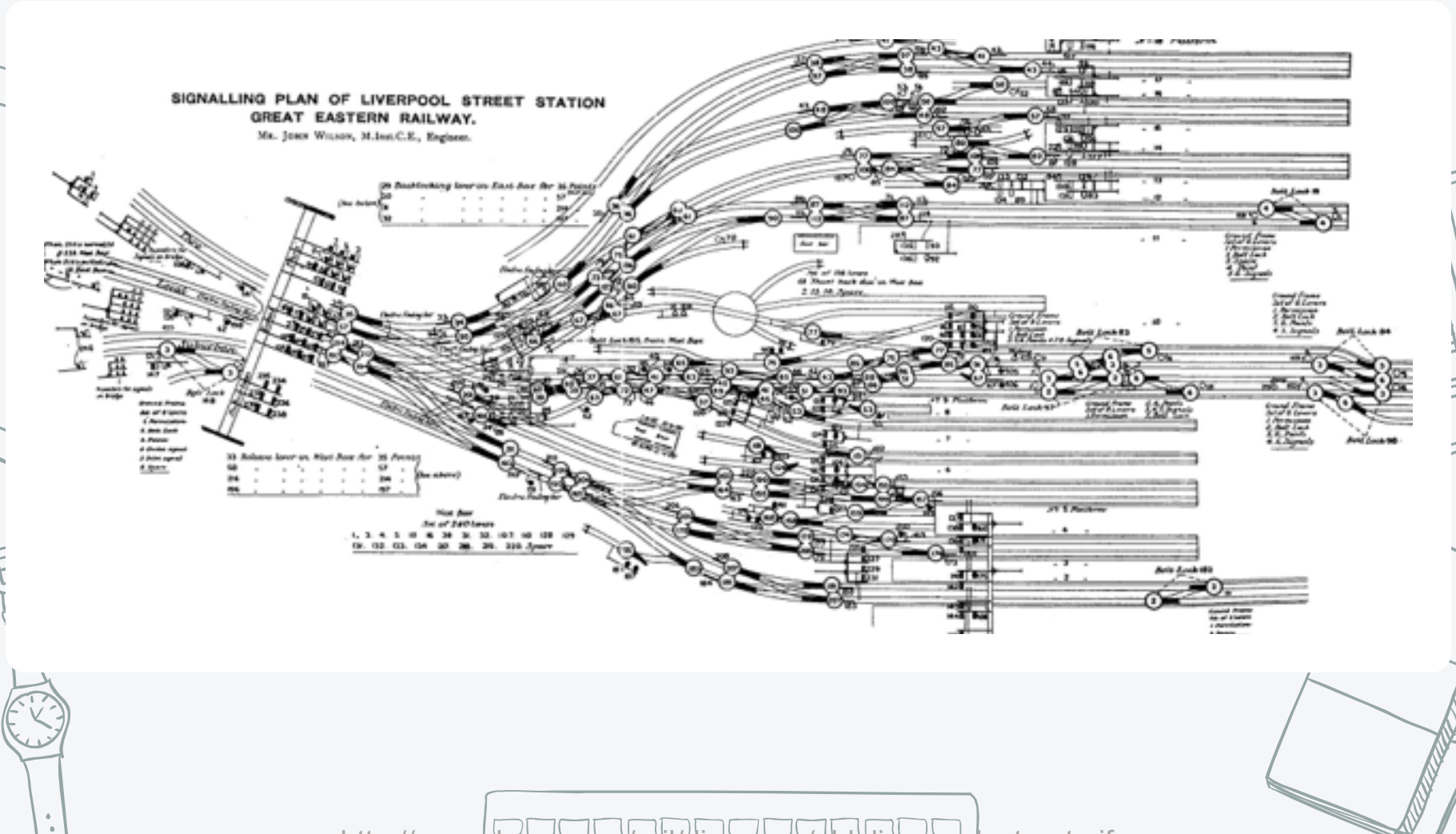
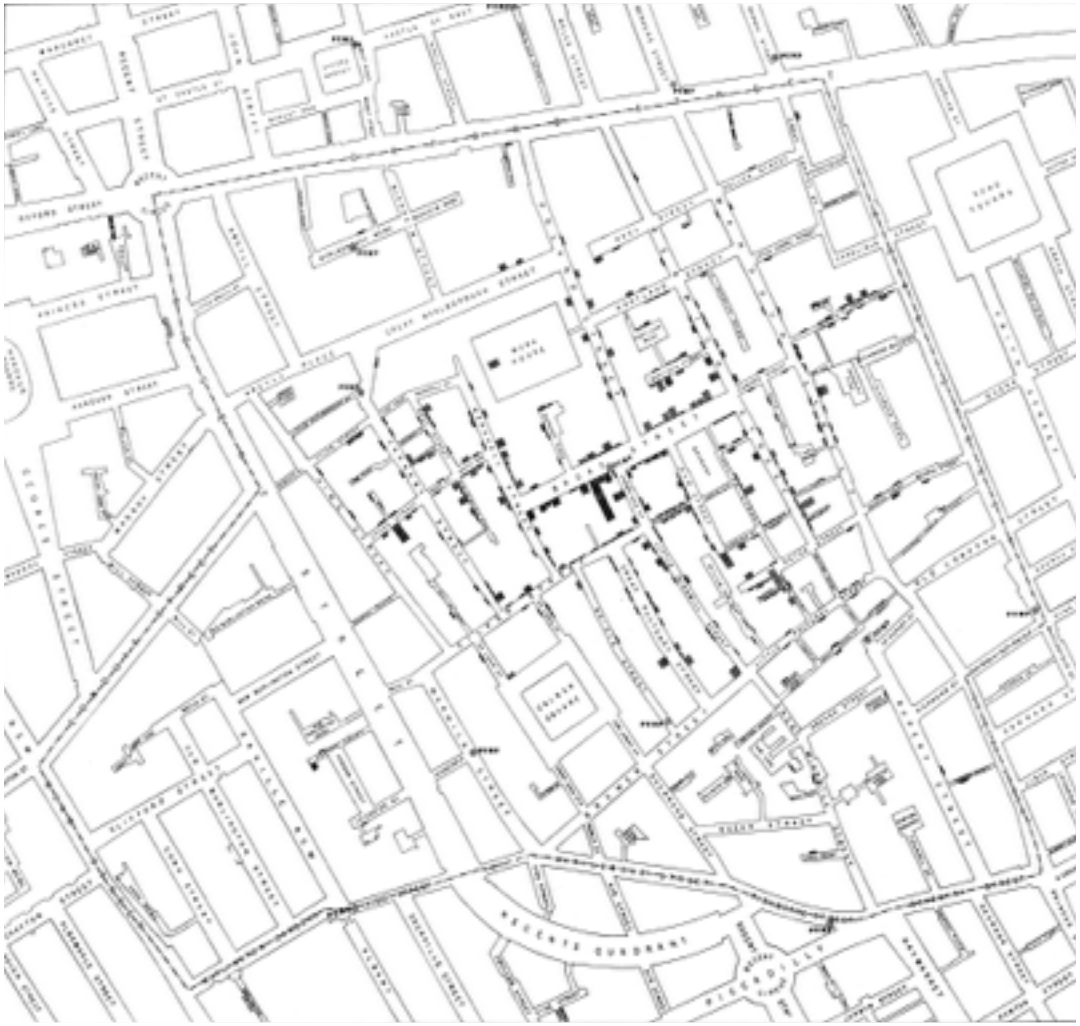
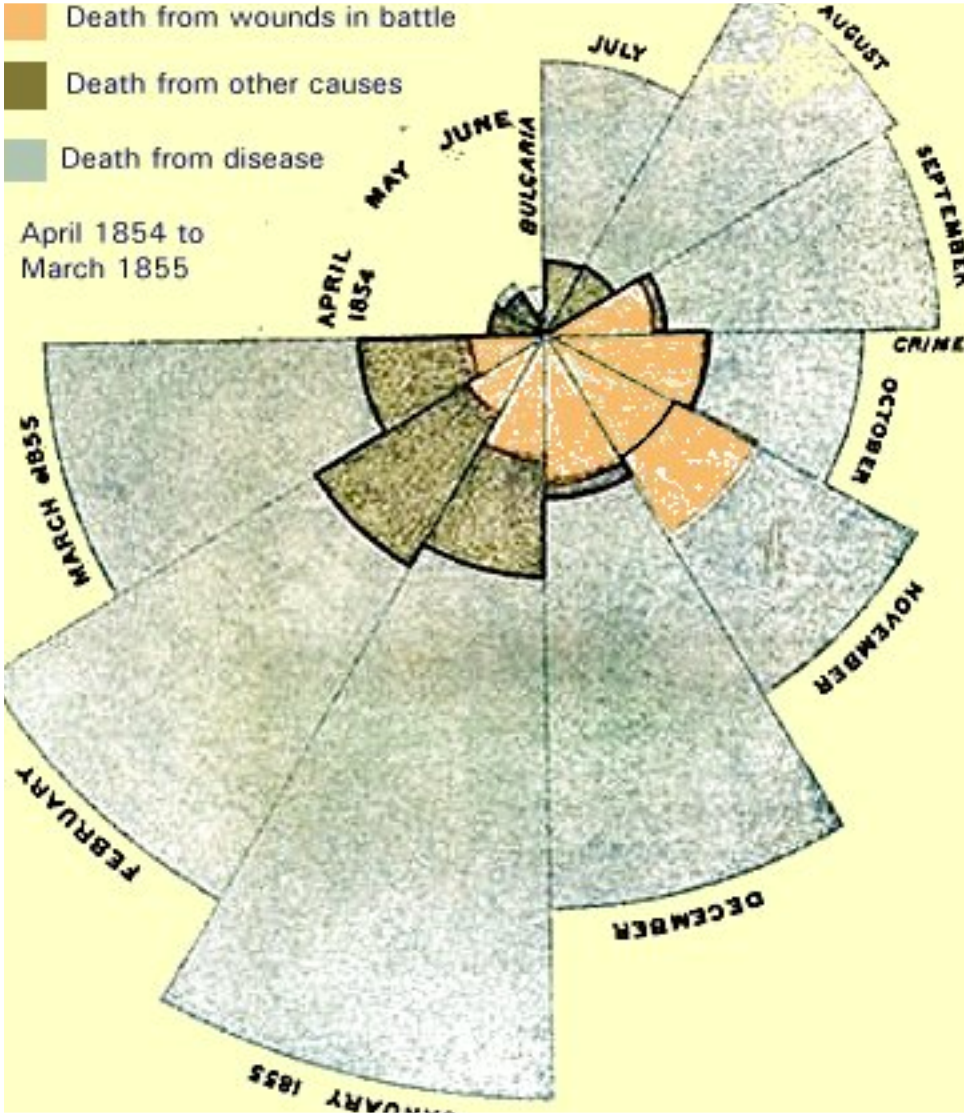


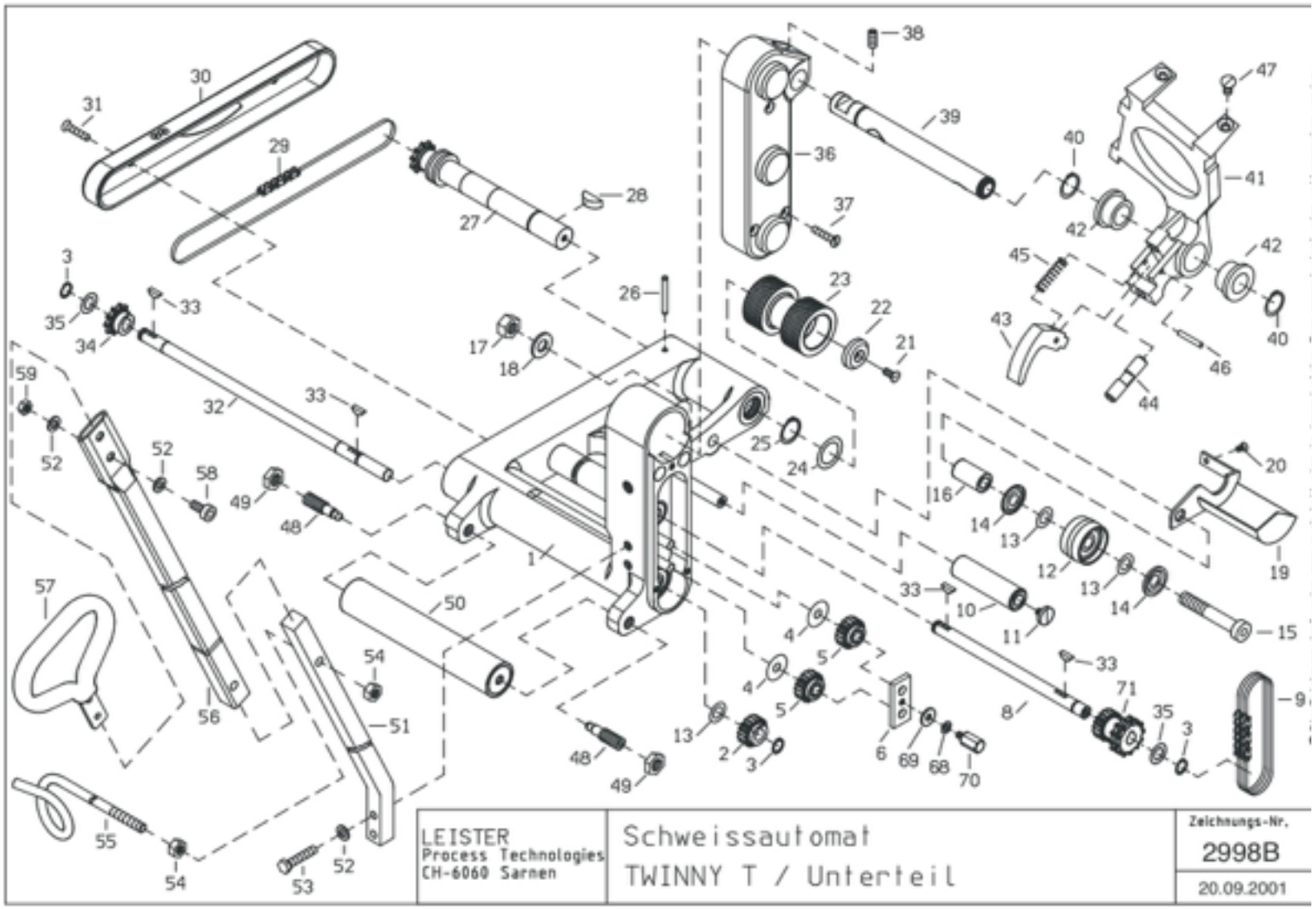
http://www.davros.org/rail/diagrams/old_liverpool_street.gif



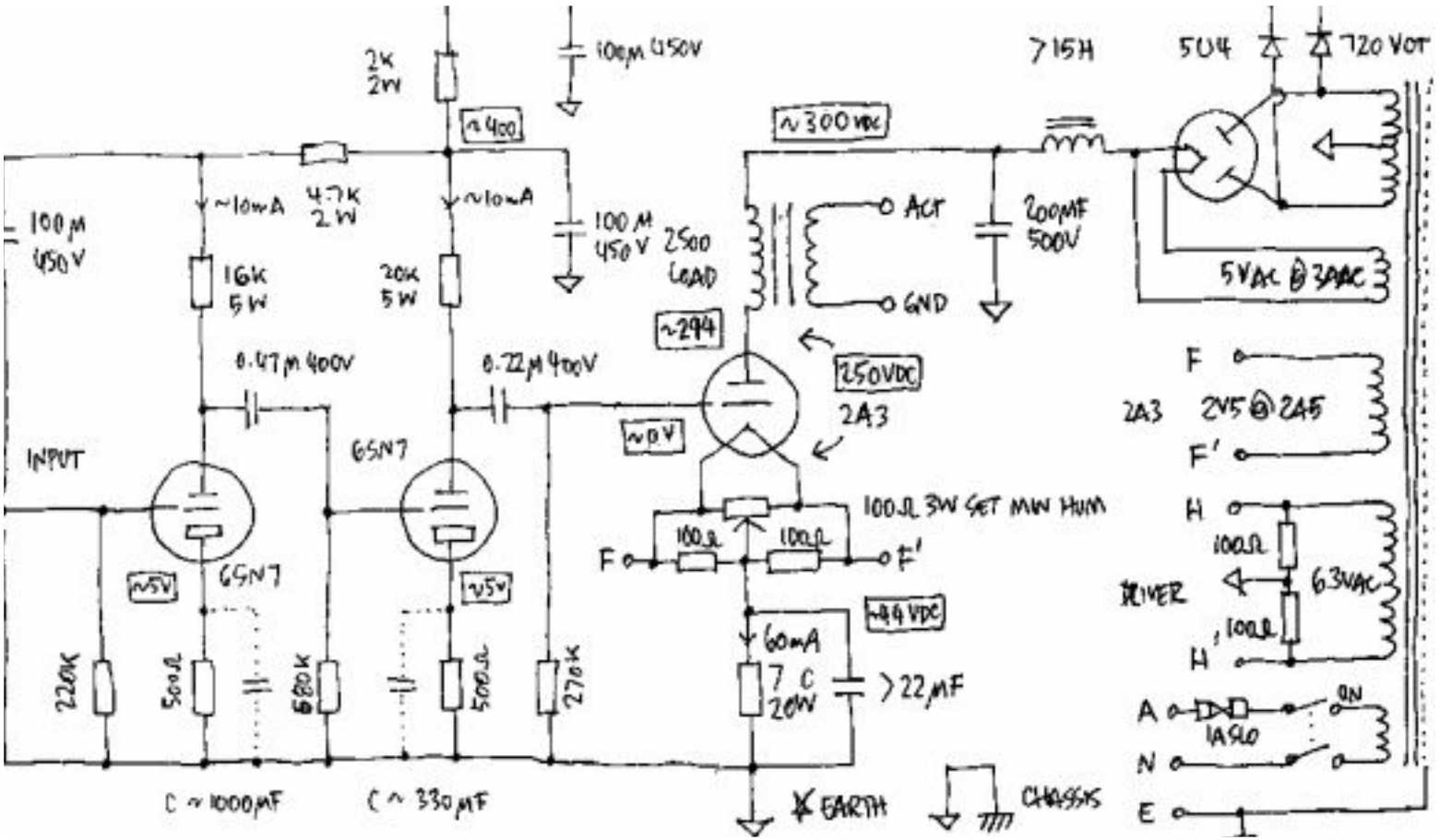
https://www.udel.edu/johnmack/frec682/cholera/snow_map.png



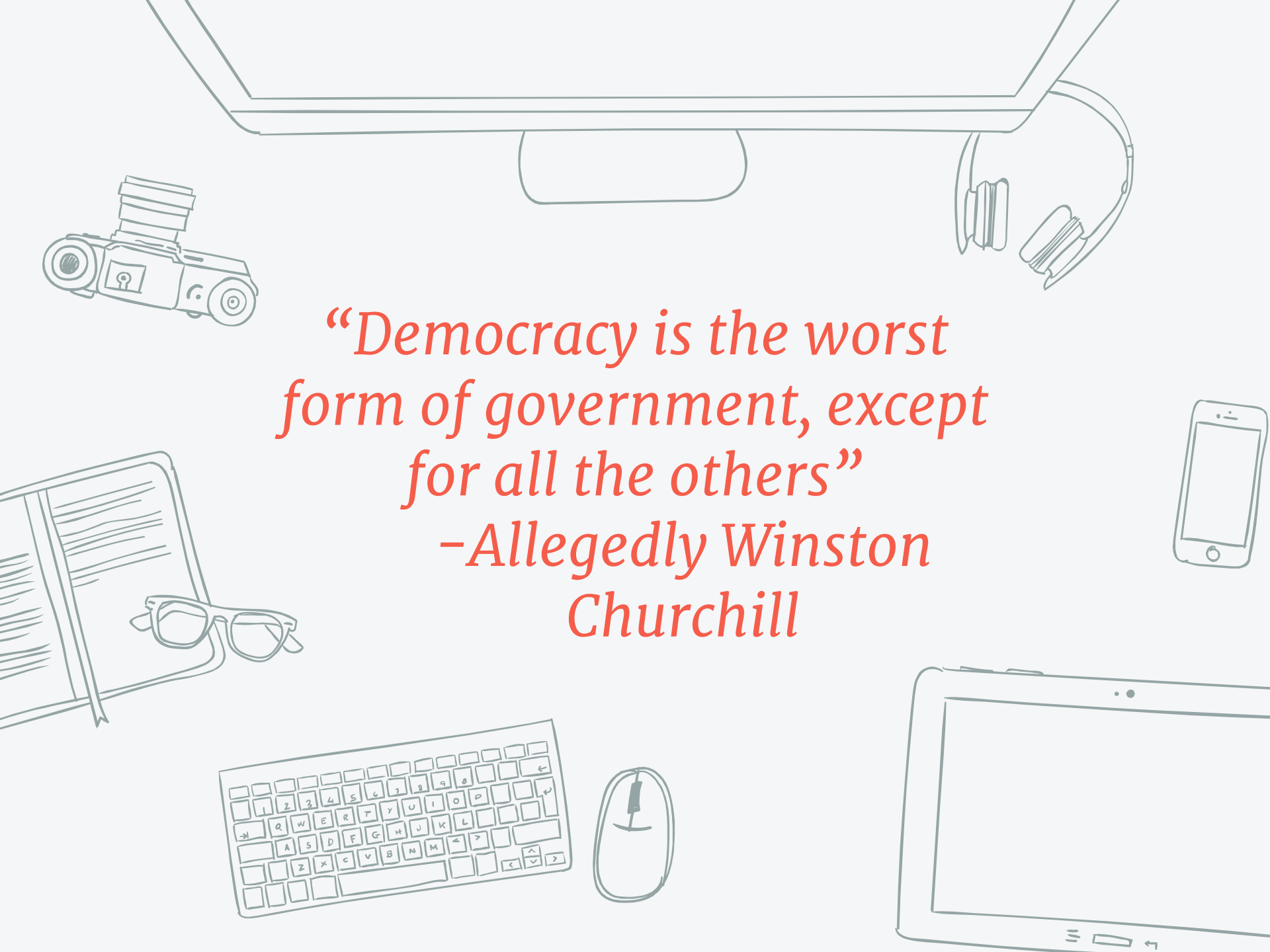
http://www.uh.edu/engines/epi1712.htm



http://files.www.ihshotair.com/twinny-s/0508-Machine_Base-CE_version.jpg



http://www.instructables.com/file/F7847IEFW4JU1UC/



"Democracy is the worst form of government, except for all the others"
-Allegedly Winston Churchill

UML is a set of many visual modeling techniques

Some UML Diagrams

- ✖Activity Diagram
- ✖Class Diagram
- ✖Communication Diagram
- ✖Component Diagram
- ✖Composite Structure Diagram
- ✖Deployment Diagram
- ✖Interaction Overview Diagram
- ✖Object Diagram
- ✖Package Diagram
- ✖Sequence Diagram
- ✖State Machine Diagram
- ✖Timing Diagram
- ✖Use Case Diagram

Some UML Diagrams

- **Activity Diagram**
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- **Use Case Diagram**

Activity Diagram

Used to model business process, or a single usage scenario, or a business rule

Example:

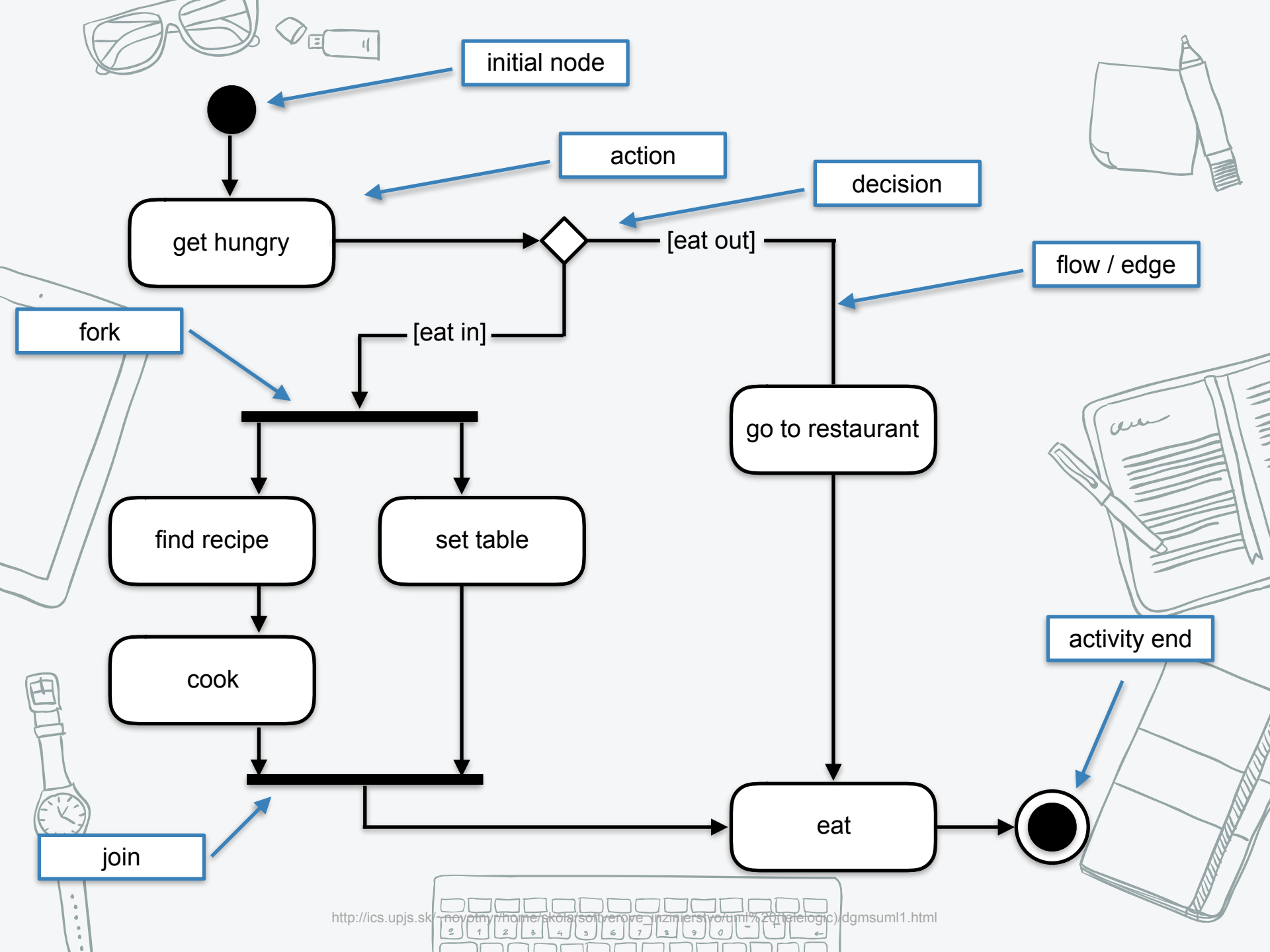
- Online Shopping
- Purchasing Ticket from vending machine
- Reserving a Flight

Activity Diagram

- Graphical representations of activities or workflow.
- Different shapes have different meanings.
- Flow goes from start to the end.

Activity Diagram Shapes

- **Black circle** represents the start
- **Rounded rectangle** represents actions
- **Diamonds** represent decisions
- **Black Bars** Represent concurrent activities
- Optional: Partition diagram with lines



http://ics.upjs.sk/~novotnyr/home/skola/softverove_inzinierstvo/uml%20(telelogic)/dgmsuml1.html

Exercise

Sequence Diagram

A Sequence Diagram is an interaction diagram that shows how processes operate with one another and in what order

Typically Model: Usage scenarios, Logic of methods, the logic of services

Helpful for understanding async code

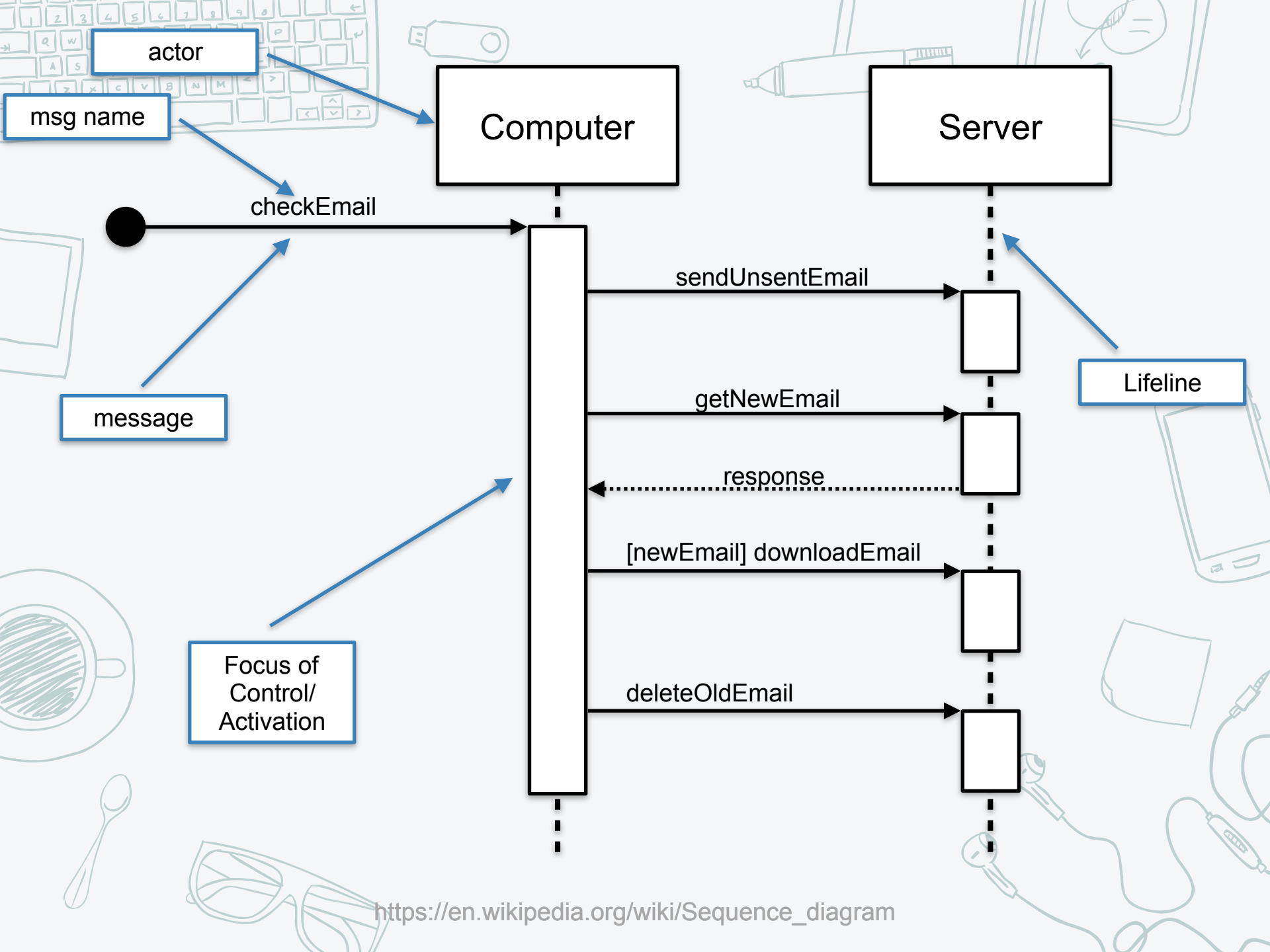
Sequence Diagram

Examples:

- Submitting comments on a website
- Facebook user authentication
- Rendering an image

Sequence Diagram Parts

- Each actor is represented as a labeled vertical line
- Each message is a horizontal line, with message name written above line
- open arrow heads represent async messages
- dashed lines are responses



https://en.wikipedia.org/wiki/Sequence_diagram

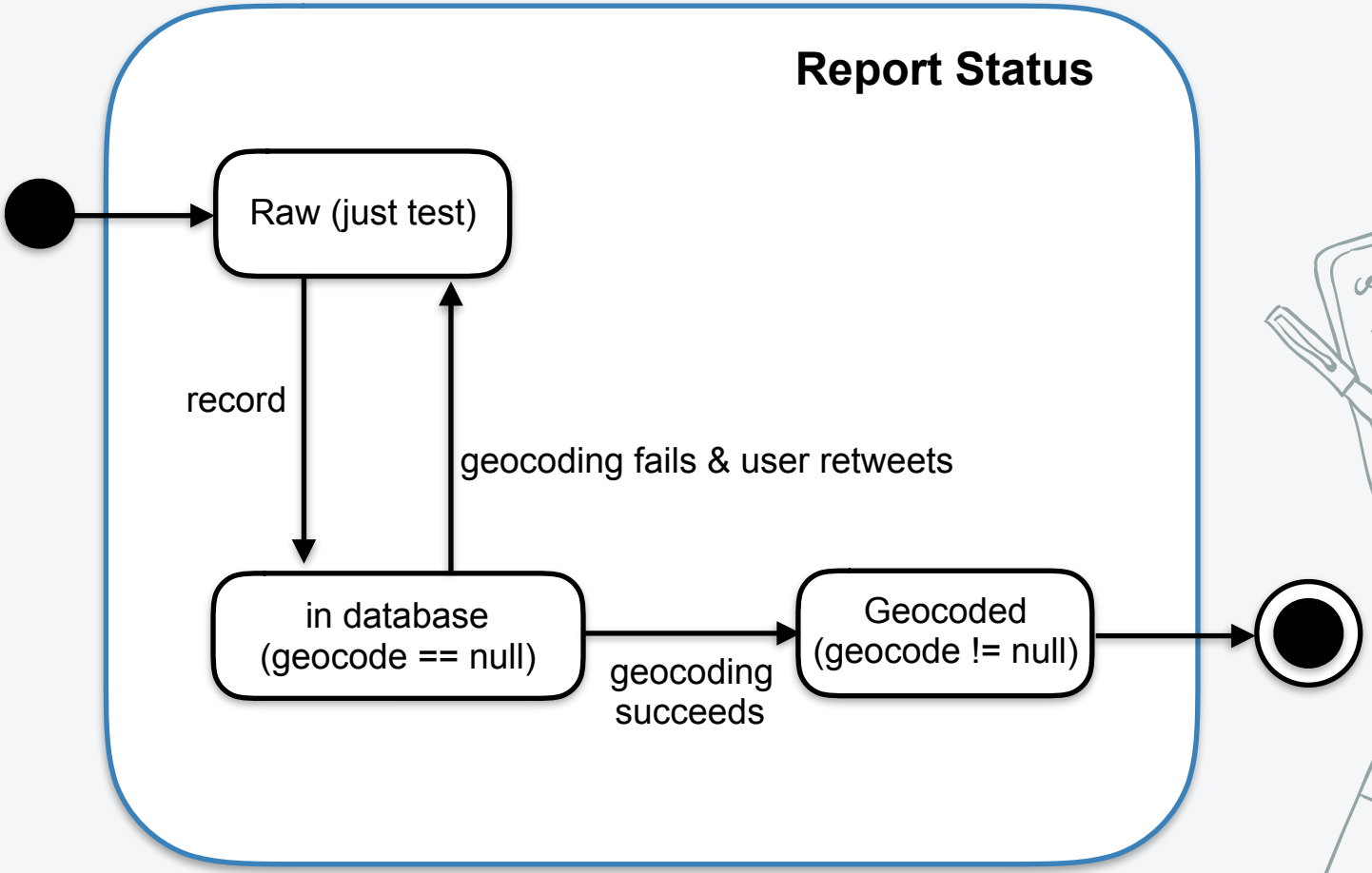
Exercise

UML State Diagrams

A state diagram shows the states of an object. Similar to a other State Diagrams, e.g. DFA

Examples:

- State of phone line
- Phases of Water



Source from Dr Anita Sharma

Use Case Diagram

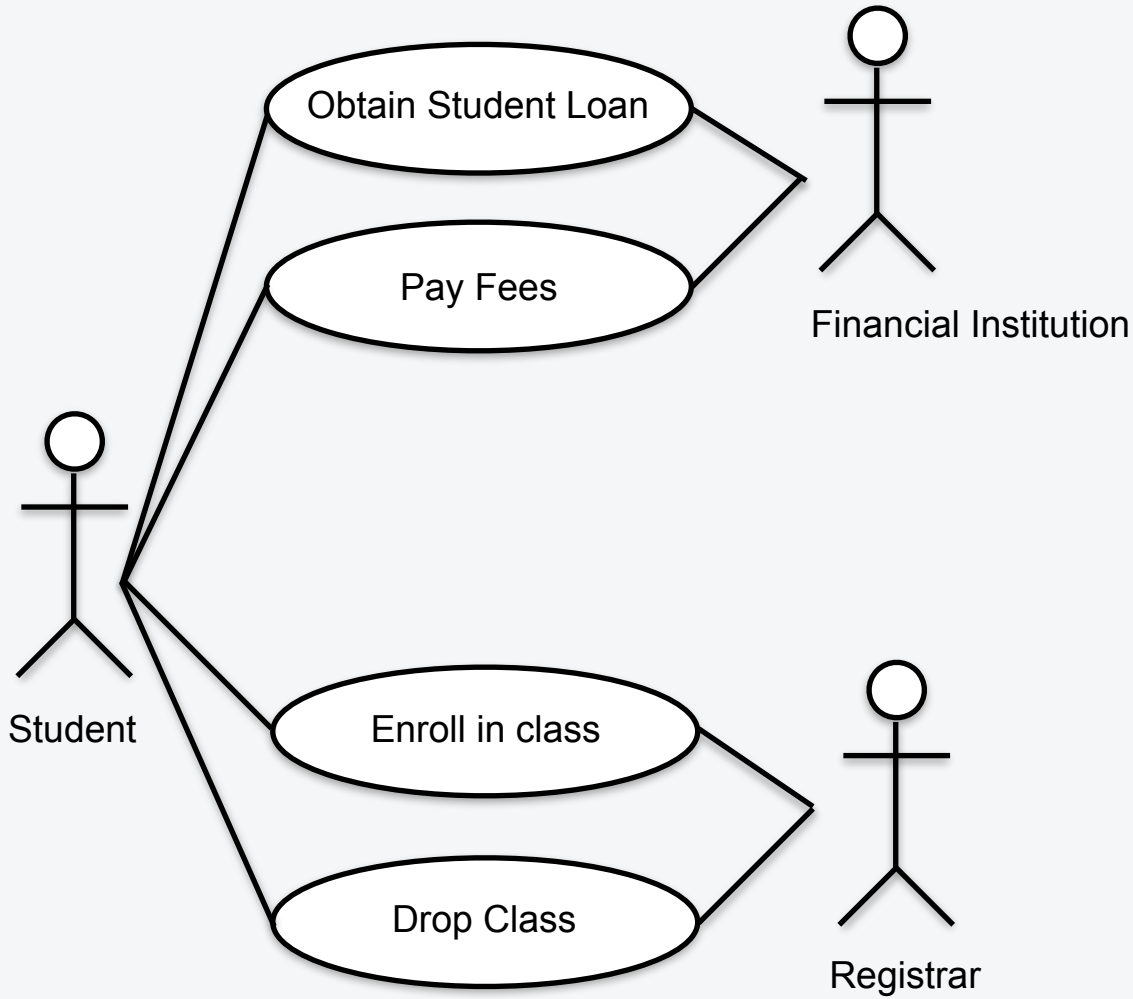
Use Case Diagram at its simplest is a representation of a user's interaction with a system.

Use Cases similar to User Stories, but more formal and more complex

Use Case

Includes:

- Summary
- Rationale
- Users
- Preconditions
- Basic Course of Events
- Alternative Paths
- Postconditions



http://agilemodeling.com/artifacts/useCaseDiagram.htm

Credits

Special thanks to all the people who made and released these awesome resources for free:

- Presentation template by SlidesCarnival
- Photographs by Unsplash