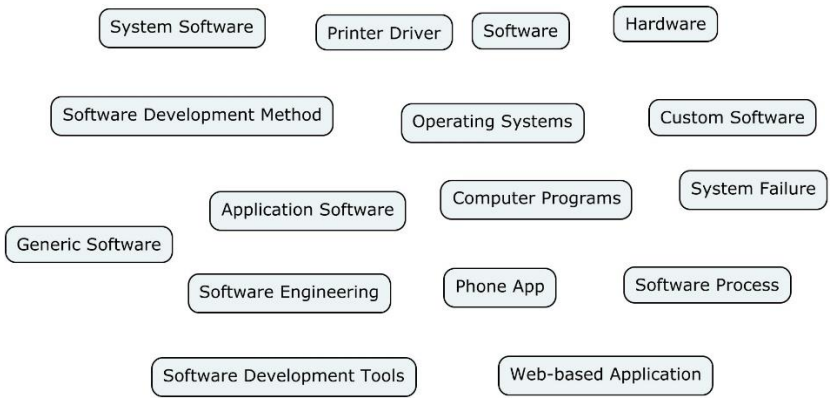
EBU6304 Software Engineering

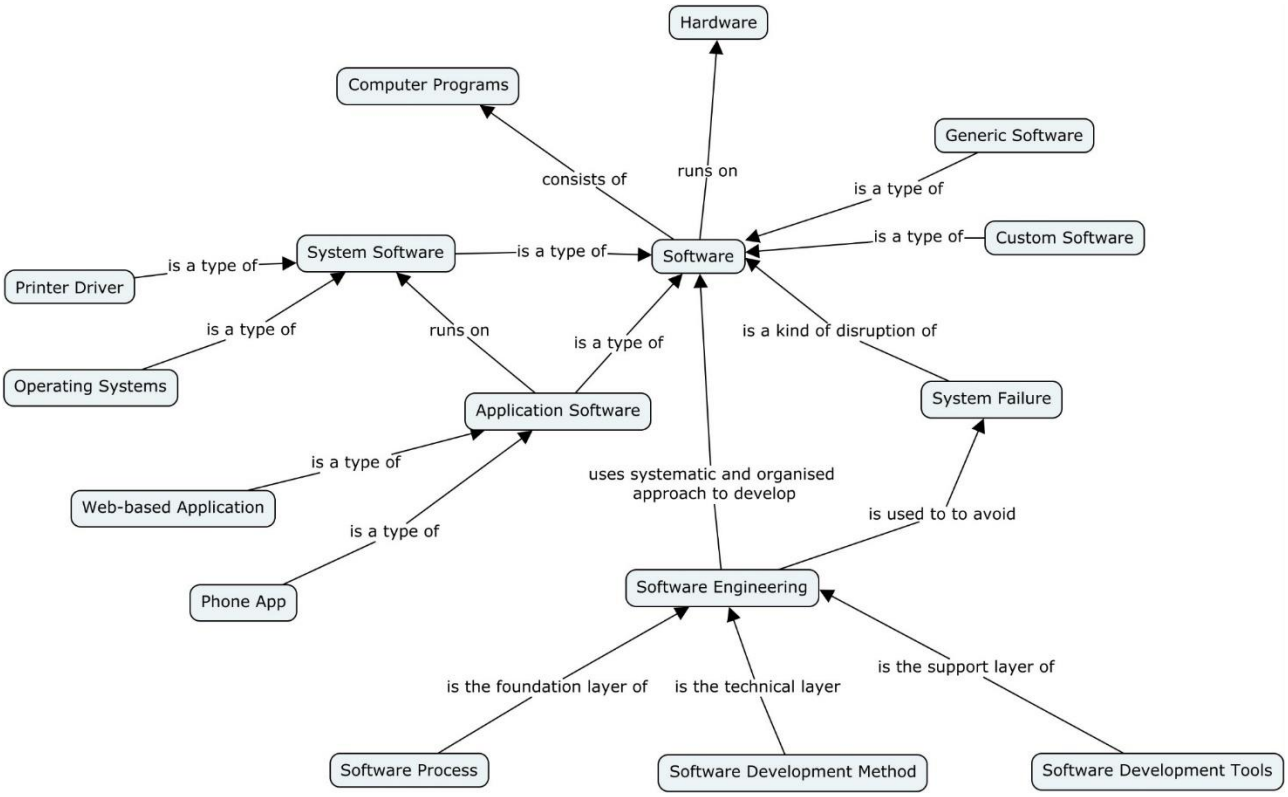
Exercises Set 1

Software and Software Engineering

1. A concept map (conceptual diagram) is a diagram that depicts suggested relationships between concepts. (-Wikipedia). Concept map can help you put knowledge together. For example, these are the concepts you could identify from lecture 1 notes.



You may put the concepts together by using links. Each link has an arrow and show the relationship. Below is an example of a completed concept map. You may watch the animation of this concept map on QM+.

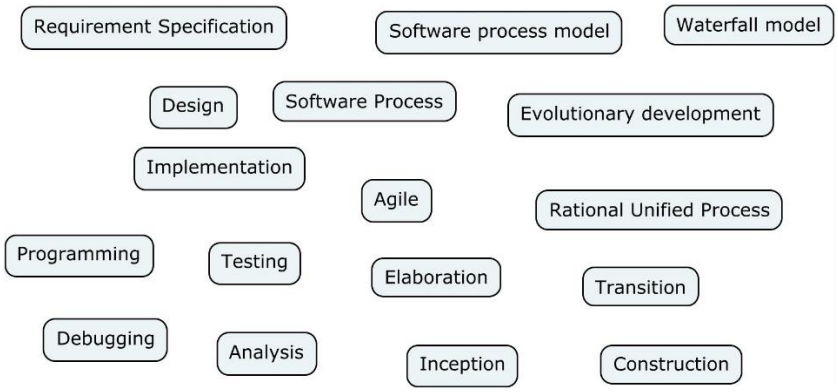


You can simply draw concept maps using pen and paper. There are also tools for concept maps, the above was using cmap: https://cmap.ihmc.us/. Now, your task is to draw your own version of concept map about Software and Software Engineering.

2. Generic Software and Custom Software are the basic two types of software products. However, the distinction between the two types of software products is becoming increasingly blurred. Explain this statement with an example.

Software Processes

1. Draw a concept map (linking the following concepts together).



2. Suggest the most appropriate software process that might be used as a basis for developing a system to control anti-lock braking in a car. Give your reasons.

Agile Software Development

1. Identify the concepts yourself. Draw a concept map of Agile Software Development.

2. Describe pair programming and discuss the advantages of pair programming.

3. Discuss if Agile software development is suitable for the following projects:

- It is not possible to get rapid feedback from customers.
- The system can be developed with a small co-located team who can communicate informally.
- It is a long-lifetime system that requires more design documentation to communicate the original intentions of the system developers to the support team.
- The development team is distributed or if part of the development is being outsourced.
- A system has to be approved by an external regulator (e.g. the FAA approve software that is critical to the operation of an aircraft).

Requirements

1. Identify the concepts yourself. Draw a concept map of Requirements.

2. Write a user story of “Withdraw Cash” on an ATM (Based on your own experience).

3. “The software should be portable.” Is it a functional requirement or a non-functional requirement? What is the problem with this requirement statement? Re-write the statement to correct the problem.

4. What is a sprint in Scrum?