

## 1.1 Abstraction

**Notebook:** How Computers Work [CM1030]

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Cornell Notes	Topic:  1.1 Abstraction	Course: BSc Computer Science
		Class: How Computer Work [CM1030]
		Date: October 9, 2019
Essential Question:		
<ul style="list-style-type: none"><li>What is abstraction in terms of computer science?</li></ul>		
Questions/Cues:		
<ul style="list-style-type: none"><li>What is a simple hierarchy of a computer process?</li><li>What is the measurement for Computer Speed?</li><li>How is Computer Memory measured?</li><li>What is Abstraction?</li><li>What is the most basic abstraction that we used to represent data on a computer?</li><li>How is a computer picture represented?</li><li>What is notional machine?</li><li>What is a Central Processing Unit or CPU?</li><li>What is RAM?</li><li>What is the basics of how a Computer works?</li></ul>		
Notes		
<ul style="list-style-type: none"><li>Modern webpage<ul style="list-style-type: none"><li>Web Browser Application<ul style="list-style-type: none"><li>Operating System<ul style="list-style-type: none"><li>Computers<ul style="list-style-type: none"><li>Central Processing Unit (CPU)/Main Microchip<ul style="list-style-type: none"><li>Quantum Processes in Semiconductors</li></ul></li></ul></li></ul></li></ul></li></ul></li><li>Comp Speed = Gigahertz, 1 GHz = about a billion math operations per sec</li><li>Memory measured in GB (Gigabytes)</li><li>Abstraction = representation of key features, without unnecessary details<ul style="list-style-type: none"><li>Ie. In Eng drawing, simple diagram to extract important features of mechanism</li></ul></li><li>Abstraction (Comp Sci Terms) = simplified representation of thinking; piece of software with other competing tech, emphasizes key details without distracting complexity.</li><li>Basic Abstraction is to represent data on Comp as numbers</li></ul>		

- Comp Pic = grid of tiny squares or pixels (short for picture elements); pixels have colour. Mixing together 3 color values in lights Red, Green, Blue. Color on screen can be rep'ed by 3 #'s RGB values.
- Higher Tier (simpler understanding) = more "layers" of abstraction
- Layers of Abstractions = something simpler to understand built-in to ongoing complexities underneath
- Abstraction of Comp Actions = Notional Machine
- Notional Machine = simplified version of how comp prog works
- CPU (Core of Comp) = chip to do all calculation on comp, run instructions which make up comp progs or code.
- Memory of Comp = Random Access Memory or RAM, where Comp stores all data it's working on.
- Data from Memory → CPU → Write back to Memory

## Summary

In this week, we learned the basics of a computer process, how Computer Speed and Memory is measured. Furthermore, we've learned how abstraction is vital to our understanding of computers, what abstraction is ie. a picture on a computer, and layers of abstraction are built-in to understand ongoing complexities underneath as a way of representation. On the other hand, we also learned how abstraction can not only be used as representation but as a way to showcase the actions of a computer or a notional machine. In closing, we also touched on how the basics of how computers works with components such as CPU and RAM working together in sync.