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CSCD 350

Task 1

Outline:

Notion of System: light description of what the system does

3 Dots: 3 attributes that characterize the system

2 relationships: relations between 2 of the dots

At the end: discuss what the systems collectively have in common.

Systems:

**Computer hardware**: the mechanical components of a computing device

* Processor
* RAM
* Power Supply

1. Power supply powers the processor
2. Processor access data and stores results in RAM

**Computer software**: programmed instructions that dictate what a user can do with a computing device

* Operating System
* Code
* Independent Development Environment (IDE)

1. Operating System composed of code
2. Code written in IDE

**Computer operating**: tools used by the user to interact with a computing device

* Output
* Input
* User

1. User gives input
2. User reads output

**Electrical**: Energy used to power machinery based on the movement of electrons

* Electrons
* Wires
* Generator

1. Electrons travel through wires
2. Generators excite electrons

**Mechanical**: a composition of moving parts that produce an effect

* Parts
* Power
* Design

1. Parts conform to a design
2. Power allows parts to move

**Biological**: a composition of living cells that interact according to DNA instructions

* Cells
* DNA
* Reproduction

1. Cells beget other cells through reproduction
2. Cells act according to their DNA

**Geological**: a body consisting of minerals

* Igneous
* Sedimentary
* Minerals

1. Minerals under extreme temperature and pressure compose igneous rocks
2. Minerals compacted over time compose sedimentary rocks

**Weather**: the state of the atmosphere of a planet

* Clouds
* Rain
* Heat

1. Clouds produce rain
2. Heat causes precipitation of water which forms clouds

**Communication**: the sharing of information

* Statement
* Hearing
* Response

1. Statements are heard.
2. Heard statements are responded to.

**Sensor**: device used to detect some phenomenon

* Detector
* Phenomenon
* Output information

1. Detector detects some phenomenon
2. Phenomenon is reported as output information

**Economic**: The exchange of goods and services

* Currency
* Product
* Consumer

1. Currency is exchanged for product
2. Consumers buy or trade for products

**Real-time**: computing subject to strict time constraints

* Time constraint
* Input
* Output

1. Input processed into output
2. Output must be processed according to a set time constraint

**What these systems have in common**:

They are all composed of some parts (the what) which interact in a predetermined way (the how, when, and where). The science build around these systems attempt to understand them in order to interact with them in a way that increases the human good; furthermore, humans use this knowledge in order to make correlations with other systems to better understand them for the human good. For instance, understanding how a desired class of mineral is formed allows humans to replicate the process in order to artificially create similar minerals.