

Hardware Abstraction 1: What is a Computer?

(15 min) I. Computer Hardware	start time:
-------------------------------	----------------



1. A computer is just a machine. That means we can categorize the parts. Computers are getting smaller and being embedded into other things. We need to be able to tell if something is a computer or contains a computer. Answer the following questions.

a.	How many parts are depicted in the model?	
b.	Which part(s) do people use to give commands or data to the computer system?	
c.	Which part(s) can the computer use to give information to the user?	
d.	What part(s) perform computations or execute commands?	

2. As a team, brainstorm at least 5 other devices that are not shown in this model, but can be connected to a computer.



Information: Computer engineers categorize computer hardware into four groups:

- **input** devices are used to provide data or commands to the computer,
- **processing** devices perform calculations or execute commands,
- **output** devices are used by the computer to provide feedback to the user, and
- **storage** devices save data, information or instructions for a period of time.

3. Using the table below:

- Check the appropriate column for each device listed.
- Add at least 5 devices identified by your team or other teams.
- Check the appropriate column(s) for each device you added.

Device	Input	Processing	Output	Storage
Hard Drive				
Mouse				
Computer/CPU				
Monitor				

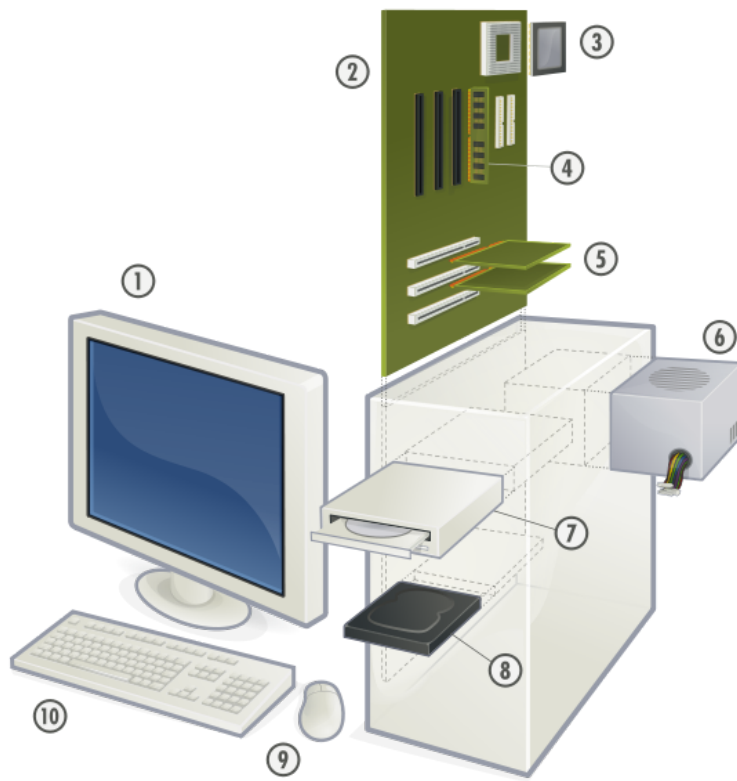
4. In the table, which column has the **fewest** check marks? Why do you think this is?

5. In the table, do any rows have more than one check mark? Explain why.

(15 min) II. Inside the Computer

start
time:





1. Monitor
2. Motherboard
3. Central Processing Unit (CPU) with heat sink
4. Random Access Memory (RAM)
5. Expansion slots
6. Power Supply
7. Optical Drive (CD and/or DVD)
8. Hard Drive
9. Pointing device
10. Keyboard

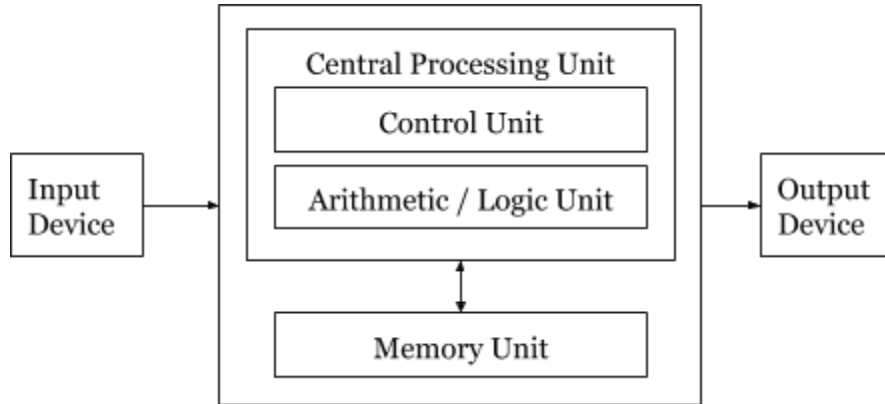
6. Complete the table below using your knowledge of computing devices and what you learned about components from the IPOS model. Reach consensus as a team:
- What hardware group contains each component? In the **HW Group** column, write I for **input**, P for **processing**, O for **output**, or S for **storage**.
 - Which components are in **every** computer? Which are optional?
In each device column, check the required components, and leave optional ones blank.

Component from Model	HW Group	Desktop PC	Laptop PC	Game Console	Phone/ Tablet
Motherboard					
CPU					
RAM					
Hard Drive					
Expansion Slots					
Monitor/Screen					
Optical Drive					

7. Use the completed table above to compose a statement that is true for all computers.



(15 min) III. The CPU	start time:
-----------------------	-------------



8. Use the diagram above to answer the following questions:

a.	What does the CPU need in order to do its job?	
b.	Which part of the CPU does the processing?	
c.	When the CPU is done processing how do we know the results?	
d.	Which part of the CPU stores data?	

9. Create 4 questions that you can ask yourself whenever you encounter something that may or may not be a computer, to help you classify it. (Hint! Use IPOS)



10. Use your questions to determine if the following items are computers or contain computers. Support your yes or no answer with your rationale:

a.	Calculator	
b.	Game console (Xbox, Wii, PlayStation, etc)	
c.	Car	
d.	Traffic light	
e.	Headphones	

