## Unit: Computer Architecture

Lesson Title: CPU Architecture

*IB Syllabus Alignment: Lesson 2.1.1 - Outline the architecture of the central processing unit (CPU) and the functions of the arithmetic logic unit (ALU) and the control unit (CU) and the registers within the CPU.*

**SWBAT/IB Teaching Standard for Assessment**. Students should be able to reproduce a block diagram showing the relationship between the elements of the CPU, input and output and storage. The memory address register (MAR) and memory data register (MDR) are the only ones that need to be included.

**Do Now / Coding Component** (2 minutes Turn-and-Talk) Students will be assigned to write a pseudocode that accepts input from the user of a string of 20 characters and counts the number of vowels and reports back the number of vowels and consonants to the screen (or printer). This will be presented tomorrow at the beginning of the class.
Teaching notes: Reemphasize the input-computing-output components of the task.

**Part A. Introducing the Lesson** (5 minutes) The teacher will ask students to guess when the first CPU was invented and what support their conjecture? (TOK component). Teacher will then ask students to do a quick read of the Stephen Cass paper (https://spectrum.ieee.org/chip-hall-of-fame-intel-4004-microprocessor)

**Part B. Student Centered Activity.** (20 minutes)

Research Tasks (includes ATL Components - Research, Communication, Time Management)
Students in small groups will be assigned to prepare 5-10 minutes discussions on the following topics:

Group 1: Prepare a diagram and brief description of the architecture of the CPU.
Group 2: Discuss the functions of the arithmetic logic unit (ALU).
Group 3: Discuss the function of the control unit (CU).
Group 4: Discuss the function of the registers within the CPU.

**Part C. Whole Group Lesson Component /Harkness Protocol** (15 minutes)

Each of the groups will present their work in 2-3 minute presentation blocks.

**Part D:** Assigned reading for next day discussion - Paul Alcorn paper
(https://www.tomshardware.com/features/amd-vs-intel-cpus)