**Level 1: Charles Babbage & Ada Lovelace**

1. Who was Charles Babbage?
   1. When and where was he born?

* December 26, 1791 London UK
  1. What was his main contribution to computer science?
* He originated the concept of programmable computers

1. What is the "Difference Engine" proposed by Charles Babbage?
   1. What did it do?

* an automatic mechanical calculator designed to tabulate polynomial functions
  1. How did it work?
* You had to crank it
  1. How was it similar to modern computers?
* It uses programming to work

1. Who was Ada Lovelace?
   1. When and where was she born?

* December 10, 1815, London, UK
  1. What was his main contribution to computer science?
* She made the analytical engine
  1. What is the computer language that is named after her?
* lovelace

1. What is the "Analytical Engine" worked on by Ada Lovelace?
   1. What did it do?

* It would perform any calculation set before it
  1. How did it work?
* It had the mill, the store, the reader , and the printer
  1. How was it similar to modern computers?
* These are some components of modern computers

**Level 2: Alan Turing**

1. Who was Alan Turing?
   1. When and where was he born?

* June 23, 1912
  1. What was his main contribution during World War II?
* He cracked the enigma code
  1. What were his main contributions to computer science after World War II?
* He made the first functional computer

1. What is the "Enigma" that Alan Turing worked on during World War II?
   1. What was the "Enigma code" used by the Germans and how did it work?

* A enciphering machineused by the German armed forces to send messages securely. The code changed daily so it was hard to crack
  1. Why was it so important for Britain to "crack" the Enigma code?
* So they can know what the Germans are doing
  1. How did Alan Turing solve the puzzle?
* He used the computer to help him
  1. Why was Turing's work kept top secret?
* They did not want Germans finding out

1. Many people call Alan Turing the "Greatest Unknown Hero of World War II". Provide some examples of the impact of his work that would support this claim.

* He cracked the enigma code
* He laid the groundwork for modern computing and theorized about artificial intelligence
* Helped win the war

1. How did being gay affect Alan Turing's life and work as a computer scientist?
   1. How did being gay affect his work during World War II?

* He got made fun of and that slowed his work
  1. How did being gay affect his work after World War II?
* he started getting very depressed and got arrested
  1. How did Alan Turing's life end?
* He committed suicide

1. Many people call Alan Turing the "Father of Computer Science". Provide some examples of the impact of his work that would support this claim.

* He made the first functioning electronic computer
* Inspired other people

**Level 3: Other Great Contributors**

1. Who was John von Neumann?
   1. When and where was he born?

* December 28, 1903 Budapest Hungary
  1. When and why did he move to America?
* He moved to the US in 1937
  1. What was his contribution to mathematics & science?
* He got a degree in mathematics and chemistry
  1. What was his contribution to computer science?
* He designed model for a stored program digital computer

1. What was the "ENIAC" computer and the "von Neumann Machine"?
   1. What did it do and how did it work?

* ENIAC was an all-electronic calculating machine
* The von Neumann machine was a computer that had CPU, hard drive, and ram
  1. How is it related to modern computers?
* We now have small calculators
  1. Explain how a "von Neumann Machine" applies to modern PCs.
* All are modern day computers are based off of the von Neumann machine

1. Who was Grace Hopper?
   1. When and where was she born?

* December 9, 1906, New York City
  1. What were some of her contributions to computer science?
* She invented a compiler tool
* She made COBOL

1. What was the "COBOL" computer language that Hopper helped to develop?
   1. How was COBOL different from other computer languages of the time?

* It was used for business
  1. Is COBOL still in use today? Explain your answer.
* COBOL is still used today in government and many businesses

1. Who is Tim Berners-Lee?
   1. When and where was he born?

* June 8, 1955 London UK
  1. Why was he knighted by Queen Elizabeth II?
* He was knighted for services to the global development of the internet
  1. What is his contribution to computer science?
* He made the world wide web

1. List some ways that your life would be different if Tim Berners-Lee did not invent the World Wide Web.

* We would not be using the internet to research things we would be using books and we would also not be able to play video games online and would have to go to our friends house to play together

**Level 4: Presentation**

Pick one of the above "heroes" of computer science and prepare a brief presentation about their life and contributions.

Your presentation will be shared with other students in the class in a "trade show" format. (When we return form Christmas break.)

Your presentation should be shared with Mr. Nestor through Google Docs or via email at p0079141@pdsb.net.