Lesson #10-12: Binary

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| Overview This lesson is an introduction to binary counting. Students will intially approach the concept through multiple entry points so they can learn how to count in binary themselves. They will then learn why binary is important in computer science. Students at the end of the lesson will creatively teach their classmate’s about one concept they researched about binary. Lesson SummaryDAY 1: Students will explore the concept of counting and how we traditionally count with base one. Then they will learn/ review how to count with base two. An introduction to binary will be given. Students will both act out, as a class, and individually count using the binary cards. They will complete a number of problems to grapple with this new concept and practice counting in binary on their own. At the end of the day they will revisit the do now and think about how high they could count and practice it with the class. DAY 2: Students will consider why binary is important in computer science. They will take Cornell notes while watching a CODE video about binary counting and come up with research questions around the topic of binary. After researching their questions online they will consider how they could teach this concept creatively to others. They will chose a project format (powerpoint, video, comic book etc) to create and use as a teaching tool. DAY 3: Students will finish their projects and present them to their classmates while completing a critique of eachothers’ work. CS Content Binary Numbers, Bit (Binary Digit), Bytes, Bitrate, Bandwith |  |  | ObjectivesStudents will be able to: To understand how to write numbers in binary, be able to explain why binary numbers are important in computer science and to teach their classmates’ about a subtopic related to binary code. Materials and PrepBinary number cards large and small, handouts, laptops, materials for projectsResourcesStudent Documents from CS Unplugged<http://csunplugged.org/wp-content/uploads/2014/12/unplugged-01-binary_numbers.pdf> Khanacademy <https://www.khanacademy.org/math/pre-algebra/applying-math-reasoning-topic/alternate-number-bases/v/number-systems-introduction> Binary Comic <https://canvas.instructure.com/courses/884561/pages/rep-binary-finger-counting> CODE Studio: Binary Widget Video: Google Video Assessments: **Written reflections, participation in discussions, Binary Lesson project, Critique participation**Notes

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