Dear Educator or Parent,

“BinaryKids” is an interactive web application designed to give middle school-aged children an introduction to the binary number system and its importance to computer science.

While most elementary-aged children are taught basic math concepts, they are rarely introduced to their real life applications and importance. Data show that this phenomenon decreases students’ propensity to pursue technical careers in the long run, and weakens our national innovation gap with other countries. By 2020, the United States will have more than 1 million vacant programming/computing jobs with only 400,000 computer science graduates available to fill them.[[1]](#footnote-1) This application attempts to fix the social/educational problem of students not being introduced to math/CS in a manageable way at an early age by teaching elementary-aged children about binary numbers and their application.

This applet consists of a tutorial and game to introduce young students to binary numbers, illustrating their importance to CS/computing, application, and conversion methods from base-10 numbers. The tutorial features an interactive walk-through of what binary numbers are, how they form the basic principles for computing and electronics, and how they differ from decimal (base-10) numbers.

Specific learning modules include:

-Introduction to Binary Numbers

-Interactive Decimal to Binary Conversion

-Interactive Binary to Decimal Conversion

-Multi-level card game that tests conversion skills.

The system will be deployed on any computer via an applet run in a web browser, but will not be supported on mobile computing devices. The target environment and audience are middle school students (7th-9th grade) with previous knowledge of basic computer skills (typing, maneuvering between pages) and who already have knowledge of basic math in base-10 (addition/subtraction/multiplication/division).

This application can be incorporated into a standard algebra math curriculum into units on exponents or logarithms, or can be presented as a stand-alone lesson that introduces students to the relationship between math and computer science.

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Binary is fun tutorial

<http://sr.photos2.fotosearch.com/bthumb/CSP/CSP992/k13990502.jpg>

history of binary

<http://images.clipartpanda.com/discrimination-clipart-ProhibitionSign2_Vector_Clipart.png>

<http://cooltext.com/Logo-Design-Keen>

<http://www.clker.com/cliparts/e/3/9/7/1245686792938124914raemi_Check_mark.svg.hi.png>

1. See TechCrunch “Closing the Computer Science Gap, From Classroom to Career.” http://techcrunch.com/2015/02/01/integrate-california-schools-with-computer-science/ [↑](#footnote-ref-1)