

EXPLORATORY TASKS STUDENT SAMPLES

CLUSTER: Information Technology

PATHWAY: Programming and Software Development Pathway

Individuals in this pathway design, develop, implement and maintain computer systems and software. They are experts in computer operating systems, programming languages and software development. They work with cutting-edge technologies to develop tomorrow's products for use by businesses and consumers.

EXPLORATORY TASK: Can you write in binary? Binary is the language spoken by computers that consists of the numerals 0 and 1 and is read by a computer as on or off. This electrical on/off code allows computers to store and transmit messages. But how is this translated into everyday language? That's where the binary alphabet becomes useful.

- Find and print a binary alphabet chart on the internet. Use it to encode, or convert, a message into binary code.
- Share the message and chart with a peer for them to decode or convert into English.

OBJECTIVE: Introduce students the fundamentals of code.

TEACHER SUPPORT:

- Collaborate with an information technology professional or a CTE computer science teacher.

STUDENT SUPPORT:

- Provide links, examples, checklist and/or a template for students to use.

LEARNING EXTENSIONS:

- Invite an information technology professional or a CTE computer science teacher to discuss computer programming and/or software development.
- Lead a discussion connecting school subjects and this pathway.
- Lead a discussion about personal qualities of a programming or software developer.
- Identify and research a career within this pathway.

CONNECTIONS TO KENTUCKY ACADEMIC STANDARDS

- Career Studies: ES.I.9, CI.2-8
- Computer Science: 1A-AP-09
- Reading and Writing: RI.6.4
- Interdisciplinary Literacy Practice 1

NOTE:

- These samples represent students' first introduction to authentic topics and skills related to a career cluster.
- A range of student performance is included within the complete body of work.

Binary Secret Message

Name _____

Class

B4



In this activity, you will write a secret message on the back of this page using **BINARY CODE**.

Make your message short - 3-5 words, and something complimentary - a "feel-good" message or words of encouragement.

Your message will be shared with a peer, who will decode your message.

Example:

H A V E _ A _ G O O D

01001000 01000001 01010110 01000101 00100000 01000001 00100000 01000111 01001111 01001111 01000100

_ D A Y

00100000 01000100 01000001 01011001

Use the chart below to help you in writing your secret message:

| | | | | | |
|---|----------|---|----------|---|----------|
| A | 01000001 | J | 01001010 | S | 01010011 |
| B | 01000010 | K | 01001011 | T | 01010100 |
| C | 01000011 | L | 01001100 | U | 01010101 |
| D | 01000100 | M | 01001101 | V | 01010110 |
| E | 01000101 | N | 01001110 | W | 01010111 |
| F | 01000110 | O | 01001111 | X | 01011000 |
| G | 01000111 | P | 01010000 | Y | 01011001 |
| H | 01001000 | Q | 01010001 | Z | 01011010 |
| I | 01001001 | R | 01010010 | | |

USE 00100000 FOR ALL SPACES

You can also use the website to help you!

<https://www.rapidtables.com/convert/number/ascii-to-binary.html>

HIGH

y 01011001 o 01001111 u 01010101 _ 00100000

L 01001100 o 01001111 o 01001111 K 01001011

_ 00100000 n 01001110 l 01001001

C 01000011 e 01000101 _ 00100000

T 01010100 o 01001111 d 010000100 a 0100001

y 01011001

Thank you!

Binary Secret Message

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Class 4

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| E | 01000101 | N | 01001110 | W | 01010111 |
| F | 01000110 | O | 01001111 | X | 01011000 |
| G | 01000111 | P | 01010000 | Y | 01011001 |
| H | 01001000 | Q | 01010001 | Z | 01011010 |
| I | 01001001 | R | 01010010 | | |

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MEP.

Y

01011001

~~XXXXXXXXXX~~

01001111

U

00010101

SPACE

00100000

A

01000001

R

01010010

E

01000101

SPACE

00100000

C

01000011

O

01001111

O

01001111

~~XXXXXXXX~~

L

01001100

Binary Secret Message

Name

Andy Doyle

Class

B4



In this activity, you will write a secret message on the back of this page using BINARY CODE.

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Low

~~XXXXXXXXXX~~

H

01001000

I

01001001

—

00100000

~~XXXXXXXXXX~~

check this again - count the zeros :)



B

01000010

Y

01011001

E

01000101

Is a Career in Science, Technology, Engineering & Mathematics for Me?

Would you be interested in a career in Science, Technology, Engineering & Mathematics? Below are knowledge and skill statements related to the careers in this cluster. Read each statement. Decide if this describes you by checking the Yes, No or Maybe box.

| THINGS I LIKE TO DO | YES | NO | MAYBE |
|---|-----|----|-------|
| Interpret formulas | | | |
| Find the answers to questions | | | |
| Work in a laboratory | | | |
| Figure out how things work and investigate new things | | | |
| Explore new technology | | | |
| Experiment to find the best way to do something | | | |
| Pay attention to details and help things be precise | | | |
| PERSONAL QUALITIES THAT DESCRIBE ME | YES | NO | MAYBE |
| Detail oriented | | | |
| Inquisitive | | | |
| Objective | | | |
| Methodical | | | |
| Mechanically inclined | | | |
| SCHOOL SUBJECTS THAT INTEREST ME | YES | NO | MAYBE |
| Math | | | |
| Science | | | |
| Drafting or computer aided drafting (CAD) | | | |
| Electronics or computer networking | | | |
| Technical classes or technology education | | | |

Did you check YES most often? If so, continue to explore careers and opportunities in this cluster. And don't forget to focus on your math, science and computer classes to build the academic skills you need for these careers.

Did you check NO most often? If so, don't worry. There are hundreds of jobs to explore in the other 15 career clusters.

Did you check MAYBE most often? If so, continue to explore in this cluster as well as investigating how your skills and interests may be a good match in other clusters.

Is a Career in Science, Technology, Engineering & Mathematics for Me?

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