Name(s)_____ Period _____ Date _____

Project Guide - Create a Representation

Overview

Representing complex objects or ideas that you care about to a computer is a challenging task. It requires you to understand how computers represent information and will always involve trade offs. For this project you will design a binary system for representing your perfect day. The challenge will be finding a class-wide system to capture all the different elements you care about.

You will…
- Write a short description of your perfect day
- Identify key elements that could be represented to a computer
- Collaborate with classmates to design a class-wide representation system
- Represent your perfect day in that system on a punch card
- Decode a classmate's perfect day punch card

You will submit…
- This completed Project Guide
- Your filled-in punch card
- Your classmates' decoded punch card and feedback

Project Steps

Step 1: Describe Your Perfect Day
Write a 1 paragraph description of your perfect day in the space below

My perfect day would involve three things: going on a hike, spending time with my dog, Lila, and eating lots and lots of french fries. My dog and I would go on a long hike with great views of the mountains and water, then we would go out to eat where I would get french fries and my dog would get dog food. Next, we would take a nap then go on another hike!

Step 2: Share with a Partner
Switch your description of a perfect day with a classmate. Read through your neighbor's description.

Step 3: Choose Representations
In the table below write the information you'd want to represent to the computer. Place them in the appropriate categories in the table below.

Numbers (temperature, # people present, when you wake up, etc.)	Characters (location name, type of weather, type of activity, etc.)	Images (what the location / activity / people / etc. look like)
2 hikes	Hike Me Sunny day My dog, Lila	Mountains Water

Step 4: Review Information Choices
Meet with your partner and share how you identified different kinds of information you'd like to capture. Discuss:

- Whether you think they missed any important information
- What **types of information** you both have in your story. Be ready to share with the class

Step 5: Full Class Activity - Agree on Classwide Punch Card
Look at the punch card on the next page. Your class will need to decide how to use the 3 numbers, 10 characters, and single 8 by 8 image to represent your perfect day. Be ready to discuss what information will be represented by each row.

Step 6: Fill Out Punch Card
Using your class's punch card structure fill out your punch card.

Step 7: Trade and Decode Punch Cards
Give your punch card to **a classmate you have not worked with so far.** Don't tell them anything about your perfect day and have them decode your punch card.

Step 8: Reflection
Discuss with your partner how much of their perfect day you were able to understand from their punch card. What was lost in the process of representing this information in binary?

Your Punch Card

C O
D E

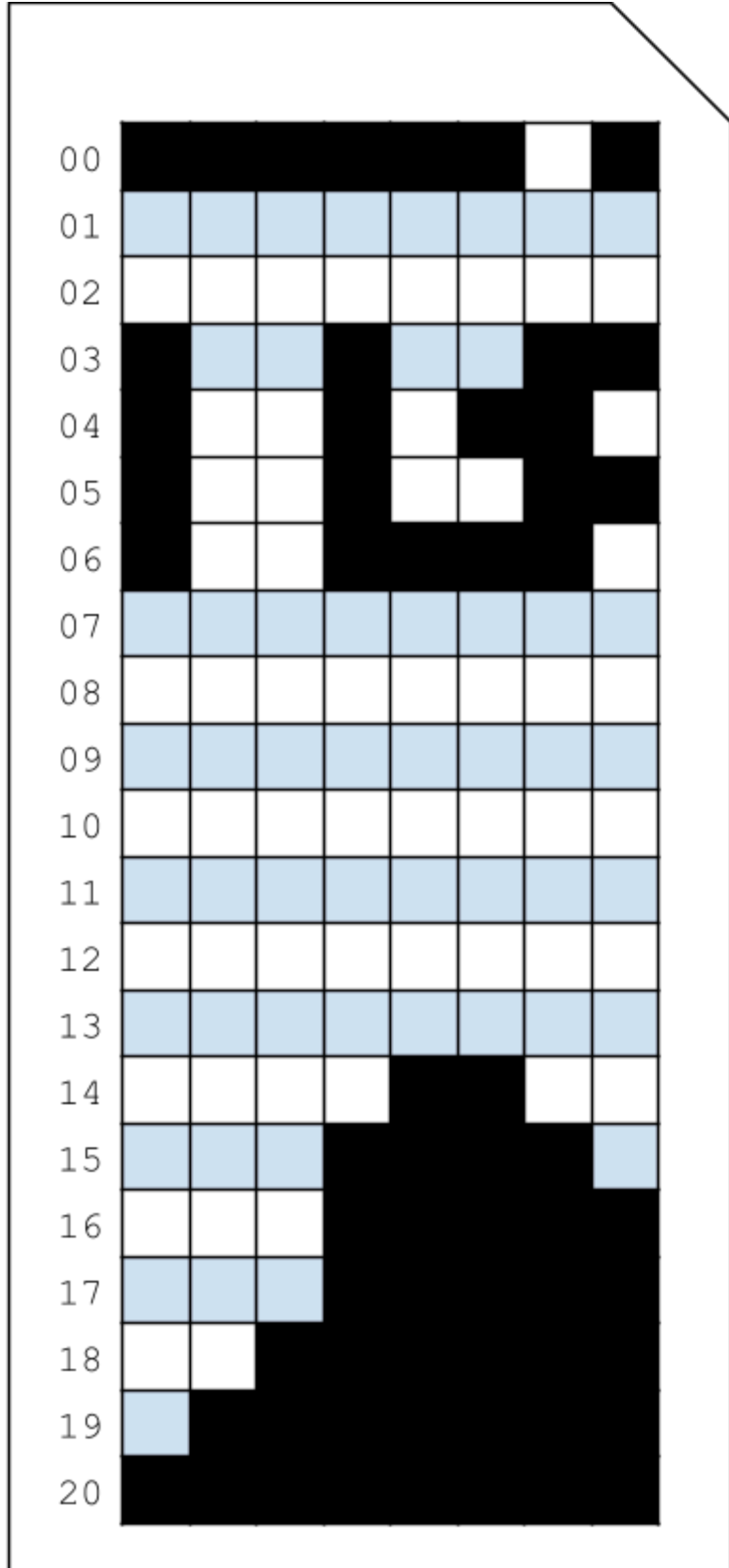| Number 1 | 00 | |
2	01	
3	02	
Character 1	03	
2	04	
3	05	
4	06	
5	07	
6	08	
7	09	
8	10	
9	11	
10	12	
Image 1	13	
2	14	
3	15	
4	16	
5	17	
6	18	
7	19	
8	20	

Decoder's Name: _____

Number Information
Write what numbers you decoded and what they represent given your classwide representation system

I decoded the number 2.

_____

_____

_____

Character Information
Write what characters you decoded and what they represent given your classwide representation system

I read the name "lila" which is the name of her dog.

_____

_____

_____

Image Information
Write what you believe the image is showing

I think the image shows a mountain.

_____

_____

_____

Describe Your Classmate's Perfect Day
Using the information you decoded, write the best description of a perfect day that you can in the space below.

According to the binary, this person spent time with their dog, Lila, going on two hikes.

_____

_____

_____

_____

Reflection
Discuss your perfect day with your partner.

What information was lost in representing the perfect day? What does their dog look like? How long did the hikes take? Where were the hikes?

Why were you unable to represent that information? There wasn't enough space for that information to be given. It would be hard to read that information out of context of the rest of the story then piece it all together.