Cedar Rapids Area Homeschools Cyber Defense Club

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Document	Teaching Notes

Using bash (the Bourne-Again Shell)

🧭 Session Flow (90 minutes)

1. **Warm-up & Orientation (10 min)**

- **Goal:** Make sure everyone knows what Bash is and why it matters.
- Quick demo: open a terminal, type `pwd`, `ls`, `whoami`.
- Framing: "This is how you talk directly to your computer—like coding, but immediate."

2. **Filesystem Basics (25 min)**

- **Commands:** `pwd`, `ls`, `cd`, `mkdir`, `touch`, `rm`, `rmdir`
- **Mini-challenges:**
    - "Where are you right now?" (`pwd`)
    - "Make a folder called `playground` and go inside it."
    - "Create a file called `hello.txt` and then delete it."
    - "Make a folder inside a folder in one command" (`mkdir -p`).
- **Engagement trick:** Run a "race"—who can create a directory tree `school/class/notes` the fastest?

3. **Looking at Files (15 min)**

- **Commands:** `cat`, `less`, `head`, `tail`
- **Mini-challenges:**
    - "What are the first 5 lines of `/etc/passwd`?"
    - "What's the last line of that file?"
    - "Why can't you read `/etc/shadow`?" (teachable moment about permissions).

4. **Permissions & Ownership (15 min)**

- **Commands:** `ls -l`, `chmod`, `chown`
- **Mini-challenges:**
    - "Who owns `/etc/passwd`?"
    - "What do the `rwx` letters mean?"
    - "Make a file that only you can read."
- **Optional fun:** Have them try `chmod 000 myfile` and then see what happens when they try to open it.

5. **Searching & Filtering (15 min)**

- **Commands:** `grep`, `wc`, `sort`, `uniq`

- **Mini-challenges:**
  - "How many users are listed in `/etc/passwd`?" (`wc -l`)
  - "Find all lines with `/bin/bash` in `/etc/passwd`."
  - "Sort the list of users alphabetically."

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6. **Intro to Variables & Simple Scripting (10 min, if time)**

- **Concepts:** variables, `if`, `while`

- **Demo only (don't go too deep):**

```
name="Chris"
echo "Hello, $name"
```

```
if [ -f /etc/passwd ]; then
  echo "File exists!"
fi
```

```
count=1
while [ $count -le 5 ]; do
  echo "Welcome $count times"
  count=$((count+1))
done
```

- Keep it light—show them the "power" without diving into environment vs. shell variables (too abstract for this level).

🎯 Teaching Tips

- **Chunk & challenge:** Teach 2–3 commands, then immediately give them a puzzle.
- **Visible progress:** Have them build a "sandbox" directory where they can experiment without fear.
- **Gamify:** Award points for fastest correct solution, or let 12th graders act as "coaches."
- **Story hooks:** Frame commands as detective work ("Who owns this file?" "What secrets are hidden in this directory?").

🚫 What to Skip

- Don't go deep into **environment vs. shell variables** —too abstract for beginners.
- Avoid **pipes and redirection** unless you have extra time; they're powerful but can overwhelm.
- Skip **ACLs, systemctl, journalctl** —too advanced for this audience.