

Operator Week 1: Files, Permissions and Installs

Mon, Nov 2 – Tue, Nov 3 · 2:30–4:00 PM · Room 105 (or live on Zoom; the link comes by email)

This week: Learn how an operating system organizes files and decides who can open them, then install software the right way with the right license and driver.

Heads up

- No meeting Tuesday, Nov 3 (schools closed). Install Day will be made up; check the app.
- Need your Builder badge? Finish the Builder Study Path and ask your Crew Mentor about your second try.

Read-aheads

Before Monday (15 minutes)

- Read the Operating systems and File systems notes below.
- On any computer, open a drive's properties (or Get Info on a Mac) and find its file system type.
- Do 15 Operator study cards.

Before Install Day (15 minutes)

- Read the Drivers, updates and licenses notes below.
- Find the license type of one app you use (free, subscription, one-time purchase or open source).
- Try the Check yourself questions.

The missions

Monday, Nov 2 · Day 7

5A · Lab The Filing Cabinet

An operating system is a very organized filing cabinet. Explore how Windows, macOS, and Linux organize files, what NTFS, FAT32, and ext4 can and cannot do, and how read, write, and execute permissions decide who can touch what. Your crew fixes a messy shared folder.

1. Create a folder structure for a class project and set different permissions for owners and viewers.
2. Test what happens when a 5 GB file is copied to a FAT32 drive and explain the fix.
3. Diagram which file system you would pick for a Windows PC, a Linux server, and a shared flash drive.

Turn in: Permissions table, the FAT32 test note, and the file-system decision diagram.

Tuesday, Nov 3 · Day 8

PGCPS schools are closed Tuesday, Nov 3. Mr. James will announce when Install Day is made up. Watch the app's Today card.

5B · Lab Install Day

New software arrives with licenses, drivers, and updates attached. Your crew installs a sample application, reads the license agreement for what it actually allows, and figures out why a printer refuses to work without the right driver. Updates are not optional, and tonight you will see why.

1. Install the sample app in the sandbox and identify its license type: open source, subscription, or perpetual.
2. Locate and install the correct driver for the sample printer and confirm a test page prints.
3. Review the update log and list two security fixes it includes.

Turn in: Install checklist with license type, driver confirmation, and the two security fixes.

Notes

Operating systems

- The operating system (OS) manages the CPU, memory, storage and devices, and lets apps run.
- Common desktop OSs: Windows, macOS, Linux, ChromeOS. Common mobile OSs: Android and iOS.
- Files live in folders (directories) arranged like a tree. A file path shows the route, like Documents/Projects/report.docx.

File systems

- NTFS: the Windows default. Supports permissions, encryption and very large files.
- FAT32: works almost everywhere, but no single file can be bigger than 4 GB and it has no permissions.
- exFAT: for flash drives that need files bigger than 4 GB on both Windows and Mac.
- ext4: the common Linux file system. APFS: the macOS file system.

Permissions

- Read: open and view. Write (or Modify): change, add or delete. Execute: run a program or script.
- Give people only the access they need. Viewers get Read; owners get Write.

Drivers, updates and licenses

- A driver is software that lets the OS talk to a piece of hardware, like a printer.
- Updates and patches fix bugs and close security holes that attackers already know about. Install them promptly.
- Open source: anyone can see, change and share the code. Proprietary: the code is private.
- Subscription: works only while you keep paying. Perpetual: buy once, use forever.
- EULA: the end-user license agreement you accept before using software. It says what you can and cannot do.

Vocabulary

Operating system	Software that manages hardware and runs apps
File system	How a drive organizes and stores files
Permission	A rule for who can read, write or run a file
Driver	Software that lets the OS use a device
Patch	An update that fixes a bug or security hole
EULA	End-user license agreement

Check yourself

1. A 6 GB video won't copy to a FAT32 flash drive. Why, and how do you fix it?
2. A new printer is plugged in but won't print. What's missing?
3. You pay monthly for an app and it stops working when you cancel. Which license?

Answers: 1. FAT32 limits files to 4 GB. Reformat the drive as exFAT (or NTFS). 2. The device driver. 3. Subscription

Bring

- A charged device
- Your student ID card