



# A Slice of Raspberry PI Dessert for GenCyber Teachers

Presented by  
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# Agenda

- UMGC Teacher Camps 2019 and 2021
- Impetus for post-camp GenCyber Teacher Camp activity
- Raspberry PI Project Overview



# UMGC GenCyber Teacher Camps

- In-Person – 2019 Teacher Camp
- Virtual – 2021 Teacher Camp



# Raspberry PI Post-GenCyber Camp Project

- Selection of dedicated teachers
- Contract and Commitment
- Pre-project meetings
- Hardware and Software dissemination
- Project Design



# Sample Project Plan

Select Raspberry PI Model and purchase	Raspberry PI 400 with keyboard, Wi-Fi, and ethernet version Purchase 32 gb memory cards (Configure with Kali and send out)  Raspberry PI \$99 Display \$64.00 Memory Cards \$15.00  Total equipment approx.. \$1,800 for 10 teachers.
Select teachers	How to select them? Send a request out. Form to fill out. Get some recommendations. Doodle poll to pick a date (Saturday)
Create Project	What will be the theme of the project? Using Kali Linux: <ul style="list-style-type: none"><li>• Linux intro / basic commands</li><li>• Network basics with Wireshark</li><li>• Password cracking</li></ul>
Schedule the Sessions	Winter break best time? How long? December or January? Follow up meeting by March 1, 2022  4-hour lab, virtual - and follow-up 2 weeks show progress, used in class, or optional help session? Breakout rooms for support Classroom usage deadline March 15, 2022. Feedback, usage report.

# Raspberry Pi Project Design

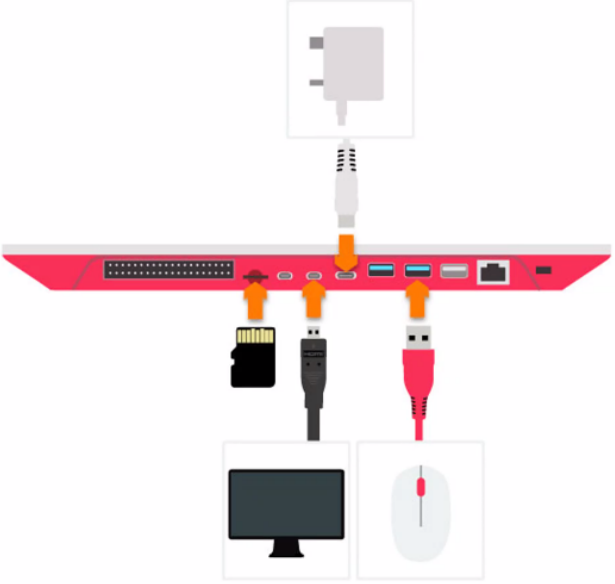
Recording... You are viewing Shannon Beck's screen View Options View

Unmute my audio with (Alt+A) or press and hold the SPACE key to temporarily unmute.

PowerPoint Slide Show - [22 Jan 22 - CyberPI Workshop Agenda.pptx] - PowerPoint

## Overall Setup of Raspberry Pi 400

Image from:  
<https://www.okdo.com/getting-started/getting-started-with-raspberry-pi-400/>



The diagram shows a red Raspberry Pi 400 board with various peripherals connected. A power supply is connected to the top. A USB-C cable is plugged into the left side. A black SD card is inserted into the top-left slot. A black USB-A cable is plugged into the top-right slot. A red USB-A cable is plugged into the bottom-right slot. A monitor and a mouse are shown below the board, connected to the bottom-left and bottom-right ports respectively.

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Elizabeth Dillard  
Loyce Pailen  
Kim Mentzell - Commerce  
Shannon Beck  
Cheryll Hawthorne  
Rachel Linder

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Recording... You are viewing Kim Mentzell - Commerce's screen View Options

## Simple Linux Command Reference

- **ls** : Lists the files in a directory
- **cd** : change directory
- **pwd** : shows the present working directory
- **cat** : concatenates a file – or displays it to the screen
- **less / more** : pagination of output
- **tar** : Tape ARchive. Old backup software, now used as a primitive way to package files.
- **cp / rm / mv** : copy, remove and move a file
- **compress / gzip / bzip2 / xv** : compression tools to make files smaller
- **touch** : create a file or change its timestamp
- **useradd** : create users
- **chown / chgrp** : change owner and group permissions on a file
- **awk / sed / grep** : modification of data in files or on the screen
- **echo** : repeats a command to the screen
- **Pipes "|, <, >"** : allow redirection of data between processes

Elizabeth Dillard Loyce Pailen  
Cheryll Hawthorne Rachel Linder  
Hana Rhee Nikita Peguero  
Nikita Patil Kim Mentzell - Commerce  
Shannon Beck Lola  
Josh Woodward Jonathan Wood...  
Josh Woodward Jonathan Woodward

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# Results and Feedback – Good News

- Good administrative interest in using Raspberry PI project at schools – looked for funding to expand
- Encouraged students and teachers to want to participate in GenCyber programs
- Development of Raspberry PI Lesson Plan
- Students were intrigued with network packet capturing and analyzing network traffic





## • Raspberry Pi Lesson Overview – Teacher Rachel Linder

- I will be doing this lesson with my 4th period Exploring Computer Science class. Due to there being school on Presidents Day, I will have an extra day with my B-Day section of this class. Attendance will probably be lower than usual, making it easier to work with small groups on this day. For most students, this is their first computer science course.
- My rough plan is to break the students into small groups and have them rotate through stations:
- Station 1: Linux Commands- Students will review materials about linux commands and play with MIT terminus. As they work, I'll pull subgroups of 2-3 students to practice using some linux commands on the Raspberry Pi.
- Station 2: Wireshark - These students will do some reading and view a pre-recorded Wireshark demo.
- Station 3: Password Auditing - These students will review some materials about password auditing, and then will get to take turns using John the Ripper on the Raspberry Pi.
- If students are interested in getting more time working with the Raspberry Pi, I'll let them know they are welcome to stay after school sometime and use it.



# Results and Feedback – Challenges

- Integrating Raspberry Pi to the school's WiFi
- Need to train other teachers – limited time.
- Incorporating the lab into existing courses



# QUESTIONS?

