



HackFRee

**2018  
Hacker's  
Guide**

# Schedule

## Saturday, January 13th

**12:30 - 1:00 pm**

Registration - Auditorium Side Entrance

**1:10 - 2:00 pm**

Opening Ceremony - Auditorium

Commvault's Keynote Address

Doug Chando - District Systems Engineering Manager at Commvault

**2:00 - 2:30 pm**

Create Groups and Begin Hacking - Cafeteria

**3:00 - 10:00 pm**

Breakout Game - C Hall Classroom

**3:00 - 5:10 pm**

Workshops/Tech Talks - C Hall Classrooms

**5:10 - 6:00 pm**

Dinner - Cafeteria

**6:00 - 8:10 pm**

Workshops/Tech Talks - C Hall Classrooms

**8:30 - 10:00 pm**

Robotics Demonstrations - Media Center

**10:00 pm**

Super Smash Bros. Tournament - Media Center

**11:00 pm - 12:00am**

Late Night Snack - Cafeteria

## Sunday, January 14th

**12:00 - 1:00 am**

Cup Stacking Competition - Cafeteria

**1:00 - 8:00 am**

Continue Hacking - Cafeteria

**8:00 - 9:00 am**

Breakfast - Cafeteria

**9:30 am**

Hacking Ends and Final Submissions for Judging Due - Cafeteria

**10:00 am - 12:00 pm**

Presentation of Hacks and Judging - Cafeteria

**12:00 - 1:00 pm**

Closing Ceremony and Recognition of Hacks of Distinction - Auditorium

**\*See page 8 for detailed tech talk/workshop schedule.**

# What to Bring Checklist

- Laptop with charging cable**  
There will be laptops available to borrow for students who cannot bring their own.
- Student (or other) ID**  
You will need an ID to check out hardware from Major League Hacking.
- Sleeping bag and/or a pillow**  
Blanket will also work, but be prepared to sleep on the floor.
- Toothbrush, deodorant, and other hygiene products**  
After a long night of hacking and cup stacking, you're going to want to freshen up. A few of the essentials might come in handy.
- Any materials you may want to use**  
We will be providing access to some hardware, but access to other components and tools is limited. If you want to use something, bring it.
- Software for workshops**  
Some workshops may ask you to pre-install software. If you have difficulties, fear not. The instructor will assist you in the workshop. A software list is included in the detailed schedule below.
- Comfort Clothes**  
You'll be working for long stretches of time, so bring your favorite hoodie to help you stay comfy. A change of clothes for Sunday is recommended.
- Toys, Gadgets, Machines**  
Have something you want to show off? Here's your chance. Bring in that modified RC car, wearable tech, and anything wonderfully nerdy.
- Passion**  
Without it, this hackathon would be impossible. Bring your passion for tech, programming, building, making, and learning.

**BE PREPARED TO BE AWESOME!!!**

# Available Hardware

## Provided by Major League Hacking

- Alienware - 2
- Amazon Echo - 8
- Samsung Gear VR - 3
- Oculus Rift CV1 - 6
- Muse Headband - 1
- Amazon Fire Phone - 1
- Dell XPS 13 (Windows) - 2
- Intel Starter Kit Component - 1
- Leap Motion - 5
- Arduino 101 - 6
- Base Shield - 6
- DragonBoard 410c - 6
- DragonBoard 410c Re-Flashing SD Card - 1
- Pebble Time - 4
- Grove Kit Component - 1
- Myo Armband - 6

## Provided by Manalapan High School

- 20 laptops (for coding purposes)

# **Menu**

## **Dinner: Saturday, January 13th**

**Burrito/Taco Bar, Beef Nacho, Chicken Nacho  
Veggie Bean Nacho, Spanish Rice, Beans  
Corn, Salsa, Shredded Lettuce, Jalapenos  
Shredded Cheese, Sour Cream, Wraps, Shells**

**Chicken Tenders and French Fries**

**Water and Snapple**

**Brownies and Cookies**

## **Late Night Snack: Saturday, January 13th**

**Philly Pretzels**

## **Breakfast: Sunday, January 14th**

**French Toast Sticks, Crispy Bacon,  
Bagels, Mini Muffins, Coffee and Tea**

**Additional snacks including chips, crackers, granola bars,  
coffee, water, and soda will be available throughout the  
duration of HackFRee!**

# Scoring Rubric

Please keep in mind that while we will be recognizing “Hacks of Distinction”, HackFree is more about creating, having fun, and being awesome than it is about following the rubric below.

Category	Things to Consider	Points
<ul style="list-style-type: none"> <li>• Problem</li> <li>• Definition</li> </ul>	<p>Define the problem clearly and concisely.</p> <p>How relevant is the real world problem or opportunity?</p> <p style="text-align: center;"><b>and/or</b></p> <p>How interesting or difficult is the problem to resolve functionally and or technically?</p> <p style="text-align: center;"><b>and/or</b></p> <p>Is someone else currently solving the problem out in the real world?</p>	<p><u>5 points</u>: The problem is not defined and/or relevant.</p> <p><u>15 points</u>: The problem is somewhat defined and/or relevant.</p> <p><u>25 points</u>: The problem is well defined and relevant.</p>
<ul style="list-style-type: none"> <li>• Solution</li> <li>• Design</li> <li>• Innovation</li> <li>• Awesomeness</li> </ul>	<p>Does the application approach a new problem, or look at an old problem in a new way?</p> <p style="text-align: center;"><b>and/or</b></p> <p>Is the solution completely innovative or does it rely on an existing concept and/or technology?</p> <p>Does the application impact a large number of people very broadly, or impact a smaller number of people very deeply?</p> <p>To which degree does the application actually solve the current problem?</p>	<p><u>5 points</u>: not so much</p> <p><u>15 points</u>: good</p> <p><u>25 points</u>: impressive</p>
<ul style="list-style-type: none"> <li>• Viability</li> </ul>	<p>Is the application/product technically viable and marketplace viable?</p> <p style="text-align: center;"><b>and/or</b></p> <p>Would people use this product?</p> <p style="text-align: center;"><b>and/or</b></p> <p>Does the product have a realistic application in the future and/or in the present?</p>	<p><u>5 points</u>: not so much</p> <p><u>15 points</u>: sort of</p> <p><u>25 points</u>: absolutely</p>
<ul style="list-style-type: none"> <li>• Does it Work?</li> </ul>	<p>I think that this category is self-explanatory.</p>	<p><u>5 points</u>: does not work</p> <p><u>15 points</u>: works somewhat</p> <p><u>25 points</u>: it works!</p>

# Judging

Teams will be recognized for Hacks of Distinction and will be judged based on the criteria in the scoring rubric (see page 6). Please keep in mind that while we will be recognizing “Hacks of Distinction” and some other awards, HackFree is more about creating, having fun, and being awesome. With that noted, here are the procedures for getting judged.

- 1.) Create a fun and inventive team name.
- 2.) Table number, team name, and team members are all due by 1:00 am on Sunday, January 14th regardless of whether or not your team is submitting a hack for judging. The form for initial submission is:

<https://goo.gl/forms/dMIFisisGpUM0WFF3>

- 3.) Design a Hack that adheres to the scoring rubric (see page 6).
- 4.) Upload your project to our Google Form, the event link will be provided at HackFRee.
- 5.) As you near completion of your team’s Hack, create a 2-3 minute presentation/pitch for the judges.
- 6.) Make sure that your Hack, your final submission, and your presentation are all ready to go by 9:30 am on Sunday, January 14th.

If you have any questions at all about the submissions and judging process, please see a member of the Leadership Team.

# Awards

- 24-30 Hacks of Distinction (6-8 Teams)
- Cup Stacking Competition (sponsored by Major League Hacking)
- Super Smash Brothers Competition
- Breakout Game
- Best IoT Hack Using a Qualcomm Device (sponsored by MLH)
- Best Domain Name from Domain.com (sponsored by MLH)

Additional details about the awards will be made available at HackFRee.

# Detailed Tech Talk & Workshop Schedule

This schedule is subject to additions and deletions up until the start of HackFRee.

## 3:00 - 4:00 PM

### A. **Basics of Programming in Java, Round 1** (Room C100)

Brian Anderson - Teacher Manalapan HS

Description: This workshop will go over the basics of Java coding, which includes learning about data types, declaring and using variables, creating conditional statements, and an overview of some built in Java tools (i.e. generate random numbers).

Software Required: Netbeans and Java Development Kit,

<http://www.oracle.com/technetwork/java/javase/downloads/jdk-netbeans-jsp-142931.html>

### B. **Debugging Websites using Your Browser's Native Tools:** (Room C104)

James Geiger - semgeeks

Description: This session will cover the use of your browser's native development tools to debug visual issues on websites, mostly related to CSS. All attendees of this workshop will be eligible for a free full-year subscription to coding classes

<https://teamtreehouse.com/>!

Software Required: Be sure to either Firefox or Chrome uploaded to your computer.

### C. **Introduction to 3D Design for 3D Printing** (C106)

Shane Evans - Teacher Manalapan HS

Description: Utilizing a powerful tool such as a 3D printer requires the user to first design the item that they want to create in CAD software. Utilizing TinkerCAD (free and online), participants will be able to design items for 3D printing their housings, components, and models.

Software Required: Sign up for an account at [www.Tinkercad.com](http://www.Tinkercad.com). No downloads required.

**D. Introduction to Motion Control for Robotics (Room C108)**

Evan Battaglia, Mike Yakubov, & Chloe Holod - Students Manalapan High School

Description: Learn about servo positioning with arduino control and stepper motor control using EasyDriver and Arduino.

Software Required: <https://www.arduino.cc/en/Main/Software>

**E. Breakout Room Challenge (Room C102)**

Jelena Komitas - Math Supervisor Manalapan High School

Description: The Breakout Room Challenge is similar to the very popular escape room games that are popping up across the country. An escape room is a physical adventure game in which players solve a series of puzzles and riddles using clues, hints, and strategy to complete the objectives at hand. In this game, players are given a set time limit to break into a box from clues that center around computer programming, the internet, and school. You need a team of four students to register for this game.

**F. Introduction to Python (C112)**

SaraAnn Stanway, Rutgers USACS & HackRU

**4:10 - 5:10 PM**

**A. Magic 8 Ball w/Java (Room C100)**

Christine Rehwinkel - Teacher Marlboro HS

Description: For those new to Java, learn how to write a Magic 8 Ball program which randomly gives an answer each time you ask the program a question.

Software Required: Software Required: Netbeans and Java Development Kit, <http://www.oracle.com/technetwork/java/javase/downloads/jdk-netbeans-jsp-142931.html>

**B. Hacking APIs with NodeJs: Using socket.io and Express (Room C104)**

Matt Kaiser, Stephen Kane, & Varun Shah - iCIMS Software Developers

Description: Join the iCIMS devs for a live coding session. The goal is to create an app that reaches out to an API and makes live updates to a webpage.

Software Required: NodeJS, <https://nodejs.org/en/download/>

**C. Introduction to Breadboarding (C106)**  
Samantha Moran - Teacher Manalapan HS

Description: A breadboard is a construction base option for building electrical circuits. Being able to breadboard allows one the ability to more easily modify and/ or adjust circuits while one works to design, develop, and create electrical circuits. During this workshop you will be taught the fundamentals of breadboarding, as well as have the opportunity to apply the information that is presented and taught.

**D. An Introduction to Python Programming via The Fibonacci Sequence (Room C112)**  
Martin Carroll - Distinguished Member of the Technical Staff at Nokia - Bell Labs

Description: In this workshop we will learn the basics of Python programming. The running example will be the famous Fibonacci sequence, which we will implement using a series of increasingly sophisticated algorithms that highlight the fun and beauty of Python programming, as well as the beauty of the Fibonacci sequence.

Software Required: Students must set up their own Beginner account on <https://www.pythonanywhere.com/pricing/>. Students should bring a laptop with them to the class.

**E. Breakout Room Challenge (Room C102)**  
Jelena Komitas - Math Supervisor Manalapan High School

Description: The Breakout Room Challenge is similar to the very popular escape room games that are popping up across the country. An escape room is a physical adventure game in which players solve a series of puzzles and riddles using clues, hints, and strategy to complete the objectives at hand. In this game, players are given a set time limit to break into a box from clues that center around computer programming, the internet, and school. You need a team of four students to register for this game.

**F. Basics of Android Development (Room C108)**  
Rajat Pawar, Commvault

## **6:00 - 7:00 PM**

### **A. Hip Hip Array! Introduction to Java, Round 2 (Room C100)**

Brian Anderson - Teacher Manalapan HS

Description: This workshop will continue with the basics of Java coding, which includes more on conditional statements, the different types of loops and when to use them, and the basics of an array.

Software Required: Netbeans and Java Development Kit,

<http://www.oracle.com/technetwork/java/javase/downloads/jdk-netbeans-jsp-142931.html>

### **B. Break it Down! From English to Code (Room C104)**

Dan Shepsis - Manalapan HS Alumni '15

Description: Learn a general approach to the daunting task of taking a problem or assignment and turning it into a useful working program. In this session, students will be guided through example problems from inception to the actual code. The solution will be provided in up to four languages including Java, Python, JavaScript, and C++.

### **C. Entrepreneurialism: The Ultimate Life Hack! (Auditorium)**

Michael S. Silva - Team Silva Enterprises (QB54), Manalapan High School Alumni '92

Description: Do you have an idea? Have no idea what to do with it? Why work for someone when you can work for yourself? See how a Manalapan Grad took his invention from Idea to Market to National Network Television. Ask questions, ask for advice on what to do with your idea. This is a fully interactive session and you will even get to try out his invention. If you are an entrepreneur or aspire to be one, you won't want to miss this session!

Software Required: None, but check out QB54's video here:

<https://youtu.be/vybiZ6Cv0Vs>

### **D. Breakout Room Challenge (Room C102)**

Jelena Komitas - Math Supervisor at Manalapan HS

Description: The Breakout Room Challenge is similar to the very popular escape room games that are popping up across the country. An escape room is a physical adventure game in which players solve a series of puzzles and riddles using clues, hints, and strategy to complete the objectives at hand. In this game, players are given a set time limit to break into a box from clues that center around computer programming, the internet, and school. You need a team of four students to register for this game.

E. **OpenCV Workshop** (Room C108)

Howard Lai, Mike Yakubov, & Ken Erikson - Manalapan HS Students

Description: OpenCV (Open Source Computer Vision Library) is an open source computer vision and machine learning software library. OpenCV was built to provide a common infrastructure for computer vision applications and to accelerate the use of machine perception in the commercial products. In this session, participants will receive an introduction to OpenCV with Python. The presenters are familiar with both Windows and Linux.

**7:10 - 8:10 PM**

A. **Shall we play a game? Introduction to Java, Round 3** (Room C100)

Brian Anderson, Teacher Manalapan HS

Description: In this workshop students will use their recently learned Java coding skills to make a game of their choice (i.e guessing game, over under, dice games).

Software Required: Netbeans and Java Development Kit,

<http://www.oracle.com/technetwork/java/javase/downloads/jdk-netbeans-jsp-142931.html>

B. **Women in Tech: Making an Impact in a Male Dominated Industry** (Room C106)

Brittany Lamb - Internal Communications Specialist at Commvault &  
Juliana Szutarski - Customer Support Engineer – Tier 1 at Commvault

Description: Learn the What and How of Responsive Web Design. Experience its usability with simple hands-on activities. Meet the women in technology and learn from their career testimony.

C. **Serial Communication Flavours** (Room C104)

Erik Levin, Teacher Manalapan HS

Description: Systems and system components primarily communicate using a variety of serial communication models. An overview will be presented for some of the more common schemes, modern and historical, and some typical devices that use them.

D. **Breakout Room Challenge** (Room C102)

Jelena Komitas - Math Supervisor at Manalapan HS

Description: The Breakout Room Challenge is similar to the very popular escape room games that are popping up across the country. An escape room is a physical adventure game in which players solve a series of puzzles and riddles using clues, hints, and strategy to complete the objectives at hand. In this game, players are given a set time limit to break into a box from clues that center around computer programming, the internet, and school. You need a team of four students to register for this game.

E. **Robotic Arm Workshop** (Room C108)

Brandon Rishi & Evan Battaglia - Students at Manalapan HS

Description: Introduction to programming an arduino-based, servo motor positioned, 4 degrees of freedom robotic arm. Attendance at the Introduction to Motion Control for Robotics workshop is recommended, but not required.

F. **Introduction to Unity** (C112)

Ezra Ablaza, Rutgers USACS & HackRU

**8:15 - 9:10 PM**

A. **Breakout Room Challenge** (Room C102)

Jelena Komitas - Math Supervisor at Manalapan HS

Description: The Breakout Room Challenge is similar to the very popular escape room games that are popping up across the country. An escape room is a physical adventure game in which players solve a series of puzzles and riddles using clues, hints, and strategy to complete the objectives at hand. In this game, players are given a set time limit to break into a box from clues that center around computer programming, the internet, and school. You need a team of four students to register for this game.

B. **R.O.S. - The Robot Operating System** (Room C108)

Brandon Rishi & Jackie Petosa - Students at Manalapan HS

Description: Learn about a modular operating system for higher level robotics. The Robot Operating System (ROS) is a set of software libraries and tools that help you build robot applications. From drivers to state-of-the-art algorithms, and with powerful developer tools, ROS has what you need for your next robotics project. And it's all open source. The presenters are familiar with both Windows and Linux.

**9:15 - 10:00 PM**

**A. Breakout Room Challenge (Room C102)**

Jelena Komitas - Math Supervisor at Manalapan HS

Description: The Breakout Room Challenge is similar to the very popular escape room games that are popping up across the country. An escape room is a physical adventure game in which players solve a series of puzzles and riddles using clues, hints, and strategy to complete the objectives at hand. In this game, players are given a set time limit to break into a box from clues that center around computer programming, the internet, and school. You need a team of four students to register for this game.

**The forms to sign up for tech talks and workshops will be available during and after registration.**

# Permission Slip

Freehold Regional High School District

Permission Form for HackFRee  
at Manalapan High School



Student Name: \_\_\_\_\_ Grade Level: \_\_\_\_\_

School: \_\_\_\_\_

Name of Event: HackFRee: Freehold Regional HS District 24-Hour Hackathon

When: 12:30 pm on Saturday, January 13, 2018 to 1:00 pm on Sunday, January 14, 2018

Location: Manalapan High School

Transportation: Parents/Guardians are responsible for transportation to and from Manalapan HS.

Student Conduct: In accordance with state law and Board of Education Policy, and as specified in the Student–Family Handbook, students are expected to comply with school rules and regulations and submit to the authority of the teachers and other staff members while attending HackFRee at Manalapan High School.

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Parents/Guardians are requested to carefully read this form and grant permission for student attendance at *HackFRee: Freehold Regional HS District 24-Hour Hackathon* by signing the statement below:

*I hereby agree to permit my child to participate in HackFRee as described above. I further agree that he/she will accept the authority of the educators in charge as final.*

*I understand that events at HackFRee may be videotaped and/or photographed by the media.*

Signature of Parent/Guardian: \_\_\_\_\_ Date: \_\_\_\_\_

Signature of Student: \_\_\_\_\_ Date: \_\_\_\_\_

**Please note that once a student arrives at HackFRee, he/she will not be permitted to leave until the end of the event unless he/she is picked up by a parent or guardian who is noted as a contact in the Parent Portal.**