LEVEL: Middle School/High School

NUMBER OF TEAMS: One (1) team per school can participate at the MESA Day state competition. Up to three (3) teams can participate at MESA regional events. Subject to change.

TEAM MEMBERS: Two (2) to Six (6) members

OBJECTIVE: Students will participate in teams to hack other computers while protecting their own computer from hackers. Teams will use the MESA Hack Attack website for competition. Teams will need to solve Computer Science (CS) puzzles to earn points to hack other computers

RESOURCES:
URL: http://hackattack.azurewebsites.net/ This is a new website
Specific types of puzzles and links to practice are in the Puzzles section of the specifications.

TESTING PARAMETERS:
1. Team members will work as a team. During MESA Day, all team members must interact in the Hack Attack website.
2. Teams should not use cellphones or other electronic devices to solve puzzles.
3. Teams will register on the website with their school name. Teams will be assigned an anonymous pseudonym during the game.
4. Teams will have 30 minutes to “Hack” to score as many points as possible.
5. Hacks are completed by choosing another team and then solving the puzzle presented to the player.
6. Viruses are the attacks on a team, which will give the team an advantage and put the opponent at a disadvantage.
7. The game will have 6 Up-grades that can help a team.
8. The game will have a Moderator who is also a judge.
9. The Moderator can attack all players in the game at any time.
10. The team with the highest score wins.
PUZZLES:

- Convert Binary Numbers to Decimal and Decimal Numbers to Binary
  - [https://www.rapidtables.com/convert/number/binary-to-decimal.html](https://www.rapidtables.com/convert/number/binary-to-decimal.html) Enter a value and it will convert it along with demonstrating the math

- Caesar Cipher
  - [https://cryptoclub.org/](https://cryptoclub.org/) A good place to practice the cipher
  - [https://crypto.interactive-maths.com/caesar-shift-cipher.html](https://crypto.interactive-maths.com/caesar-shift-cipher.html) An online tool that encrypts and decrypts with tools to see how the Process works

- Computer Science Terms

- Tic Tac Toe
  - [https://playtictactoe.org/](https://playtictactoe.org/)

- Next Number
  - [https://www.mathsisfun.com/algebra/sequences-series.html](https://www.mathsisfun.com/algebra/sequences-series.html) A guide about different types of sequences and links to strategies to find the pattern

- 8 Queens

- Convert Hexadecimal Numbers to Decimal and Decimal Numbers to Hexadecimal
  - [https://www.mathsisfun.com/hexadecimals.html](https://www.mathsisfun.com/hexadecimals.html) Explains what Hexadecimal numbers are
  - [https://www.permadi.com/tutorial/numDecToHex/](https://www.permadi.com/tutorial/numDecToHex/) How to convert Decimal to Hexadecimal
  - [https://learn.sparkfun.com/tutorials/hexadecimal/all](https://learn.sparkfun.com/tutorials/hexadecimal/all) How to convert Hexadecimal to Decimal

- Quick Math
  - [https://www.prodigygame.com/blog/multiplication-chart/](https://www.prodigygame.com/blog/multiplication-chart/) Multiplication chart plus tips to faster multiplication

- Other puzzles may be added through out the year.
TYPES OF HACKS AND VIRUSES:

Here are some examples of types of hacks and viruses. Actual features in the game may vary.

- **Firewall**: When activated, team will have an increased protection for up to 3 minutes. Teams attempting to hack another team with a firewall active will have to complete double the amount of minigames to have the same effectiveness.
- **Address Spoof**: When activated, team will have the ability to change their name to anything they choose, including that of another team. Their name on the targets list and in chat will show up as the spoofed name for a duration of up to 3 minutes.
- **Virus - Fat Fingers**: When activated, team will be prompted to choose an enemy team. For up to 3 minutes, that chosen team will have a malfunctioning keyboard whenever they want to type, making it difficult for them to complete puzzles or chat.
- **Incognito Mode**: When activated, team will disappear from other teams’ target list for up to 2 minutes. During these two minutes, the team will be able to hack other teams but not be hacked unless they were already be hacked before the powerup went into effect.
- **Virus – Adware**: When activated, team will be prompted to choose an enemy team. For up to 3 minutes, that team will be annoyed with harmless pop ups that block their view of the game. They must click the X on the window if they wish to get rid of it.
- **Brute Force Attack**: When activated, the teams next hack will steal double the cryptocurrency from the team they hack.
- **Logic Bomb**: When activated, the team will be equipped with a layer of protection from their next attacker. The next team who attempts to hack the team will lose 5% of their currency and be unable to attempt a rehack on the team for 1 minute.

UPGRADES:

Here are some examples of types of hacks and viruses. Actual features in the game may vary.

- **RAM** - Hacks deal 25% more damage
- **Cooling** - Hacks against you are 25% weaker
- **Router** - Allows you to see what up-grades targets are using
- **CPU** - Viruses used against you are 25% weaker
- **GPU** - Viruses you use are 25% stronger
- **Power Supply** - Generates 2 Money every 10 seconds

SCORING CRITERIA:

1. Points are earned from successful solving of puzzles.
2. Points are lost from unsuccessful solving of puzzles
3. An Up-Grade will add to your score. The longer you hold an Up-Grade, the more points are earned.
GAMEPLAY:
1. Movement
2. Interact with Object/Person
3. Store for Power Ups

STARTING A GAME:
1. Go to the website: http://hackattack.azurewebsites.net/
2. Enter Name in “User Name”
3. Enter the server in the “Game ID” session
4. Click “Join Game”