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The CodER Youth Organisation's Scenarios Handbook

Title: Virtual Legacy
Escape to reality

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Introduction

Targeted Audience:

- Age: This game is suitable for all ages.
- Level: This game is suitable for beginner level individuals interested in STEM fields.
- Group size: This game is designed for groups of 1-4 players.
- Type of target group: This game is ideal for those interested in technology-based challenges.

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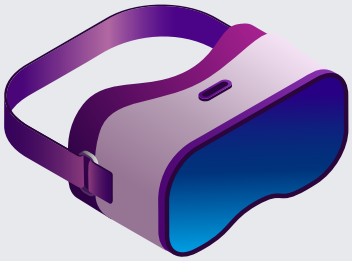
Storyline

Three college students, who are all working on computer science, see a TV ad for a new virtual reality headset testing by the famous programmer and AI developer Dr. Salazar Stonecipher. Intrigued by the opportunity to test the latest technology, they sign up for the testing.

As they arrive at the testing location, they are greeted by a team of scientists who instruct them to put on the VR headsets and enter the virtual world. As soon as they put on the headsets, they are transported to a strange virtual world, full of rooms and passages, and quickly realize that it was all a trap.

The VR experience turns into a nightmare, and as they arrive in the first stage,a strange voice echoes "*you must face my world to escape back to reality..*" Each challenge is located in a different room, and the students must find a way to solve each one and progress to the next one.



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Objective of the game

The objective of this ER scenario is for the players to solve each challenge in each room and ultimately escape back to reality. Each challenge is designed to test their problem-solving skills, teamwork, and creativity. Along the way, they will learn about the remarkable contributions of women in STEM fields throughout history, and how their achievements have paved the way for future generations. By successfully completing each challenge, players will gain a deeper understanding and appreciation for STEM fields and hopefully be inspired to pursue their own interests in these important areas.

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The game

Game Master: The Virtual World.

Hints: In this escape room scenario, the hints for each stage will be provided by a hologram version of each woman in STEM mentioned in the story. Each hologram will provide clues and guidance to help the players progress to the next stage. These women were selected for their remarkable contributions to science, technology, engineering, and mathematics, and their holograms serve as a tribute to their legacy. Listen carefully to each hologram and pay attention to the details they provide, as they may hold the key to unlocking the next clue.

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The game

Stage 1: Grace Hopper: “Debugging Math Maze”

Grace Hopper was a pioneering computer scientist and Navy Rear Admiral. She is known for her contributions to the development of the first commercial computer, the UNIVAC I, as well as her work on the development of programming languages, including COBOL. She was a trailblazer for women in STEM and played a crucial role in the early days of computer science. Her legacy continues to inspire and influence the field to this day.

Challenge: In this challenge, players don’t need to have any programming skills because the language of programming is simply mathematics. The players have to fix a program that contains a bug before they can move on to the next challenge. Once the players have fixed it, they will need to put the result number to the lock in the door and move to the next challenge.

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The game

Stage 1: Grace Hopper: “Debugging Math Maze”

Game master:

”Ah, welcome, my dear players. You have stumbled upon my lair and have foolishly decided to play my game. Let me make one thing clear - I am not your friend, I am not your ally, I am your adversary. I am the game master, and this game is not for the faint of heart. You will be tested, and you will certainly be challenged.But fear not, for I will be watching your every move, relishing in your failures, and cackling at your defeat. So let the game begin, and may the odds be ever in my favor.”

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The game

Stage 1: Grace Hopper: “Debugging Math Maze”

Program: Addition Error

```
#include <iostream>

int main() {
   int num1 = 5;
   int num2 = 3;
   int sum;

   sum = num1 - num2;
   std::cout << "The sum of " << num1 << " and " << num2 << "
is: " << sum << std::endl;
return 0;
}
```

Error: The error in this program is in the addition of num1 and num2. Instead of subtracting them, we should add them.

Solution:

```
#include <iostream>int main() {
   int num1 = 5;
   int num2 = 3;
   int sum;
sum = num1 + num2;
std::cout << "The sum of " << num1 << " and " << num2 << " is:
" << sum << std::endl;
return 0;
}
```

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The game

Stage 1: Grace Hopper: “Debugging Math Maze”

Hints:

If the players get stuck a hologram of Ada lovelace will provide hints such as:

- *“Check your math! Addition is not the same as subtraction.”*
- *“Double check your calculations to find the error."*
- *“The answer lies in symbols not letters or numbers.*

When the players have found the correct answer they need to type the correct number to the keypad in the door.The door opens and a voice of Ada Lovelace is heard:

“Congratulations, my dear players! Your wit, your skill, and your bravery have led you to this moment of triumph. But do not rest on your laurels just yet, for the game master is always watching and always waiting for a rematch. So savor your victory, and let it fuel your determination for the challenges that lie ahead. Well done!”

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The game

Stage 2: Ada Lovelace-”Code Conuntrum : Ada’s Clues”

Challenge:

In this challenge, the players must decode an ASCII binary message which reads "**Escape**".They can find the binary code written on a terminal in the center of the room and they must convert it to English using a book accessed from the bookshelf in the room. However, they must also find a keyboard and plug it into the computer to type the answer and unlock the door to the next room.

Next to the terminal, there is a locked door. Above the door, there is a hologram of Ada Lovelace, who appears to be the source of the hints for this challenge.As the players approach the hologram, Ada Lovelace speaks,

"Welcome, my dear friends. I am Ada Lovelace, the first computer programmer in history. I have hidden a clue in this room that will help you unlock the door and move on to the next challenge. Look closely and think logically.”

As the players enter the room, they see a large terminal with a message in ASCII binary code displayed on the screen: **"01000101 01110011 01100011 01100001 01110000 01100101"**

Suddenly, a bookcase on the wall slides open, revealing a shelf of old books.

1010011000101111
0001110101110011
0110101010010101
1101101101010101
1010101010010101

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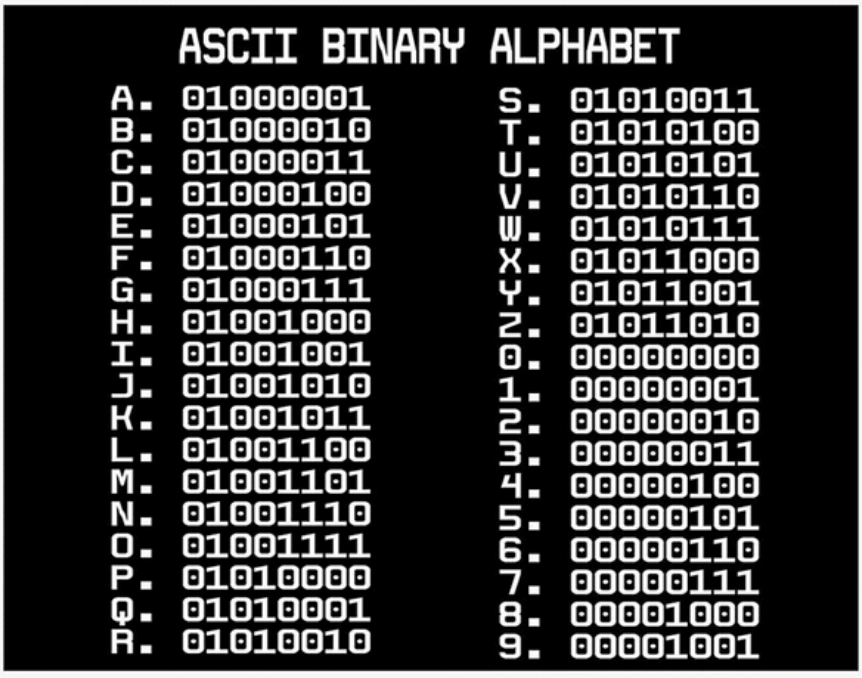
The game

Stage 2: Ada Lovelace-”Code Conuntrum : Ada’s Clues”

Hints:

Ada Lovelace's hologram will provide hints on binary conversion,

- *“the binary code in the terminal is not just random numbers, but it represents letters in the ASCII table.”*
- *“computers read everything in binary code”*
- *“the binary code can be converted to English by using a guide found in the books.”*
- *“look around the room for a keyboard and a place to plug it in.”*
- *“The book you are looking for should be named as ‘ASCII BINARY ALPHABET”..”*



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The game

Stage 2: Ada Lovelace-”Code Conuntrum : Ada’s Clues”

To make things even more difficult, the players soon discover that the computers in the room have been tampered with and they cannot access the internet. The only way to convert the binary code is to use a book that Ada Lovelace has hidden in the bookshelf next to the terminal. The book contains a table with the ASCII code for each character, which the players can use to manually convert the binary code into readable text.

When the players finally figure out that the binary code translates to "escape",find the keyboard and successfully plug it in, they need to type the answer on the computer terminal to unlock the door.

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The game

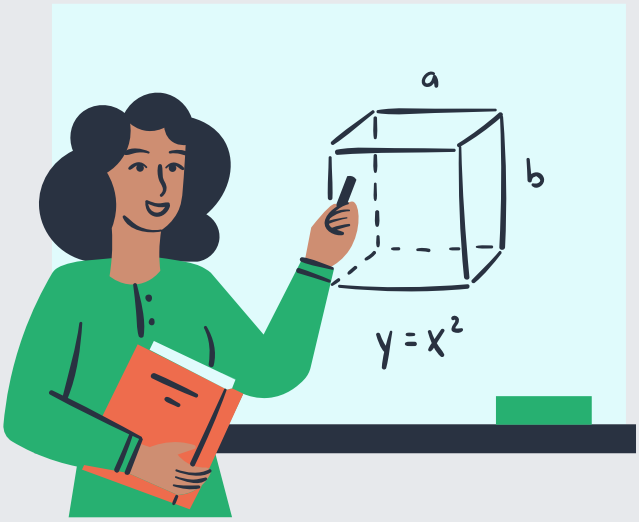
Stage 3: Katherine Johnson-”Artful Arithmetic Hunt”

Katherine Johnson is known for her work as a mathematician for NASA and her contributions to the first human spaceflight. In this challenge, the players must observe and inspect all paintings in the room and record every clue in a notebook in order to find the correct answer.The hologram of Katherine Johnson will provide hints on how to solve the equation.

The challenge is designed to be challenging but solvable with basic math skills. The players don't need to be involved with mathematic skills to solve it – they just need to be able to perform basic arithmetic operations like addition, subtraction, multiplication, and division and cooperate with each other.

Challenge:

Upon entering the room, the players see a lot of paintings and a big dinning table at the center with a lot of notebooks and pens.



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The game

Stage 3: Katherine Johnson-”Artful Arithmetic Hunt”

Game master:
“You have stumbled upon one of my most challenging puzzles yet. Are you ready to put your mathematical skills to the test? In this stage, you will need to think critically and creatively to solve the equations and unlock the next clue. Remember, time is of the essence. The clock is ticking, and im watching. Will you be able to escape before it's too late? Let the mathematical madness begin!”

The players must look for hidden numbers in the paintings and eventually test whether they should add,subtract,multiply or divide them by asking the hologram of Katherine Johnson if what they found is the correct answer.

Katherine Johnson's hologram appears before the players, her wise and determined voice echoing in the room:

Katherine Johnson: *"Greetings, mathematicians. I am Katherine Johnson, and I am here to assist you on your journey. As a trailblazer in mathematics and space exploration, I have encountered my fair share of challenges. But with perseverance and a sharp mind, I have always found a way to solve them. I hope that my presence will guide you towards the correct path in this puzzle. Let's get to work!"*

Project Number: 2021-1-FR02-KA220-YOU-000028696

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The game

Stage 3: Katherine Johnson-”Artful Arithmetic Hunt”

Hints:

The hints are provived by the hologram of Katherine Johnson.

- *“Look for numbers hidden within each painting.”*
- *“Don't overthink the math problems – they are simple equations”*
- *“A painting has two sides..”*
- *“What hides behind the paintings?”*

The paintings:

1)Mary Casatt-*The Loge*: It has the number **5**
2)Frida Kahlo-*Memory, the Heart*: It has the number **9**
3)Agnes Martin-*The islands:* It has the number **4**
4)Leonora Carrington-How Doth the Little Crocodile: It has the number **6**

Project Number: 2021-1-FR02-KA220-YOU-000028696

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The game

Stage 3: Katherine Johnson-”Artful Arithmetic Hunt”

The correct answer is the result of multiplying those number :**1080.**
When the players have their answer they should say : We have the answer Katherine! In which she will reply with *What is your result*?.

If the answer is correct a door opens, leading to the next stage and the voice of the game master echoes: “*You may have defeated this stage but you haven’t defeated me..*”.
If the answer is incorrect, the players have to perform other possible operations until they finally perform the multiplication.

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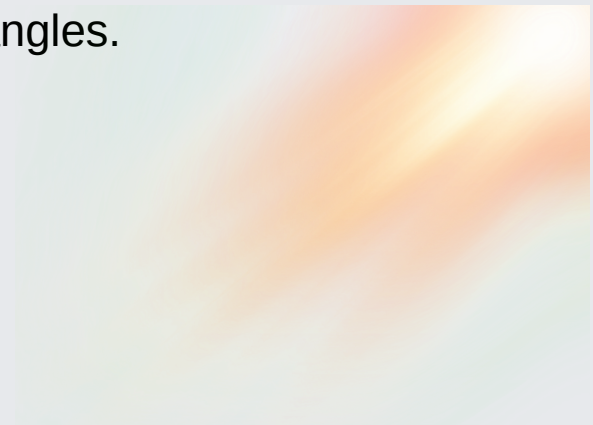
The game

Stage 4: Maria Telkes-”Sunlight Symphony”

Maria Telkes was a pioneering scientist who believed in the power of the sun.In this challenge she provides helpful hints and encourages players to work together and experiment with different reflective materials and angles.



Challenge:

In the Solar Escape Room challenge, players must use their creativity and problem-solving skills to escape the room by opening the curtains and letting in the sunlight. The challenge is designed to be accessible and beginner-friendly, so players don't need any special knowledge or skills to participate. With teamwork and creativity, anyone can harness the power of the sun and escape the room before time runs out.

Game Master:

”Beware my little playthings..the darkness is not your only enemy. Are you ready to face the light?"

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The game

Stage 4: Maria Telkes-”Sunlight Symphony”

Suddenly the lights go out and a voice from a hologram echoes:

Maria Telkes: “Welcome, to the next stage! Your mission is to escape this room by opening the curtains and letting in the sunlight. But the curtains are stuck, and you can't move them. Luckily, you have a secret weapon - the power of the sun! All you need to do is find a way to let the sun's rays shine on the curtains, and they will magically open. But be careful, time is running out, and the game master is watching your every move. Will you be able to use your creativity and resourcefulness to let the sun in and escape the room? Good luck!”

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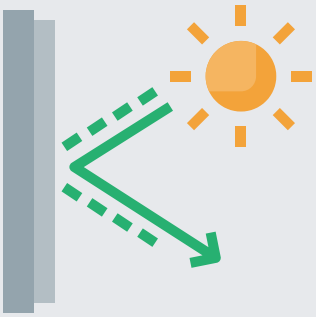
The game

Stage 4: Maria Telkes-”Sunlight Symphony”

Hints:

Hints are provided by a hologram of Maria Telkes:

- “Look around the room for objects that you can use to reflect the sunlight. “
- "Think about what materials are best at reflecting sunlight. Do you have anything shiny or reflective in the room?"
- "Have you tried adjusting the angle of your reflective objects? Sometimes a small change can make a big difference."
- "I always believed that innovation comes from experimentation. Don't be afraid to try something new and see if it works!"
- “Maybe there's a mirror, a shiny surface, or a piece of aluminum foil. Try holding them up to the window and see if they reflect the sunlight onto the curtains. “



Solution:

The solution to the Solar Escape Room challenge is to find reflective objects in the room, such as mirrors or aluminum foil, and position them to reflect the sunlight onto the curtains. By doing this, the curtains will magically open, and the players can escape the room.

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The game

Stage 5:Ann Caracristi -”Cipherly victorious”

Ann Caracristi was an American cryptanalyst and intelligence officer who worked for the National Security Agency (NSA) during the Cold War. She became the first woman to hold a senior leadership position at the NSA, and played a key role in developing new cryptanalytic techniques.

Challenge:

The challenge is designed to be beginner-friendly, and players do not need to have any prior knowledge of decryption to participate.

In this challenge players see a secret message that has been encrypted using a simple letter shift cipher on the wall. Each letter in the original message has been replaced by the letter that comes before it in the alphabet. The team’s task is to figure out what the original message says by decoding the secret message. The hologram of Ann Caracristi will provide hints to help players decode the message.

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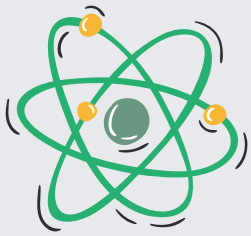
The game

Stage 5:Ann Caracristi -”Cipherly victorious”

Ann Caracristi: *“Welcome, players. I am the hologram of Ann Caracristi, one of the remarkable women in the field of decryption. Congratulations on reaching the final stage of this escape room challenge. Your task is to decode a secret message that has been encrypted using a simple letter shift cipher.”*

Secret Message:
"Gnvltgbneeuqetdsvnkcnsdmrhmrdmtdmnrcmehtmdmtdmvdmmdu."
Applying this shift to the secret message gives us the original message: "**How much of the world is balanced on the unseen**"



Hints:
Hints are provided by a hologram of Ann Caracristi.

- Think about how the letters in the secret message are related to the letters in the original message.
- Try shifting the letters in the secret message forward one letter in the alphabet to see if that reveals anything.
- Pay attention to any patterns or repeated sequences of letters in the secret message that might help you figure out what the original message says.

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The game

Stage 5:Ann Caracristi -”Cipherly victorious”

Solution:

To decode the secret message, players need to shift each letter a certain number of spaces in the alphabet. In this case, the shift is one letter forward.

Once the players find the decoded version of the sentence they say it out loud.

Players: How much of the world is balanced on the unseen?

Then the Game Master responds with:

"Ah, I see you've deciphered my little puzzle. Clever.. How much of the world is balanced on the unseen you ask? well, let's just say that sometimes the most important things are the ones we can't see. But in the end, it seems my downfall was underestimating your STEM skills. You may have won this time, but I'll be back with a challenge that even your science and math won't be able to solve!"

Then the holograms of Grace Hopper,Ada Lovelace,Katherine Johnson,Marie Telkes and Ann Caracristi appear above the final door as it opens..

All women: "Congratulations, you have proven yourselves to be true problem solvers and critical thinkers. Your ability to tackle these challenges with intelligence and persistence is a true testament to the power of human ingenuity. We are proud to welcome you into the community of those who embrace curiosity and seek knowledge. May you continue to use your skills to make the world a better place."

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The game

Stage 5:Ann Caracristi -”Cipherly victorious”

Purpose:

The purpose of this ER scenario is to celebrate and recognize the important contributions and discoveries made by women in STEM fields throughout history. Our escape room is designed to not only entertain but also educate and inspire individuals who are interested in these fields. Through puzzles, clues, and challenges, participants will learn about the remarkable achievements of women in science, technology, engineering, and mathematics, while also expanding their knowledge and understanding of these important fields. We hope that this experience will not only be enjoyable but also encourage and empower individuals to pursue their passions in STEM and continue making important contributions to the world.

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