# Cyber Escape: The Firewall Trials

## [BATCH-11]

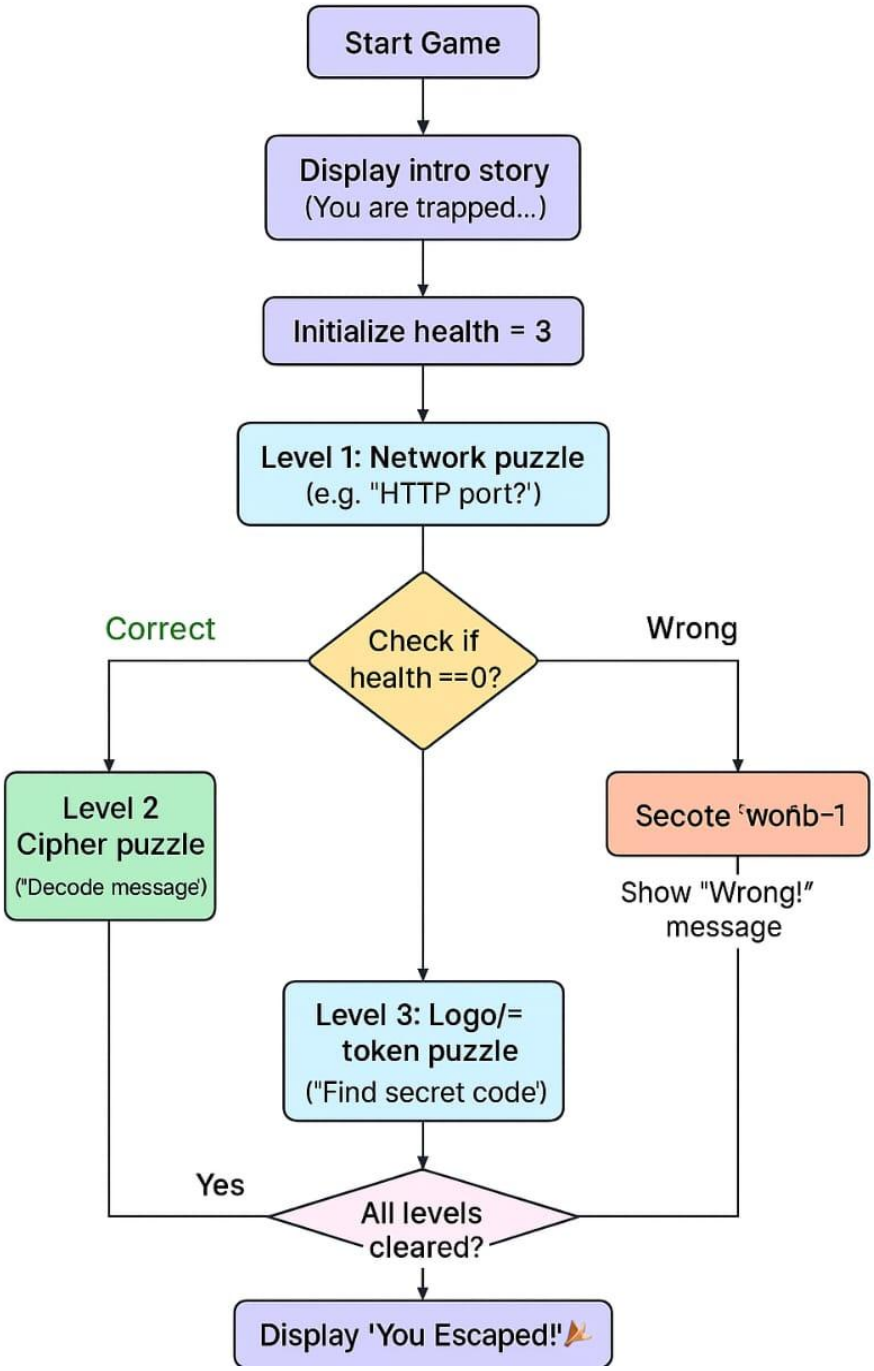
**Final Table**

| Name of Student | SRN | Module Worked On |
|---|---|---|
| MAHANTH SRIRANGA NANDUR | PES2UG25AM149 | Level 3 + all level cleared logic |
| Kushal Joshi | PES2UG25EC067 | Start, Intro, Health System, Level 1 |
| Lad Krishna Samir | PES2UG25EC068 | Level 2 Cipher System |
| Monish S | PES2UG25CS315 | Integration of all modules, Tester, Debugging, Compiler |

# Problem Statement

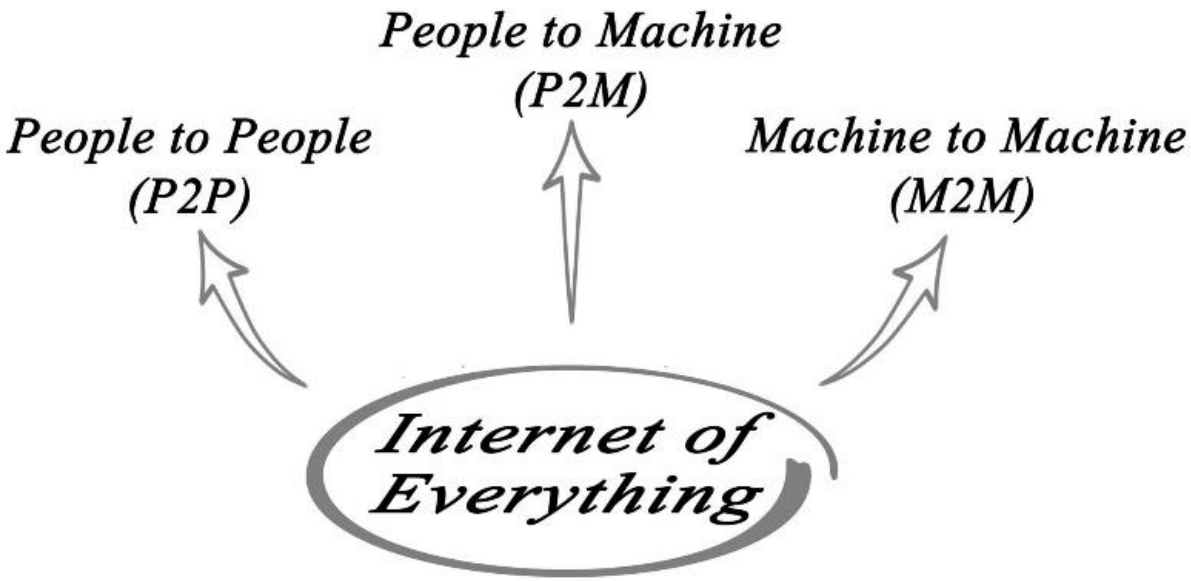
**The challenge is to design and implement a gamified educational experience, Cyber Escape: The Firewall Trials, that tests a player's knowledge across three key cybersecurity domains, Network Protocol basics, Cryptography (Ciphers), and Token/Authentication methods, using a structured, multi-level puzzle format. The system must incorporate a health-based failure mechanism (starting at health = 3) to provide immediate feedback on incorrect answers, ultimately determining whether the player successfully escapes the firewall or is trapped by depletion of health.**

# Cyber Escape: The Firewall Trials



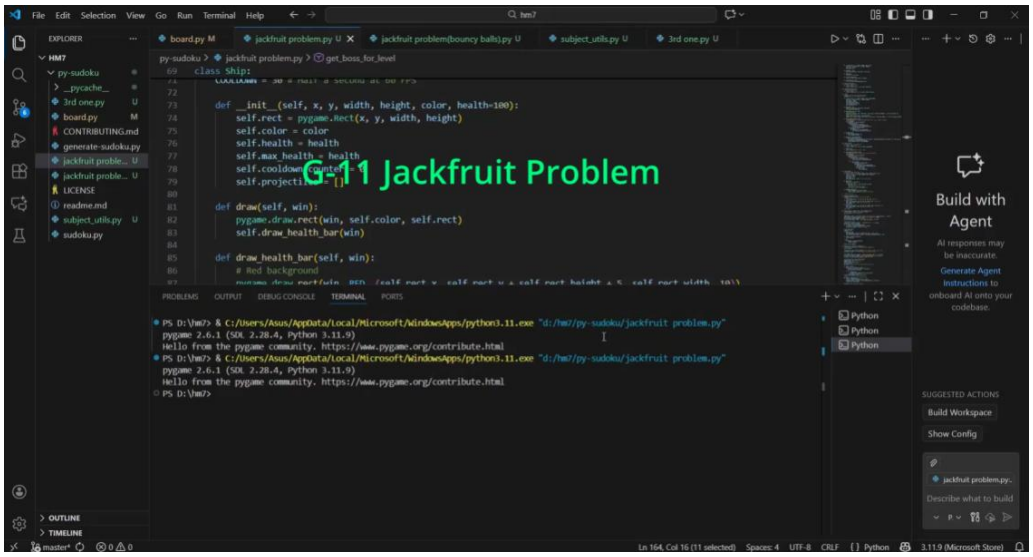
# Approach Used To Solve

**The approach used in the "Cyber Escape" project is a State Machine Architecture combined with Object-Oriented Programming (OOP). The entire program flow is governed by a central game state variable (e.g., "PLAYING", "QUIZ", "LOST") which dictates the specific code block executing and the rules of interaction, ensuring clean separation between the intense space shooter boss fights and the static, decision-based quiz segments. This state management is coupled with OOP, where core game entities like Ship, Player, Enemy, and Projectile are organized into an inheritance hierarchy. This structure allows game objects to manage their own behaviour, health, and collision logic efficiently, making the code both modular and highly maintainable, particularly for handling the sequential levelling and the health-dependent transitions required by the game's design.**



# INPUT

## CODE-INTERFACE




## GAME-INTERFACE

# OUTPUT

## LEVEL-1 (WORM)


## LEVEL-2(TROJAN)


## LEVEL-3(RANSOMWARE)

# Challenges Faced

1) Projectile and Collision Cleanup Issues
2) Screen Element Overflow and Layout Bugs
3) Pygame Font/Text Rendering Artifacts and Overlap
4) OOP Health/Projectile Logic Mismanagement