

ESCAPE ROOM CHALLENGE

A 3D escape room designed, built, and scripted in the Unity game engine, featuring three interconnected rooms, each with unique puzzles to solve.

BACKGROUND

- Video games are one of the most popular and fastest growing forms of entertainment in the world.
- Recent statistics have shown that video games are a roughly \$300 billion business with approximately 3 billion people playing video games worldwide.
- With the increased interest in video games, the interest in video game development has also skyrocketed. This varies from AAA video game studios like Nintendo and Electronic Arts (EA) to smaller indie creators like Toby Fox (Undertale) and Eric Barone (Stardew Valley).
- This is also partly due to the increased availability of game development engines like Unity, Unreal, and Godot. These tools allow anyone to design and create a video game in the comfort of their own home.
- Escape rooms are a newer form of entertainment where one or more players are locked in a room and must solve puzzles to escape within an allotted time.
- Escape rooms have gained great popularity in the last few years with players varying from students going to have fun to corporate groups working on teambuilding.
- With the recent improvements in 3D game development technology, game developers are now taking inspiration from real life escape rooms and creating 3D escape room games. These games include popular titles such as Escape Room Simulator, The Room (Series), and I Expect You To Die.

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```

public class HintManager : MonoBehaviour
{
    public Text hintDisplay;
    private bool isDisplayingHint = false;
    private float hintDuration = 5f;
    private float hintTimer = 0f;
    private string hint = "Press the 'H' key if you need a hint!";
    private int hintCounter = 0;
    public int hintAmount = 5;
    public string[] hints = new string[5];
    // Start is called before the first frame update
    void Start()
    {
        hintDisplay.text = hint;
        isDisplayingHint = true;
        hintTimer = 0f;
        StartCoroutine(HideHintAfterDelay(hintDuration));
    }

    // Update is called once per frame
    void Update()
    {
        if (Input.GetKeyDown(KeyCode.H) && !isDisplayingHint)
        {
            DisplayHint();
        }
        if (isDisplayingHint)
        {
            hintTimer += Time.deltaTime;
            if (hintTimer > hintDuration)
            {
                HideHint();
            }
        }
    }

    void DisplayHint()
    {
        hintDisplay.text = hints[hintCounter];
        isDisplayingHint = true;
        hintTimer = 0f;
        StartCoroutine(HideHintAfterDelay(hintDuration));
        NextHint();
    }

    void HideHint()
    {
        hintDisplay.text = "";
        isDisplayingHint = false;
    }

    void NextHint()
    {
        hintCounter += 1;
        if (hintCounter >= hintAmount)
        {
            hintCounter = 0;
        }
    }

    IEnumerator HideHintAfterDelay(float delay)
    {
        yield return new WaitForSeconds(delay);
        HideHint();
    }
}
    
```

A code snippet of the hint system script. This script waits for the player to press the "H" key and displays a hint for five seconds via a text UI object. It can handle any number of custom hints.



Lower Level
"The Workshop"



Ground Level
"The Parlor"



Upper Level
"The Attic"

CORE GAME FEATURES

- First person point of view and controls for the mouse and keyboard
- Interactable items that you can examine and place in your inventory
- Dynamic items that can be interacted with to perform certain dynamic actions
- UI countdown timer to show the player how much time they have left
- UI hint system to provide the player with hints if they're stuck
- Complete main menu, loading, game over, and game complete scenes.
- Level select functionality for players who want to go directly to a specific room
- Save and Load game functionality implemented with the Horror FPS kit.

ESCAPE ROOM AND PUZZLE DESCRIPTIONS

- The escape room challenge consists of three different escape rooms, each with three or more unique puzzles to solve. All the puzzles present a moderate level of difficulty, with some puzzles building upon one another and others incorporating the Unity physics engine.
- The escape room challenge sees the player trapped in a house with no clear way out. The first escape room is "The Workshop". As the name implies, the room is themed after a garage workshop with décor items like car repair tools, a workbench, storage shelves, and more! This room has three side puzzles which all need to be completed to solve the main puzzle and escape the room. The side puzzles include the "Map Puzzle", the "Clock Puzzle", and the "Lamp Puzzle". Each puzzle makes use of unique custom scripts and textures.
- The second escape room is "The Parlor" – After successfully finding your way out of the garage, you progress into the heart of the main residence and find yourself trapped inside the living room. It seems normal enough, though the owner may be a tad eccentric? Here you will find 3 puzzles, each testing your powers of observation, deduction and reasoning. Can you escape before time runs out? What awaits you on the other side of that door? And where is the TV? Honestly, what do these people do for fun?
- For the final escape room in the sequence, you exit the parlor and find your way to an attic. This cramped, uncomfortable, space has been furnished with what appears to be a mix of antique furniture, defunct hospital equipment, and plain junk. The previous occupant was clearly unwell, and you can't help noticing that the door has been barred... from the inside? At first glance there isn't much to do anyway, but at least you've found where they keep the TV! This room will confront you with a set of puzzles designed to test your resolve. You were crafty enough to escape the garage, clever enough to pass the parlor, but do you have the courage to face the attic?