COP 701 ASSIGNMENT#2

Contra Game

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1.1   Problem Statement

Implement the Contra game. Use Unity3D or the Unreal engine.
1. Make it a standalone application.
2. Incorporate very nice visual elements.
3. Make the graphics very smooth.
4. Gradually make a level harder.
5. Have at least three levels. Be creative and improvise. Add at least two new features.

- We implemented the Contra game using Unity3D engine. We made it a standalone application.
- Nice Visual Elements we incorporated. Details are provided further in the report.
- We tried our best to make the graphics smooth.
- Levels are made harder by incorporating more traps, enemies and the intelligently designing subsequent levels.
- Three levels are designed in the game. Various creative features are added throughout the game. Pause/ Resume, coins collect, player hold rifle and shoot in all direction. Pass through platform

1.2   Game details

1.2.1   Game Overview

"Contra" is a classic run-and-gun platformer game known for its intense action and challenging levels. Players control soldiers fighting against alien and enemy forces in a 2D side-scrolling environment.

1.2.2   Game mechanics

The following features are included:
• Player Controls: Player can move left/right, jump, crouch, and shoot.
• Health: Player have a health bar; getting hit reduces health.
• Enemies: Enemies include alien creatures, soldiers, and mechanical foes.
• Display: The game screen should display health, current weapon, and score.

1.2.3   Level design

• Themes: Levels include jungle, ice, and Fortress themes.
• Obstacles: Levels feature platforms, traps, and moving hazards.
• Boss Battles: Each level ends with a challenging boss battle.

1.2.4   Bonus

The following features are added for extra credit:

• **Power-ups**: Collectible power-ups for **Changing bullets (Spread shot, Burst shot)**.
• **Power-ups**: Collectible power-ups **for Changing Guns (Flame Thrower, Shot Gun)**.
• **Lives**: Player has a limited number of lives; extra lives can be earned if lives are less than max possible lives.
• **Health**: Player has a limited health; additional health can be earned when it reduces.
• **Coins**: Player collects coins to increase the score.
• **Moving Platforms**: Player has to jump on platform to cross the area.
• **Moving Hazards**: Moving enemies, Saws.
• Platform Crossing: Player can **jump to upper platform** without colliding.
• Platform Crossing: Player **can go to lower platform** without colliding.
• **Boss sends enemies**: While fighting with boss along with shooting fireballs, boss also sends enemies.
• **Enemies take some of player's health** on death if player is near enemy when it exploded.
• **Enemies on moving platform**.
• **Health and lives on moving platform**.
• **Traps**: Various traps are installed at different locations. These include **Spikes and rotating saws**.
• **Menus: Start menu, Pause Menu, Game Over Menu, load levels option menu** are also provided for in game transitions.
• **Mechanical foes**: Turrets are installed.

• **Respawn**: Player respawns after health is zero.
• **Gun Display**: Gun is displayed in players hand.

Player Controls

- Move Left: A key
- Move Right: D key
- Jump: SPACE key
- Crouch: S key
- Go to Lower terrain: double press S key
- Shoot: Mouse left Button
- Automatic Shoot mode : Mouse Right button
- Pause Game: P Key

1.2.5   Scripts

1.2.5.1   Enemy Scripts

- **EnemyBullet Script:** Tracks player current position then sends the bullet at the player's position and if player is hit the bullet is destroyed.

- **EnemyFacePlayer Script**: If checks player position with respect to enemy, then if enemy is not facing player then rotates it to face player.

- **EnemyFire Script:** Checks if player is in range. Then shoots bullets at intervals at the player.

- **EnemyLife Script:** Checks Enemy life. If life is less than zero then changes enemy animation to dying animation. Also has a function to destroy the enemy object which is called from the event called at the die animation of enemy .

- **EnemyRotation:** Turret rotation scripts. Rotates turret in player's direction**.**

- **EnemyRunLeft Script:** Assigns the direction of movement of enemy to the left.
- **SpawnerEnemy Script:** Spawns the enemies at the spawner position. It holds enemies in an array. Then spawns a number of enemies at random time intervals. It also sets the enemy movement speed at random at time of spawning the enemy.

1.2.5.2 Health Scripts

- **Healthbar Script:** Fills the player's health bar on canvas.
- **Lifebar Script:** Fills the player's life bar on canvas.

1.2.5.3 MovingPlatform Scripts

- **StickToPlatform Script:** Makes the player move with platform if it is standing on it.
- **WaypointFollower Script:** Used to move platform/objects between the two points.

1.2.5.4 Player Scripts

- **BulletScript Script:** If player bullet hits enemy then decrease the enemy health life, and destroys bullet.
- **ChangeRifle Script:** Changes the player rifle when player takes the rifle powerups.
- **displayScore Script:** Displays the Current score on the canvas and update the score if coin is collected.
- **FireBullet Script:** Fires the bullet from the firepoint depending on the powerup of the bullet player has taken.
- **MainCameraController Script:** camera follows the player.
- **PlayerLife Script:** Controls player life. Updates when player takes damage or powerup.
- **PlayerMovement Script:** Controls the player movements and animations when keyboard movement keys are pressed. powerUp
- **powerup Script:** Changes bullets when bullet power up is taken.
- **RifleRotation Script:** Rotates Player rifles with mouse position.

- **ScoreCalculate:** Calculates and updates the score when player bullet hits enemy.

1.2.5.5 Scenes Scripts

- **PauseMenu Script:** Pauses/resumes the gameplay, load other scenes.
- **StartMenu Script:** Plays different levels, and quit applications

1.2.5.6 autoDestroy Script: Destroys the bullets which did not hit the player. Also destroys the distant past enemies which were not killed by the player.

NOTE: All graphical images are picked up from the internet. All levels' objects are designed by us using the those images.

Our code can be found in following git Repository.
https://github.com/bhuvnesh1315/Contra-Clone