Unity Test

Minimalistic third person shooter game evaluating Unity gameplay and UI implementation skills.

Instructions

- Carefully read the game specification and the coding standard.
- Create a **Unity Test** 3D project in **Unity 2017.3**.
- Import the following assets (and nothing else) :
    - https://assetstore.unity.com/packages/3d/environments/fantasy-landscape-103573
    - https://assetstore.unity.com/packages/3d/characters/humanoids/sci-fi-hero-handpainted-demo-106154
    - https://assetstore.unity.com/packages/3d/characters/humanoids/mini-legion-footman-handpainted-86576
    - https://assetstore.unity.com/packages/3d/characters/humanoids/mini-legion-grunt-handpainted-98187
    - https://assetstore.unity.com/packages/3d/characters/humanoids/mini-legion-lich-handpainted-91497
    - https://assetstore.unity.com/packages/3d/characters/humanoids/mini-legion-rock-golem-handpainted-94707
    - https://assetstore.unity.com/packages/vfx/particles/cartoon-fx-free-109565
    - https://assetstore.unity.com/packages/vfx/particles/mezanix-fx-free-65810
    - https://assetstore.unity.com/packages/tools/particles-effects/lowpoly-water-107563
    - https://assetstore.unity.com/packages/essentials/beta-projects/textmesh-pro-84126
    - https://assetstore.unity.com/packages/2d/fonts/bubble-font-free-version-24987
    - https://assetstore.unity.com/packages/audio/music/six-styles-of-bgm-35941
    - https://assetstore.unity.com/packages/audio/sound-fx/fantasy-sfx-32833
    - https://assetstore.unity.com/packages/audio/sound-fx/weapons/futuristic-weapons-set-15644
    - https://assetstore.unity.com/packages/audio/sound-fx/foley/fantasy-sfx-for-particle-distort-texture-effect-library-42146
- Try to implement as much as you can of this game in maximum two days, preferably in the following order :
    - The hero animation, overlay, aiming, shooting, impact and death.
    - The footman/grunt/golem/lich animation, navigation, aiming, attack, impact and death.
    - The game-lost menu.
    - The game-won menu.
    - The game-paused menu.
    - The game-title screen.
    - The game-options screen.
    - The enemy minimap.
    - The hero aiming IK.
    - The hero feet IK.
    - The text localization.

- Do your best to apply the programming conventions explained in the coding standard document, especially the following rules :

  - Write types in **UPPER_CASE** : TANK_SHELL.
  - Write type members in **CamelCase** : Tank.ShootShell().
  - Write local variables and method parameters in **snake_case** : enemy_index.
  - Align braces vertically.
  - Don't use acronyms, abbreviations or single-letter variables.

- On the last evening, simply send us back a pack or archive of your work in progress using a file transfer web service like **wetransfer.com** or **transferbigfiles.com**.

Description

The player controls a futuristic hero equipped with a fully automatic laser gun.

He must survive in a forestial area with many aggressive enemies.

They can be of four different types :

- The footman, a small knight holding a spike.
- The grunt, a fierce goblin holding an axe.
- The golem, a rock creature with deadly fists.
- The lich, a vicious witch shooting fireballs with her magical wand.

To win the game, the hero must eliminate all the enemies with his gun in only 3 minutes, without being killed.

Game controls

The primary game control device is an X360-like gamepad controller.

- Gameplay-mode :

  - Left stick up/down : **Move Up/Down axis**.
  - Left stick left/right : **Move Left/Right axis**.
  - Right stick up/down : **Aim Up/Down axis**.
  - Right stick left/right : **Aim Left/Right axis**.
  - Right trigger : **Shoot button**.
  - Start button : **Pause button**.

- Menu-mode :

  - Left stick up/down : **Move Up/Down axis**.
  - Lower face button (A) : **Select button**.
  - Right face button (B) : **Exit button**.

Game entities

The game :

- Has a state.
- Has a maximum duration.
- Has an enemy list.

- Has a hero.
- Has a camera.
- Has a camera overlay.

The game menu :

- Has a title.
- Highlights the active option, which can be chosen with the Move Up/Down axis.
- Selects the highlighted option with the **Select** button.
- Can be left by pressing the **Exit** button.

The game-title screen menu :

- Plays the Chrono Storm background music in a loop.

- Is made of :

    - The **Unity Test** title.
    - The **Start** option, to start a single-player game.
    - The **Options** option, to change the game options.
    - The **Exit** option, to exit the game.

The game-paused menu :

- Plays a game-paused sound once.

- Appears by pressing the **Pause** button during a game.

- Suspends the game.

- Is made of :

    - The **Resume** button, to resume the game.
    - The **Restart** button, to restart the game.
    - The **Quit** button, to go back to the title screen.

- Can also be left by pressing the **Pause** button again.

The game-options screen menu :

- Plays a menu-change sound once.

- Is made of :

    - The **Language : French/English/German** pull down option.
    - The **Fullscreen : on/off** pull down option.
    - The **Back** button, to go back to the title screen.

The game-played screen :

- Plays the Car Race background music in a loop.
- Shows the camera overlay (HUD).
- Starts with a 5-seconds countdown.
- Shows the game-lost menu if the hero is killed or if the available time is exhausted.
- Shows the game-won menu if the hero has killed all the enemies before the available time is exhausted.

The game-over menu :

- Playes a custom music once.
- Is centered.
- Is made of :
  - A big custom message.
  - The **Score : … points** message.
  - The **Restart** button, to restart the game.
  - The **Quit** button, to go back to the title screen.

The game-won menu :

- Is a game-over menu.
- Plays a Jingle Win music once.
- Shows a **Victory** message.

The game-lost menu :

- Is a game-over menu.
- Plays a Jingle Win music once.
- Shows a **Defeat** message.

The game-played overlay :

- Has a small "+" character in its center.
- Has a temporary countdown timer starting at **5** seconds in its center,
- Has a score counter starting at **0** near the middle of the upper edge.
- Has a time counter starting at **3:00** near the upper left corner.
- Has a health bar (or counter) near the lower left corner.
- Has an enemy minimap near the upper right corner.

The island :

- Is surrounded by a large sea plane at zero height.
- Is the default landscape of the "Fantasy Landscape" asset
  with its outermost borders lowered to remain under the sea surface.
- Uses the meters as the distance unit.
- Has **20** footmen, **10** grunts, **5** golems, **5** liches and the hero, spread over its land surface.

The character :

- Has a state
- Can **stand** idle.
- Can **turn** (without animation).
- Can **walk** or **run**, more or less quickly, depending on its current ground speed.
- Can **attack** with a hitting weapon, a shooting weapon or his fists, depending on its own abilities.
- Can **get hit**.
- Can **die**.
- Has a health.

- Has an attack delay.
- Has a maximum forward walking speed.
- Has a maximum forward running speed.
- Has a maximum sideways walking speed.
- Has a maximum turning speed.
- Has a capsule collider.
- Has a locomotion blend tree.

The hero :

- Is a character.
- Is **2** meters tall.
- Has an initial health of **100**.
- Has an initial score of **0**, which is incremented by the initial health of the enemies he kills.
- Can run at **6** meters per second.
- Can shoot several laser rays per second.
- Walks or runs when the Move axis is used.
- Rotates to point his gun toward the hero camera target.
- Shoots laser rays with its gun toward the hero camera target when the Shoot button is used.
- Uses IK to aim vertically.
- Uses IK to make the feet touch the ground when they get below it.

The hero camera :

- Aims roughly 0.5m above the hero head.
- Remains a few meters behind the hero character,
  so that we can see his feet in the bottom of the screen when looking horizontally.
- Can turn laterally and vertically up to **120** degrees per second.
- Can look down at **-80** degrees.
- Can look up at **+80** degrees.
- Immediately gets closer to the hero if there is an obtacle between them.
- Quickly gets back to its default distance otherwise.
- Rotates when the Aim axis is used.

The laser ray :

- Is a thin stretched capsule.
- Has a glowing effect.
- Has a speed of **20** meters per second.
- Has a direct hit damage of **25**.
- Is shot from the gun tip toward what is pointed by the center of hero camera along its axis.

The hero spawn :

- Has a glowing particle effect.
- Is where the hero starts the level.
- Disappears after 5 seconds.

The enemy :

- Is a character.
- Has an energy bar over its head when its close enough from the hero.
- Can't hurt the other enemies.
- Can turn at **180** degrees per second.
- Runs toward the hero when it's in front of him and closer than **50** meters, or if the hero hits him.
- Strafes sideways when the hero aims directly at him.
- Randomly attacks the hero when it's close enough, at a maximum frequency of once per **4** seconds.

The enemy minimap :

- Has a circular shape.
- Shows the enemies within a 50 meters radius around the player as dots.
- Shows the farther enemies as small triangles pointing outside the minimap from its edge.

The footman :

- Is an enemy.
- Has an initial health of **50**.
- Is **1** meters tall.
- Can run at **2** meters per second.
- Can hit the hero with a damage of **25** using his spike.
- Attacks the hero only when it's closer than **2** meters.

The grunt :

- Is an enemy.
- Has an initial health of **100**.
- Is **2** meters tall.
- Can run at **4** meters per second.
- Can hit the hero with a damage of **50** using his axe.
- Attacks the hero only when it's closer than **2** meters.

The golem :

- Is an enemy.
- Has an initial health of **200**.
- Is **3** meters tall.
- Can run at **2** meters per second.
- Can hit the hero with a damage of **100** using his fists.
- Attacks the hero only when it's closer than **2** meters.

The lich :

- Is an enemy.
- Has an initial health of **75**.
- Is **1.5** meters tall.
- Can run at **2** meters per second.
- Can hit the hero with a damage of **50** using his fireball.
- Attacks the hero only when it's closer than **2** meters.
- Aims a bit in front of the hero, based on its current speed and direction.

The lich fireball :

- Is a small ball.
- Has a flame particle effect.
- Has an initial speed of **10** meters per second.
- Has a direct hit damage of **20**.

Version

1.0

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