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KJK CPSC 386 Unity Assignment 2 Documentation

Introduction:

World War III Tanks is a video game in which the player must destroy all of the enemy tanks by shooting at them in order to move onto the next level. The enemy tanks can also shoot at the player as well and if any of the enemy tank bullets hit the player, then it is game over. If the player destroys all of the tanks and completes all of the levels, then the player wins. The player tank is moved with the arrow keys and you press the spacebar or click the mouse in order to fire bullets.

Important Game Objects:

The important game objects are the player tank, the enemy tanks, the collision and the bullets. They all interact with one another because they allow for the game to function by the player and the enemy shooting at one another and by the collision preventing them from going off course.

Scene Transitions:

The scene transitions that exist are the transitions from each scene.

Saving and Loading:

The thing that is saved are the sound settings. The thing that is loaded are all the scenes.

Scenes:

Scene 1 is the title screen which allows the player to go to the main menu by clicking the start button.

Scene 2 is the main menu that allows the player to either start the game or go to the settings or quit the application by clicking the associated buttons.

Scene 3 is the settings scene that allows the player to adjust the volume of the game.

Scene 4 is the first level of the game in which the player must destroy all of the enemy tanks in order to move onto the next level.

Scene 5 is the second level of the game in which the player must destroy all of the enemy tanks in order to move onto the next level.

Scene 6 is the third level of the game in which the player must destroy all of the enemy tanks in order to move onto the next level.

Scene 7 is the fourth level of the game in which the player must destroy all of the enemy tanks in order to move onto the next level.

Scene 8 is the fifth and last level of the game in which the player must destroy all of the enemy tanks in order to win.

Scene 9 is the win screen.

Scene 10 is the game over screen.

Scripts:

Summary:

The scripts are the things that allow the game to function. They provide functionality for the game objects. Below is the code for all of the scripts.

Volume:

using UnityEngine;

using UnityEngine.Audio;

using UnityEngine.UI;

public class volume : MonoBehaviour

{

[SerializeField] private AudioMixer mixer;

[SerializeField] private Slider music;

void Start(){

if(PlayerPrefs.HasKey("musicVolume")) {

loadMusicVolume();

} else {

setVolume();

}

}

public void setVolume() {

float musicVolume = music.value;

mixer.SetFloat("music", Mathf.Log10(musicVolume)\*20);

PlayerPrefs.SetFloat("musicVolume", musicVolume);

}

private void loadMusicVolume() {

music.value = PlayerPrefs.GetFloat("musicVolume");

setVolume();

}

}

Vcam:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

public class Vcam : MonoBehaviour

{

[SerializeField] private float tankfollowspeed;

[SerializeField] private float X\_Offset;

[SerializeField] private float Y\_Offset;

[SerializeField] private Transform vcamera;

private void Update()

{

Vector3 newPosition = new Vector3(vcamera.position.x - X\_Offset, vcamera.position.y - Y\_Offset, -10f);

transform.position = Vector3.Slerp(transform.position, newPosition, tankfollowspeed \* Time.deltaTime);

}

}

sceneChanger:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

using UnityEngine.SceneManagement;

public class sceneChanger : MonoBehaviour

{

public void LoadScene(string scene) {

SceneManager.LoadScene(scene);

}

}

PlayerTank:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

using UnityEngine.InputSystem;

public class PlayerTank : MonoBehaviour

{

[SerializeField] private float tankspeed;

[SerializeField] private float rotateTank;

private Rigidbody2D tankrigidbody;

private Vector2 tankmovementInput;

private void Awake()

{

tankrigidbody = GetComponent<Rigidbody2D>();

}

private void FixedUpdate()

{

tankrigidbody.velocity = tankmovementInput \* tankspeed;

tankrotation();

}

private void tankrotation() {

if(tankmovementInput != Vector2.zero){

Quaternion target = Quaternion.LookRotation(transform.forward, tankmovementInput);

Quaternion rotation = Quaternion.RotateTowards(transform.rotation, target, rotateTank \* Time.deltaTime);

tankrigidbody.MoveRotation(rotation);

}

}

private void OnMove(InputValue inputValue) {

tankmovementInput = inputValue.Get<Vector2>();

}

}

PlayerBulletS8:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

using UnityEngine.SceneManagement;

public class PlayerBulletS8 : MonoBehaviour

{

bool enemy1HasBeenDestroyed = false;

private void OnTriggerEnter2D(Collider2D bulletcollision) {

if (bulletcollision.gameObject.CompareTag("gameObject")) {

Destroy(bulletcollision.gameObject);

Destroy(gameObject);

enemy1HasBeenDestroyed = true;

}

if(enemy1HasBeenDestroyed == true) {

SceneManager.LoadScene("Scene 9");

}

}

}

PlayerBulletS7:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

using UnityEngine.SceneManagement;

public class PlayerBulletS7 : MonoBehaviour

{

bool enemy1HasBeenDestroyed = false;

private void OnTriggerEnter2D(Collider2D bulletcollision) {

if (bulletcollision.gameObject.CompareTag("gameObject")) {

Destroy(bulletcollision.gameObject);

Destroy(gameObject);

enemy1HasBeenDestroyed = true;

}

if(enemy1HasBeenDestroyed == true) {

SceneManager.LoadScene("Scene 8");

}

}

}

PlayerBulletS6:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

using UnityEngine.SceneManagement;

public class PlayerBulletS6 : MonoBehaviour

{

bool enemy1HasBeenDestroyed = false;

private void OnTriggerEnter2D(Collider2D bulletcollision) {

if (bulletcollision.gameObject.CompareTag("gameObject")) {

Destroy(bulletcollision.gameObject);

Destroy(gameObject);

enemy1HasBeenDestroyed = true;

}

if(enemy1HasBeenDestroyed == true) {

SceneManager.LoadScene("Scene 7");

}

}

}

PlayerBulletFire:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

using UnityEngine.InputSystem;

public class PlayerBulletFire : MonoBehaviour

{

[SerializeField] private GameObject bullets;

[SerializeField] private float bulletspeed;

[SerializeField] private float bulletWaitTime;

[SerializeField] private Transform gunOffset;

private bool rapidFire;

private bool fireSingleBullet;

private float timeOfBulletFired;

private void Update()

{

if(rapidFire == true || fireSingleBullet == true) {

float timeAfterBullet = Time.time - timeOfBulletFired;

if(timeAfterBullet >= bulletWaitTime) {

FireBullet();

}

timeOfBulletFired = Time.time;

}

}

private void FireBullet() {

GameObject bullet = Instantiate(bullets, gunOffset.position, transform.rotation);

Rigidbody2D bulletrigidbody = bullet.GetComponent<Rigidbody2D>();

bulletrigidbody.velocity = bulletspeed \* transform.up;

}

private void OnFire(InputValue inputValue) {

rapidFire = inputValue.isPressed;

}

}

PlayerBullet:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

using UnityEngine.SceneManagement;

public class PlayerBullet : MonoBehaviour

{

bool enemy1HasBeenDestroyed = false;

private void OnTriggerEnter2D(Collider2D bulletcollision) {

if (bulletcollision.gameObject.CompareTag("gameObject")) {

Destroy(bulletcollision.gameObject);

Destroy(gameObject);

enemy1HasBeenDestroyed = true;

}

if(enemy1HasBeenDestroyed == true) {

SceneManager.LoadScene("Scene 6");

}

}

}

Pause:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

using UnityEngine.SceneManagement;

public class pause : MonoBehaviour

{

public GameObject PausePanel;

public void Pause() {

PausePanel.SetActive(true);

Time.timeScale = 0;

}

public void Continue() {

PausePanel.SetActive(false);

Time.timeScale = 1;

}

public void Quit() {

SceneManager.LoadScene("Scene 1");

}

}

mainMenu:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

using UnityEngine.SceneManagement;

public class mainMenu : MonoBehaviour

{

public void PlayGame() {

SceneManager.LoadScene("Scene 5");

}

public void OptionsDisplay() {

SceneManager.LoadScene("Scene 3");

}

public void QuitGame() {

Application.Quit();

}

}

EnemyTankAI:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

public class EnemyTankAI : MonoBehaviour

{

public bool playerAwareness {

get;

private set;

}

public Vector2 AIdirectionToPlayer {

get;

private set;

}

[SerializeField] private float distanceToPlayer;

private Transform player;

// Start is called before the first frame update

void Start()

{

player = FindObjectOfType<PlayerTank>().transform;

}

// Update is called once per frame

void Update()

{

Vector2 enemyToPlayer = player.position - transform.position;

AIdirectionToPlayer = enemyToPlayer.normalized;

if(enemyToPlayer.magnitude <= distanceToPlayer) {

playerAwareness = true;

} else {

playerAwareness = false;

}

}

}

EnemyTank:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

public class EnemyTank : MonoBehaviour

{

[SerializeField] private float tankspeed;

[SerializeField] private float rotateTank;

private Rigidbody2D tankrigidbody;

private EnemyTankAI enemyTankAI;

private Vector2 target;

private void Awake()

{

tankrigidbody = GetComponent<Rigidbody2D>();

enemyTankAI = GetComponent<EnemyTankAI>();

}

private void FixedUpdate()

{

UpdateTarget();

targetRotation();

setVelocity();

}

private void UpdateTarget() {

if(enemyTankAI.playerAwareness) {

target = enemyTankAI.AIdirectionToPlayer;

} else {

target = Vector2.zero;

}

}

private void targetRotation() {

if(target == Vector2.zero) {

return;

}

Quaternion rotateTarget = Quaternion.LookRotation(transform.forward, target);

Quaternion rotation = Quaternion.RotateTowards(transform.rotation, rotateTarget, rotateTank \* Time.deltaTime);

tankrigidbody.SetRotation(rotation);

}

private void setVelocity() {

if(target == Vector2.zero) {

tankrigidbody.velocity = Vector2.zero;

} else {

tankrigidbody.velocity = transform.up \* tankspeed;

}

}

}

EnemyBulletFire:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

using UnityEngine.InputSystem;

public class EnemyBulletFire : MonoBehaviour

{

[SerializeField] private GameObject bullets;

[SerializeField] private float bulletspeed;

[SerializeField] private float bulletWaitTime;

[SerializeField] private Transform gunOffset;

private bool rapidFire = true;

private float timeOfBulletFired;

private void Update()

{

for (int i=0; i<1000; i++) {

if(rapidFire == true) {

float timeAfterBullet = Time.time - timeOfBulletFired;

if(timeAfterBullet >= bulletWaitTime) {

FireBullet();

}

timeOfBulletFired = Time.time;

}

}

}

private void FireBullet() {

GameObject bullet = Instantiate(bullets, gunOffset.position, transform.rotation);

Rigidbody2D bulletrigidbody = bullet.GetComponent<Rigidbody2D>();

bulletrigidbody.velocity = bulletspeed \* transform.up;

}

}

Bullet:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

using UnityEngine.SceneManagement;

public class Bullet : MonoBehaviour

{

private void OnTriggerEnter2D(Collider2D bulletcollision) {

if (bulletcollision.gameObject.CompareTag("Player")) {

Destroy(bulletcollision.gameObject);

Destroy(gameObject);

SceneManager.LoadScene("Scene 10");

}

}

}

References:

Some code was originally from Solo Game Dev, Ketra Games and Rehope Games. Modifications by Kevin Kiely.

Sound was created by Everet Almond.