Game Engines

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Networking

Vo verzii s VS17 je UNet, ktorý je už deprecated



Vyjdeme z projektu Ethan – ver5.

Abstraktný vstup

Abstrakcia nad joystickmi, šípkami, ... Input.GetAxis(name) vracia -1.0 .. 1.0

```
void Update () {
    float forward = Input.GetAxis("Vertical");
    float turn = Input.GetAxis("Horizontal");
    if (forward < 0) forward = 0;
    anim.SetFloat("Forward", forward);
    anim.SetFloat("Turn", turn);
}</pre>
```

Cross platform Input Manager

Slúži na ovládanie herných objektov cez sieť

using UnityStandardAssets.CrossPlatformInput;

miesto:

Input.GetAxis("Vertical")

použijeme:

CrossPlatformInputManager.GetAxis("Vertical")

Funguje to rovnako, ale tým pádom je objekt schopný prijať vstup nielen z lokálnej ale aj vzdialenej klávesnice

Network Identity

Pridáme komponet Network identity:



Network Transfrom

Pridáme komponet ktorý umožňuje sieťovú synchronizáciu transform-ov vo všetkých inštanciách hry:



Network Manager

Vytvára sa trochu zvláštne: v hierarchy window vytvoríme empty objekt a premenujeme ho na "Network Manager"

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Network Manager

Objektu "Network Manager" pridáme komponenty "NetworkManager" a "NetworkManagerHUD"

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Z Ethana v scéne urobíme Prefab (z Hierarchy windows ho stiahneme do Assetov)

Vymažeme ho zo scény.

Nastavíme v Network Manageri Player-a

Network Manager



Network Manager

Následkom toho pri spustení hry bude ponúknuté či hra beží ako host alebo ako client. Prvý musí byť host.

Kým nezvolíme, žiadny avatar v hre nie je



Build

Keď teraz chceme spustiť hru raz ako host a raz ako client, najjednoduchšie je zbuildovať ju do inštalačného balíka, spustiť host v Unity a cez exe v balíku spustiť client-a

V Build Settings / Player Settings / Resolution musíme akurát vypnúť Full screen mode



Build (uložíme niekde mimo projekt do deployment directory)

Run

Spustíme hru v prostredí Unity a zvolíme Host

Tým pádom sa objaví aj avatar. Urobme s ním jeden krok dopredu. 🔇 Unity 2018.2.8f1 Personal (64bit) - scena.unity - Ethan - net - PC, Mac & Linux Standalone <DX11>

File Edit Assets GameObject Component Mobile Input Window Help



Spustíme zbuidované Ethan.exe v deplyment directory, dáme Play a zvolíme Client

Tým pádom v oboch scénach spriahnutých cez sieť budú dva avatary a z obidvoch hýbeme obomi

Keď dáme Stop v jednej druhej, zmiznú



Ethan Cor	figuration				×
Graphics	Input				
	Screen	1024 x 768	\sim	✓ Windowed	
	Graphics quality	Ultra	\sim		
	Select monitor	Display 1	\sim		
				Play!	Quit

SetupLocal Player

Prefabu EthanNet vypneme skript RunOrStay A pridáme mu skript SetupLocalPlayer:

```
using UnityEngine.Networking;
public class SetupLocalPlayer : NetworkBehaviour {
    void Start () {
        if (!isLocalPlayer)
        {
            GetComponent<RunOrStay>().enabled = false;
        }
    }
```

}

Zbuildujeme, spustíme oba a teraz už ovláda každý hráč len toho svojho

Synchronizácia animácii

Nestačí synchronizovať transform avatara, musíme synchronizovať aj jeho animačný stav.

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Rôzne pointy

- Hráči by sa mali objavovať na rôznych miestach
- Na to stačí pridať prefabu playera



a zvoliť random alebo round robin

alebo aspoň skriptom posunúť náhodne avatara

Synchronizácia scény

Synchronizovať možno nielen playera ale aj objekty zo scény. Stačí ich vyrobiť ako inštancie prefabov, ktoré majú network identity a zaregistrovať ich ako spawnable prefab v Network manageri



Spustenie na rôznych uzloch siete

Defaultný port Unity je 7777

V teminálke však tento port nie je povolený na firewalle, povolený je 7171

Zbuildujeme

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Network Port	7171		
Server Bind to IP			
Script CRC Check			
Max Delay	0.01	 	
Max Buffered Packets	16		
Packet Fragmentation			
MatchMaker Host URI	mm.unet.unity3d.com	 	
MatchMaker Port	443	 	
Match Name	default	_	
Maximum Match Size	4	_	

Spustenie na rôznych uzloch siete

V cmd cez ipconfig si zistíme IP adresu svojho stroja. Na ňom v Unity spustíme hru a zvolíme Host. Urobíme s avatarom krok dopredu

Obsah deployment directory prenesieme na iný počítač v sieti

Na ňom spustíme exe a pred zvolením Client, nahradíme "localhost" za zistenú IP adresu

Následne by mala hra fungovať cez sieť.



C Ethan

HUD = heads-up display

Sychronizácia premenných

UNet podporuje synchronizáciu na úrovni buffrov niekoľkých základných typov:

- SyncListString
- SyncListFloat
- SyncListInt
- SyncListUInt
- SyncListBool

Tieto získate zámenou MonoBehaviour za jeho odvodeninu NetworkBehavior

možno si definovať aj vlastnú synchronizovanú štruktúru pomocu SyncListStruct

```
public class MyScript : NetworkBehaviour
    public struct Buf
    {
        public int id;
        public string name;
        public float timer;
    };
    public class TestBufs : SyncListStruct<Buf> {}
    TestBufs m bufs = new TestBufs();
    void BufChanged(Operation op, int itemIndex)
    {
        Debug.Log("buf changed:" + op);
    }
    void Start()
    {
        m_bufs.Callback = BufChanged;
    }
```

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