UNIVERSIDAD TECNOLÓGICA DE SANTIAGO (UTESA)

SISTEMA CORPORATIVO

Facultad de Arquitectura e Ingeniería, carrera de Ingeniería en Sistemas Computacionales

Programación de Videojuegos

Capítulo 3 – Proyecto Final

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Presentado por:

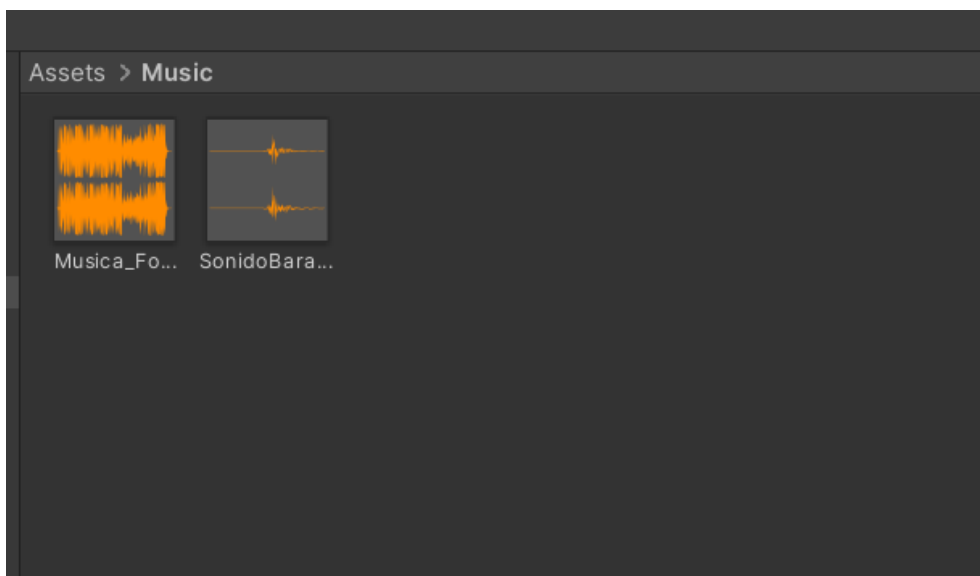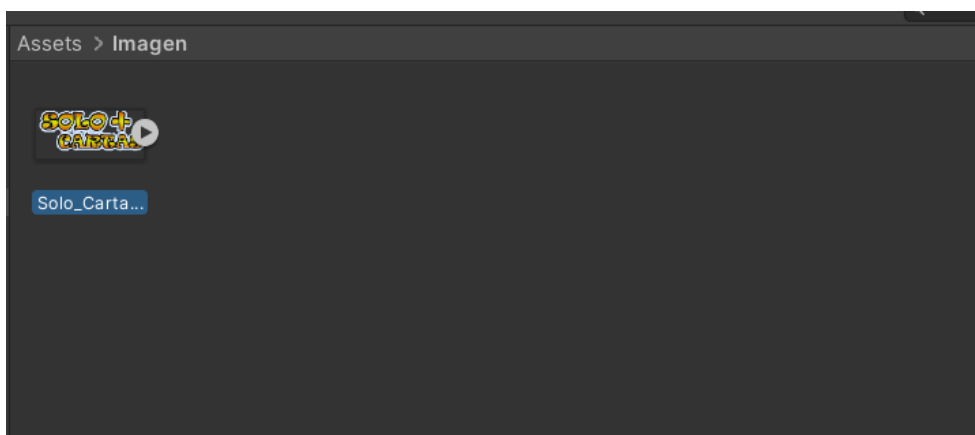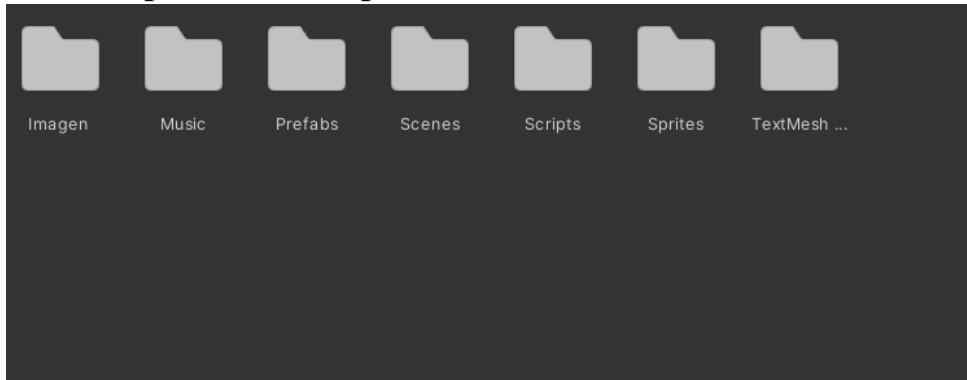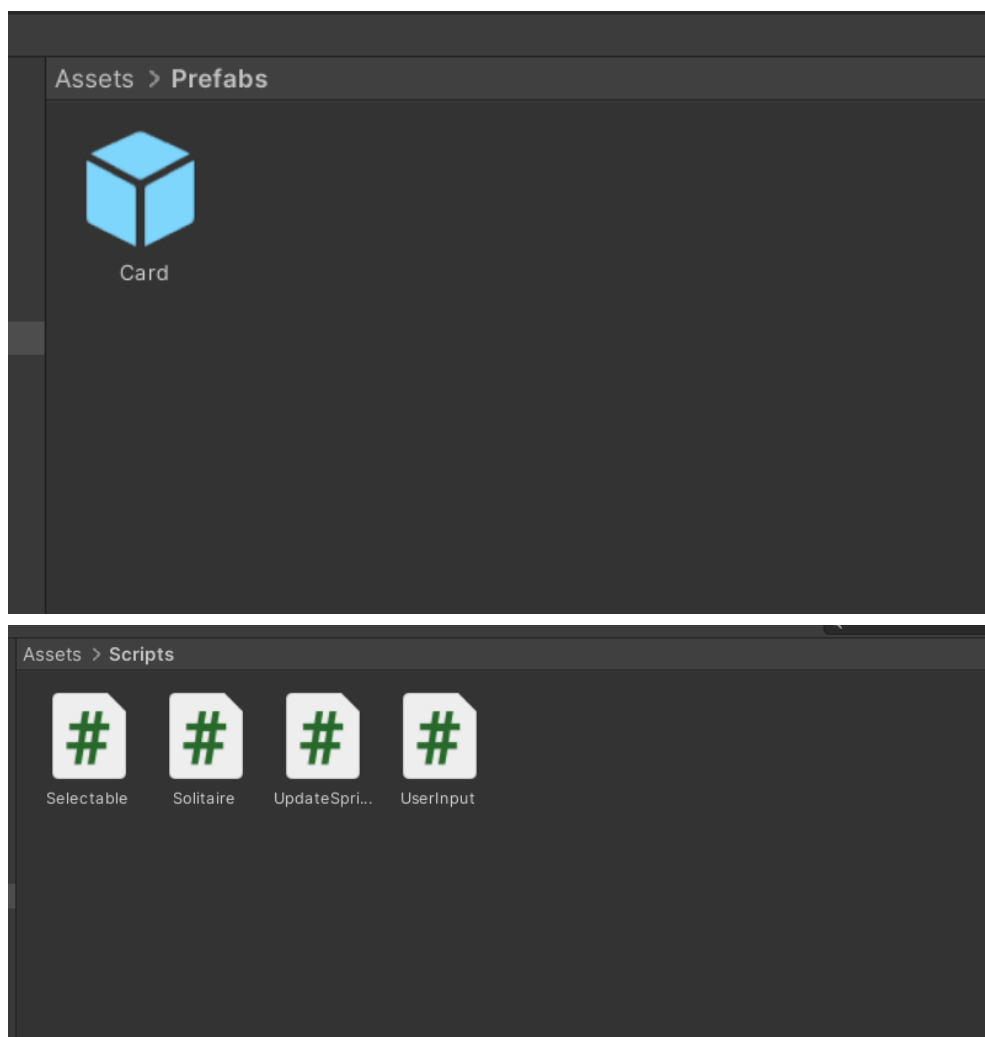|	
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3.1 Capturas de la Aplicación Scripts, Sprites, Prefabs e imágenes)

- **Capturas de la aplicación**

Descripción de scripts:

- **Selectable:** En esta parte se hacen todas las referencias a las ejecuciones de usabilidad del juego, partiendo desde el área donde se hace la acción mediante el script UserInput.
- **Solitaire:** Este script abarca toda la lógica del jeugo con sus atributos generales, reglas, selecciones de acciones, mismas que se ejecutan conforme el jugador va tomando ciertas decisiones a lo largo del gameplay.
- **UpdateSprite:** Esta parte se encarga de actualizar la interfaz de usuario, brindando todas las salidas gráficas de actualizaciones para ir avanzando el la partida.
- **UserInput:** Este script abarca toda la parte de las interacciones del usuario, con el juego. Vela por ver las ejecuciones dadas por el mismo, dependiendo lo que este decida.

Selectable script:

```csharp
using System.Collections;
using System.Collections.Generic;
using UnityEngine;

public class Selectable : MonoBehaviour
{
    public bool top = false;
    public string suit;
    public int value;
    public int row;
    public bool faceUp = false;
    public bool inDeckPile = false;


    private string valueString;

    // Start is called before the first frame update
    void Start()
    {
        if(CompareTag("Card"))
        {
            suit = transform.name[0].ToString();

            for (int i = 1; i < transform.name.Length; i++)
            {
            char c = transform.name[i];
            valueString = valueString + c.ToString();
            }

            if(valueString == "A")
            {
                value =1 ;
```

```
        }
        if(valueString == "2")
        {
            value = 2;
        }
        if(valueString == "3")
        {
            value =3 ;
        }
        if(valueString == "4")
        {
            value = 4;
        }
        if(valueString == "5")
        {
            value = 5;
        }
        if(valueString == "6")
        {
            value = 6;
        }
        if(valueString == "7")
        {
            value = 7;
        }
        if(valueString == "8")
        {
            value = 8;
        }
        if(valueString == "9")
        {
            value = 9;
        }
        if(valueString == "10")
```

```csharp
            {
                value = 10;
            }
            if(valueString == "J")
            {
                value = 11;
            }
            if(valueString == "Q")
            {
                value = 12;
            }
            if(valueString == "K")
            {
                value = 13;
            }


        }


    }


    // Update is called once per frame
    void Update()
    {

    }
}
```

Solitaire script:

```csharp
using System.Collections;
using System.Collections.Generic;
```

```csharp
using UnityEngine;
using System.Linq;
using TMPro;

public class Solitaire : MonoBehaviour
{
    public TextMeshProUGUI temporizador;

    public Sprite[] cardFaces;
    public GameObject cardPrefab;
    public GameObject deckButton;
    public GameObject[] bottomPos;
    public GameObject[] topPos;
    public List<string> tripsOnDisplay = new
List<string>();
    public List<List<string>> deckTrips = new
List<List<string>>();


    public static string[] suits = new string[] { "C",
"D", "H", "S" };
    public static string[] values = new string[] { "A",
"2", "3", "4", "5", "6", "7", "8", "9", "10", "J", "Q",
"K" };
    public List<string>[] bottoms;
    public List<string>[] tops;

    private List<string> bottom0 = new List<string>();
    private List<string> bottom1 = new List<string>();
    private List<string> bottom2 = new List<string>();
    private List<string> bottom3 = new List<string>();
    private List<string> bottom4 = new List<string>();
    private List<string> bottom5 = new List<string>();
    private List<string> bottom6 = new List<string>();
```

```csharp
    public List<string> deck;
    public List<string> discardPile = new
List<string>();
    private int trips;
    private int tripsRemainder;
    private int deckLocation;
    private float TimeT=0;



    // Start is called before the first frame update
    void Start()
    {
        bottoms = new List<string>[] { bottom0,
bottom1, bottom2, bottom3, bottom4, bottom5, bottom6 };
        PlayCards();
    }


    // Update is called once per frame
    void Update()
    {
        TimeT+=Time.deltaTime;

        temporizador.text = ""+ TimeT.ToString("0");
    }


    public void PlayCards()
    {
        deck = GenerateDeck();
        Shuffle(deck);

        foreach(string card in deck)
```

```csharp
        {
            print(card);
        }


        SolitaireSort();
        StartCoroutine(SolitaireDeal());
        SortDeckIntoTrips();
    }


    public static List<string> GenerateDeck()
    {
        List<string> newDeck = new List<string>();
        foreach (string s in suits)
        {
            foreach (string v in values)
            {
                newDeck.Add(s + v);
            }
        }
        return newDeck;
    }


    void Shuffle<T>(List<T> list)
    {
        System.Random random = new System.Random();
        int n = list.Count;
        while (n > 1)
        {
            int k = random.Next(n);
            n--;
            T temp = list[k];
            list[k] = list[n];
            list[n] = temp;
        }
```

```csharp
    }

    IEnumerator SolitaireDeal()
    {
        for(int i = 0; i < 7; i++)
        {

            float yOffset = 0;
            float zOffset = 0.03f;
            foreach(string card in bottoms[i])
            {
                yield return new WaitForSeconds(0.01f);
                GameObject newCard =
Instantiate(cardPrefab, new
Vector3(bottomPos[i].transform.position.x,
bottomPos[i].transform.position.y - yOffset,
bottomPos[i].transform.position.z - zOffset),
Quaternion.identity, bottomPos[i].transform);
                newCard.name = card;
                newCard.GetComponent<Selectable>().row
= i;
                if(card == bottoms[i][bottoms[i].Count
- 1])
                {

newCard.GetComponent<Selectable>().faceUp = true;
                }


                yOffset = yOffset + 0.3f;
                zOffset = zOffset + 0.03f;
                discardPile.Add(card);
            }
        }
```

```csharp
            foreach(string card in discardPile)
        {
            if(deck.Contains(card))
            {
                deck.Remove(card);
            }
        }
        discardPile.Clear();
    }


    void SolitaireSort()
    {
        for(int i = 0; i < 7; i++)
        {
          for(int j = i; j < 7; j++)
          {
              bottoms[j].Add(deck.Last<string>());
              deck.RemoveAt(deck.Count - 1);
          }
        }
    }


public void SortDeckIntoTrips()
{
        trips = deck.Count / 3;
        tripsRemainder = deck.Count % 3;
        deckTrips.Clear();

        int modifier = 0;
        for(int i = 0; i < trips; i++)
        {
```

```csharp
                List<string> myTrips = new List<string>();
                for(int j = 0; j < 3; j++)
                {
                    myTrips.Add(deck[j + modifier]);
                }
                deckTrips.Add(myTrips);
                modifier = modifier + 3;
            }


            if(tripsRemainder!=0)
            {


                List<string> myRemainders = new
List<string>();
                modifier = 0;


                for(int k=0; k < tripsRemainder; k++)
                {


                    myRemainders.Add(deck[deck.Count -
tripsRemainder + modifier]);
                    modifier++;
                }


                deckTrips.Add(myRemainders);
                trips++;
            }
            deckLocation = 0;
        }


    public void DealFromDeck()
    {
```

```csharp
        // add remainings card to discard pile
        foreach(Transform child in
deckButton.transform)
        {
          if(child.CompareTag("Card"))
          {
            deck.Remove(child.name);
            discardPile.Add(child.name);
            Destroy(child.gameObject);
          }
        }


         if(deckLocation < trips)
         {
            // draw 3 new cards
            tripsOnDisplay.Clear();
            float xoffset = 2.5f;
            float zoffset = -0.2f;
            foreach(string card in
deckTrips[deckLocation])
            {
              GameObject newTopCard =
Instantiate(cardPrefab, new
Vector3(deckButton.transform.position.x + xoffset,
deckButton.transform.position.y,deckButton.transform.po
sition.z + zoffset), Quaternion.identity,
deckButton.transform);
              xoffset = xoffset + 0.5f;
              zoffset = zoffset - 0.2f;
              newTopCard.name = card;
              tripsOnDisplay.Add(card);
```

```csharp
newTopCard.GetComponent<Selectable>().faceUp = true;

newTopCard.GetComponent<Selectable>().inDeckPile =
true;

                }
                deckLocation++;
            }
            else
            {

                //RestackTopDeck
                RestackTopDeck();
            }


        }


    void RestackTopDeck()
    {
        foreach(string card in discardPile)
      {
          deck.Add(card);
      }
      discardPile.Clear();
      SortDeckIntoTrips();

    }


}
```

UpdateSprite:

```csharp
using System.Collections;
using System.Collections.Generic;
using UnityEngine;

public class UpdateSprite : MonoBehaviour
{
    public Sprite cardFace;
    public Sprite cardBack;
    private SpriteRenderer spriteRenderer;
    private Selectable selectable;
    private Solitaire solitaire;
    private UserInput userInput;



    // Start is called before the first frame update
    void Start()
    {
        List<string> deck = Solitaire.GenerateDeck();
        solitaire = FindObjectOfType<Solitaire>();
        userInput = FindObjectOfType<UserInput>();

        int i = 0;
        foreach (string card in deck)
        {
            if (this.name == card)
            {
                cardFace = solitaire.cardFaces[i];
                break;
            }
            i++;
        }
```

```csharp
        spriteRenderer =
GetComponent<SpriteRenderer>();
        selectable = GetComponent<Selectable>();
    }


    // Update is called once per frame
    void Update()
    {

        if (selectable.faceUp == true)
        {
            spriteRenderer.sprite = cardFace;
        }
        else
        {
            spriteRenderer.sprite = cardBack;
        }

        if(userInput.slot1)
        {
            if(name == userInput.slot1.name)
            {
                spriteRenderer.color = Color.yellow;
            }
            else
            {
                spriteRenderer.color = Color.white;
            }


        }


    }
}
```

UserInput:

```csharp
using System.Collections;
using System.Collections.Generic;
using UnityEngine;

public class UserInput : MonoBehaviour
{

    public AudioSource AudioSource;
    public GameObject slot1;
    private Solitaire solitaire;
    // Start is called before the first frame update
    void Start()
    {
        solitaire = FindObjectOfType<Solitaire>();
        slot1 = this.gameObject;
    }


    // Update is called once per frame
    void Update()
    {
        GetMouseClick();
    }


    void GetMouseClick(){

        if(Input.GetMouseButtonDown(0)){

            Vector3 mousePosition =
Camera.main.ScreenToWorldPoint(new
Vector3(Input.mousePosition.x, Input.mousePosition.y,
-10));
```

```csharp
            RaycastHit2D hit =
Physics2D.Raycast(Camera.main.ScreenToWorldPoint(Input.
mousePosition), Vector2.zero);


        if(hit){
            // what has been hit? Deck//Card/
Emptyslot..
            if(hit.collider.CompareTag("Deck")){
            //clicked deck
            Deck();
            }
            else
if(hit.collider.CompareTag("Card")){
            //clicked Card
                Card(hit.collider.gameObject);
            }
            else
if(hit.collider.CompareTag("Top")){
            //clicked Top
                Top();
            }
            else
if(hit.collider.CompareTag("Bottom")){
            //clicked Bottom
                Bottom();
            }

        }
    }
    }


    void Deck()
    {
```

```csharp
        //Deck click actions
        print("clicked on Deck");
        AudioSource.Play();
        solitaire.DealFromDeck();
    }


    void Card(GameObject selected)
    {


        //Card click actions
        print("clicked on Card");

        if(slot1 == this.gameObject)
        {
            slot1 = selected;
        }
        else if(slot1 != selected)
        {

            if(Stackable(selected))
            {
                //Stackit
            }
            else
            {

              slot1 = selected;
            }


        }


    }


    void Top()
```

```csharp
        {
            //Top click actions
            print("clicked on Top");

        }

        void Bottom()
        {
            //Bottom click actions
            print("clicked on Bottom");

        }

    bool Stackable(GameObject selected)
    {
        Selectable s1 =
slot1.GetComponent<Selectable>();
        Selectable s2 =
selected.GetComponent<Selectable>();


        if(s2.top)
        {
            if (s1.suit == s2.suit || (s1.value == 1 &&
s2.suit == null))
            {
                if(s1.value == s2.value + 1)
                {

                    return true;

                }
            }
            else
```

```
        {
            return false;
        }
    }
    else
    {
        if(s1.value == s2.value - 1)
        {
            bool card1Red = true;
            bool card2Red = true;

            if (s1.suit == "C" || s1.suit == "S")
            {

             card1Red = false;

            }

            if (s2.suit == "C" || s2.suit == "S")
            {

             card2Red = false;

            }
            if(card1Red == card2Red)
            {
                print("Not stackable");
                return false;
            }
            else
            {
                print("Stackable");
                return true;
            }
```

```
        }

    }

    return false;

  }

}
```

3.2 Prototipos

Para este juego se hicieron prototipos de pruebas básicos, sin todas las reglas que incluye este en la vida real (física),

3.3 Perfiles de usuarios

El público objetivo del videojuego es para personas entre 10 años de edad en adelante. Personas con interés en sucesos históricos.Personas con interés en el género Beat 'Em Up.

3.4 Usabilidad

- **Controles:** Sólo se utilizará el mouse para jugar (Click izquierdo)

3.5 Test

3.6 Versiones de la aplicación