EECS 4471 ASSIGNMENT

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1. Link to Github

https://github.com/zhongziyin98/EECS4471_Project

5. Link to demo video

https://drive.google.com/open?id=1A6PHkSoo5XVHL6sUy8Aqra8zhf3ZFHy9
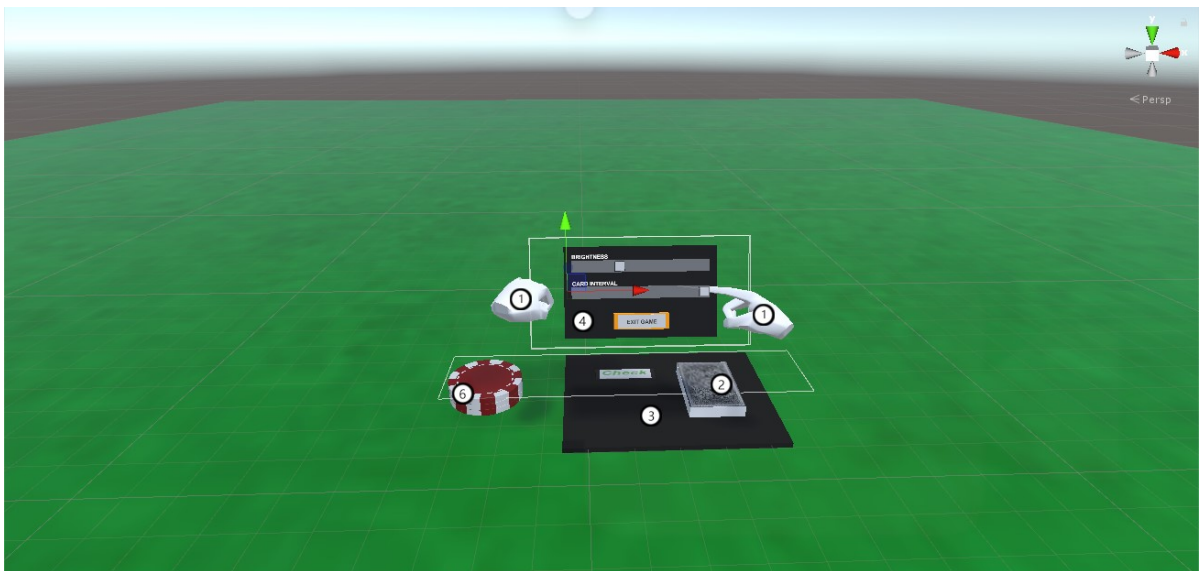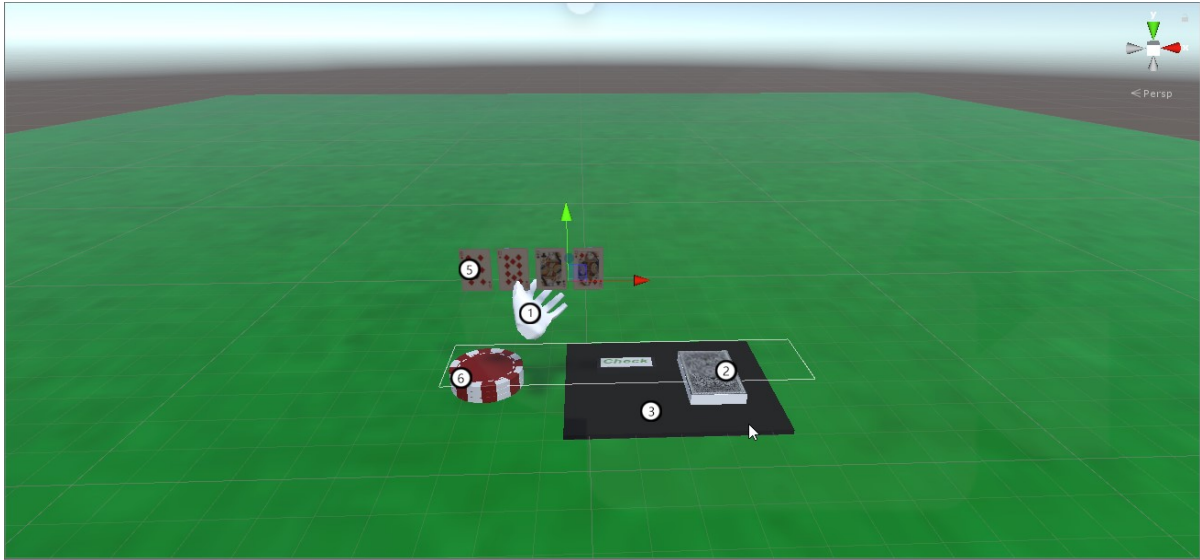
2. Usage of Card Game Interface

Components

(0) Game title

(0.1) Exploration button: Start game

(1) Player hands

(2) Deck

(3) Deck Panel

      (3.1) Check button: Tell your opponent to take their turn.

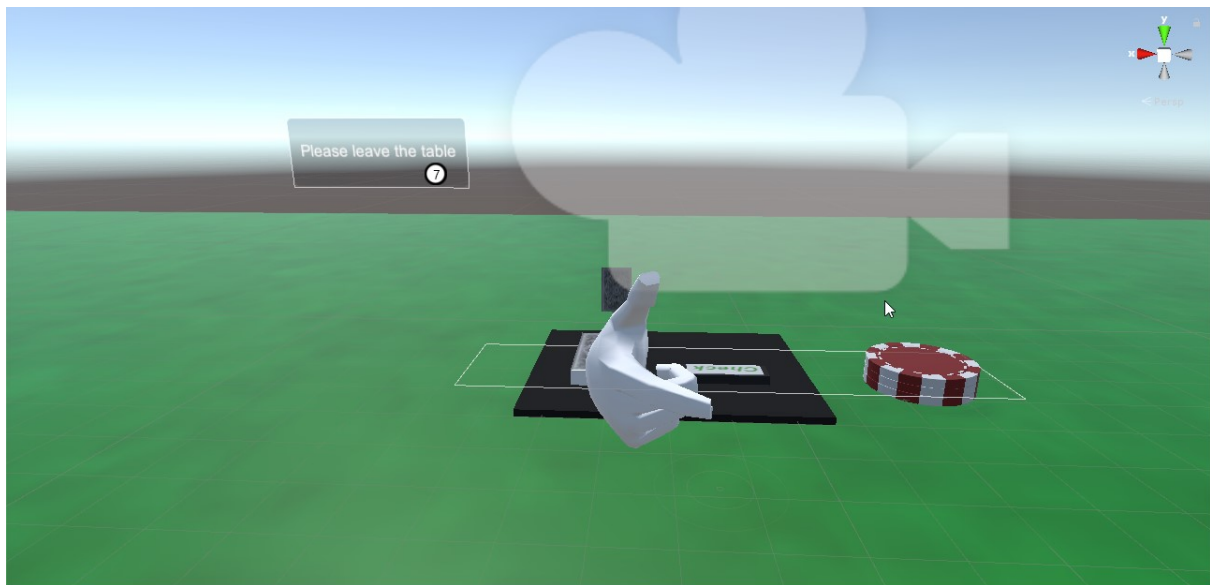(4) Hand Panel

      (4.1) Brightness slider: change the brightness of scene

      (4.2) Card Interval slider: change the distance between cards in hand

      (4.3) Exit Game button: go back to main menu

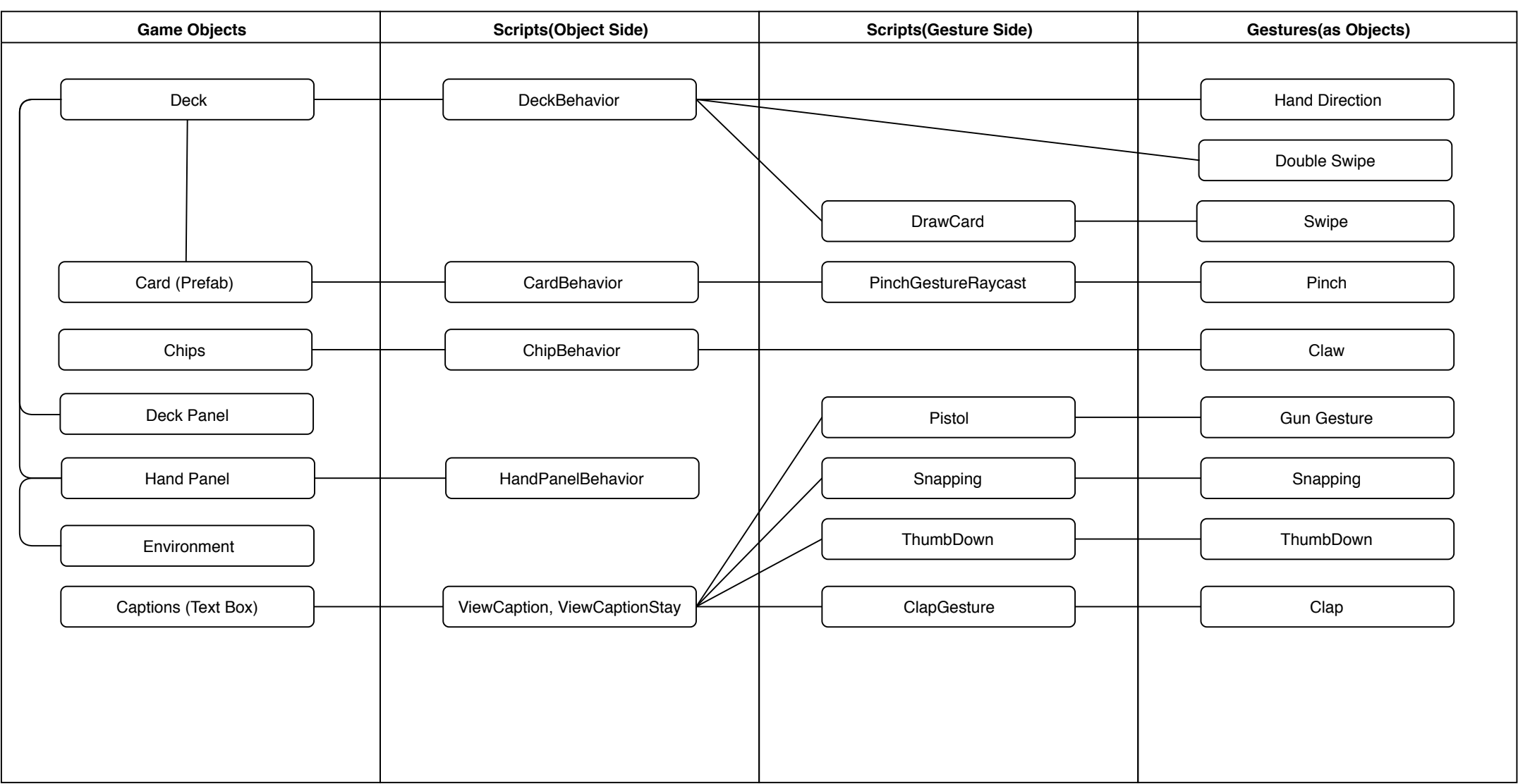(5) Cards

(6) Chips

(7) Text box (opponent's view)

Supported Gestures

Left hand:

(1) Place your left hand opened and upwards to show all cards in your hand

(2) Place your left hand closed (fist) and downwards to show the menu. Use right hand's index finger to interact directly.

Right hand:

(3) Pinch a card from anywhere (index finger pointing to card)

(4) Grab a chip (index finger's tip inside the chip object)

(5) Swipe inward on the deck to draw a card

(6) When showing the cards in left hand, snap (only thumb, index, middle finger extended and thumb is close to middle finger) to use black magic

(7) Thumb down to taunt (text UI)

(8) Clap to say gg

(9) Pistol gesture (finger and thumb extended) for threatening, rotate pistol along x axis to fire

Game Objects	Scripts(Object Side)	Scripts(Gesture Side)	Gestures(as Objects)
Deck	DeckBehavior		Hand Direction
			Double Swipe
		DrawCard	Swipe
Card (Prefab)	CardBehavior	PinchGestureRaycast	Pinch
Chips	ChipBehavior		Claw
Deck Panel		Pistol	Gun Gesture
Hand Panel	HandPanelBehavior	Snapping	Snapping
Environment		ThumbDown	ThumbDown
Captions (Text Box)	ViewCaption, ViewCaptionStay	ClapGesture	Clap

4. Descriptions and dependencies

Scripts (Object Side)

DeckBehavior

The behavioral script of Deck object. It holds information of all cards in deck and in hand. Not including cards in wild. It updates information of all cards in hand each frame.

DrawCard()	Initiate a Card object and add it to player's hand.
RenderCardPosition()	Calculate and set positions of all cards in hand.
RenderCardSize()	Calculate and set sizes of all cards in hand.
SetCardInterval()	Set the distance between two cards in hand.
HandToPinch(GameObject cc)	Remove the card from hand and set its status to pinched.
InitiateDeck()	Start a deck with 52 poker cards and shuffle it.
Shuffle()	Shuffle the deck.
SetTargetSize(float val)	Set sizes of all cards in hand.
BlackMagic(bool magic)	When there is a snap gesture, set a boolean to spin cards in hand and create a magic light.

Co-Authors: Ziyin Zhong, Zian Liu

CardBehavior

The behavioral script of Card prefab object. Does the framely computation of Card status.

SetScale(float val)	Set the scale of this Card object.
SetTexture(String name)	Set the texture of this card object. String name is from a predefined set of String in Deck.
SetRotation(Vector3 rot)	Set the rotation of this Card object.

Author: Ziyin Zhong.

ChipBehavior

The behavioral script of Chip object. Does the framely computation of Chip status. Also handles the collision with virtual hand.

GrabinStart(), GrabinEnd()	Event functions of Grab Chip gesture.

Co-Authors: Diane Bickram, Ziyin Zhong

HandPanelBehavior

The behavioral script of Hand Panel object. Does the framely computation of Panel status.

SetSize(float val)	Sets the size of the whole panel.

Author: Ziyin Zhong

ViewCaption

Sets a caption object within the scene as temporarily active for a specified amount of time (default is 2.5 seconds).

View()	Sets an object as active and resets time for next invocation.

Author: Diane Bickram

ViewCaptionStay

Sets a caption object within the scene as either active or inactive depending on the method called during a gesture state. Also modifies the position of the caption relative to the current hand position.

ViewStay()	Activates object and is used for the stay state of a gesture.
ViewEnd()	Deactivates object and is used for the end state of a gesture.

Author: Diane Bickram

Scripts (Gesture Side)

DrawCard

Detect the collision between deck and hand after an inward swipe gesture occurring. If the interaction happens, draw a card.

onTriggerEnter(),onTriggerExit(),	called if index finger's tip cube enters deck

Author: Zian Liu

PinchGestureRaycast

A modified version of the PinchGesture script provided in *The Essential Leap-Motion Gesture Detection* asset. Uses raycasting to interact with card objects while the pinch gesture is detected.

onGestureEnd()	Removes currently selected card from the pinched state, letting it go from the hand.
onGestureStay()	Casts a ray from the index finger while the pinch gesture is detected. When the ray hits a card, the card is in a pinched state and its position is modified relative to the current hand position.

Co-Authors: Diane Bickram, Ziyin Zhong, Zian Liu

Pistol

Script that detecting pistol gesture then activate a text UI

Detected()
Track if only index finger and thumb are extended. During pistol gesture, if right hand rotates along x axis over a certain degree then shoot a bullet.

Co-Authors: Zian Liu, Diane Bickram

Snapping

Detected()
If only thumb, index and middle fingers are extended and thumb has a small distance with middle finger, consider it as a snap.

Author: Zian Liu

ThumbDown

Script that detecting thumb down gesture then activate a text UI

Detected()
Track if only thumb finger is extended, and its direction is approximate downward.

Author: Zian Liu

Asset we retrieved from store:

The Essential Leap-Motion Gesture Detection

https://assetstore.unity.com/packages/tools/input-management/the-essential-leap-motion-gesture-detection-111791

Free Little Games Asset Pack

https://assetstore.unity.com/packages/3d/props/free-little-games-asset-pack-125089

Objectify: Highlight and Loot

https://assetstore.unity.com/packages/vfx/shaders/objectify-highlight-and-loot-22321