TEB1043- Object Oriented & Programming
MAY 2025

PROJECT DOCUMENTATION

LECTURER:
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Team Members:

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1	BAI JIAMING	24007821	Information Technology
2	PANG YIYANG	24006889	Information Technology
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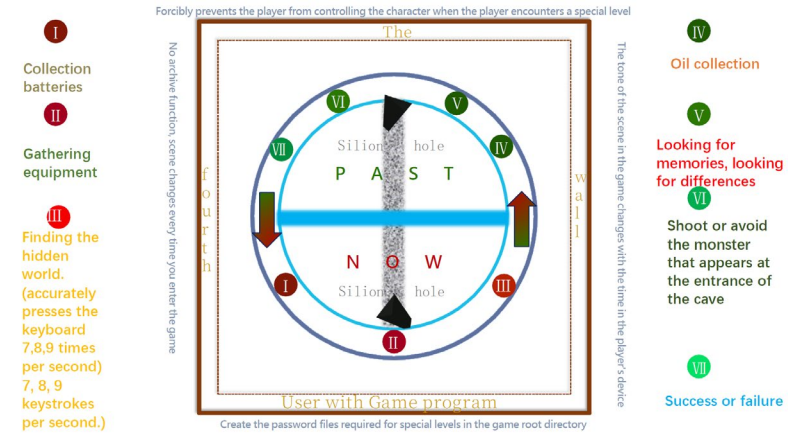
Project Description

Game Overview and Backstory



Design Concept*: In the current context where environmental crises are escalating, people often lack the sense of urgency and motivation for environmental protection actions. This work aims to evoke people's awe and sense of responsibility towards nature, guiding players to actively engage in environmental protection. Through the gaming experience, players will understand that humans and nature co -exist symbiotically. Only by adhering to the original aspiration of protecting nature and actively implementing environmental protection measures can we break the deadlock of environmental degradation and achieve sustainable development.*

Story Background*: Due to humanity's long -term over -exploitation and profligate use of natural resources, the Earth's resources are on the verge of depletion. As a member of the Time Action Team, the protagonist embarks on a journey to search for energy and oil and activate the "Time Hole" to travel back to the past. Along the way, the protagonist has toovercome numerous obstacles resulting from ecological collapse. Eventually, the desperate environmental situation of the future will be presented to humans in the past, ringing the alarm bell for environmental protection and urging people to cherish resources and safeguard the Earth's homeland.*

Game Features*: By setting up certain hints or special operation methods, the game attempts to break the "fourth wall" between users and the game program. This is designed to provide users with a brand-new gaming experience and help them gain a deeper reflection on the game's plot while playing.*

Gameplay Overview

Level 1: batteries switch on machine

The electricity is a massive energe to revival the earth in the future world.First,you need collection enough batteries that can switch machine.

Level 2: life base on water

The water still is a very important in human daily life,human can not live leave it.You need collection water and help human who shortage on water.

Level 3: Important currency

Gold always is a essential currency from ancient to today.But it very shortage in future world.You need bring these back to future.

Level 4: go back

Now,you collection all objects that needly in future world,it is time start timemachine go back to future.You find the switch of timemachine and start it.

Objective

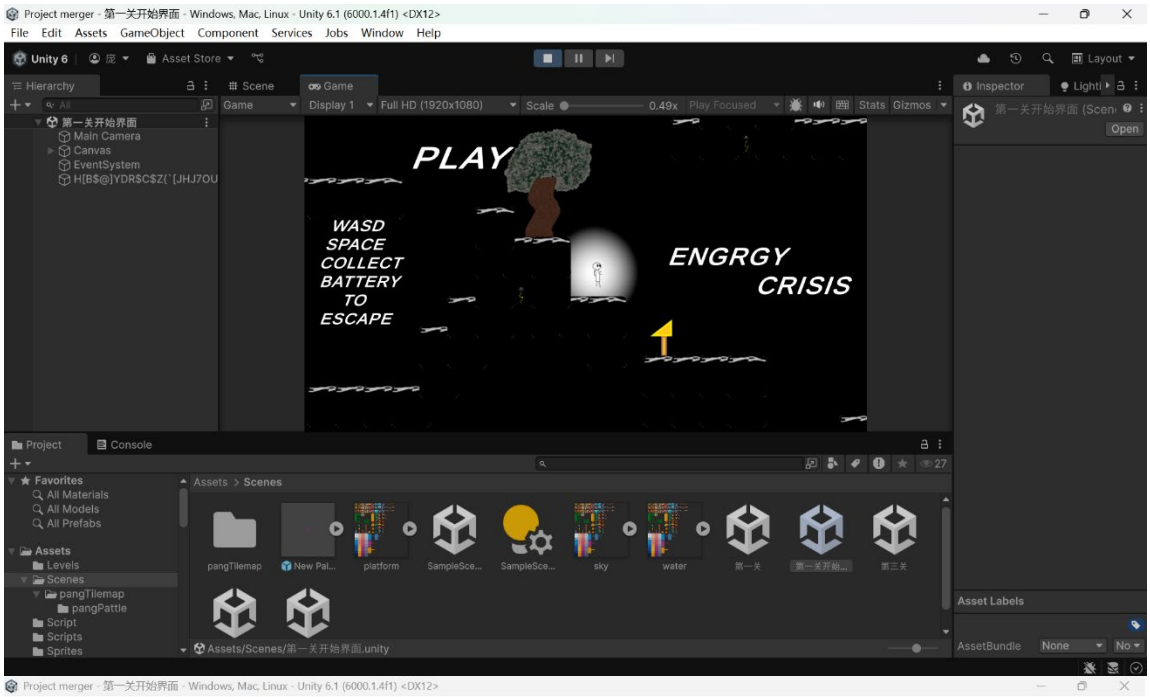
You need collection all objects in the game map and take them through all the game map,and find the switch of timemachine and go back to thr future.

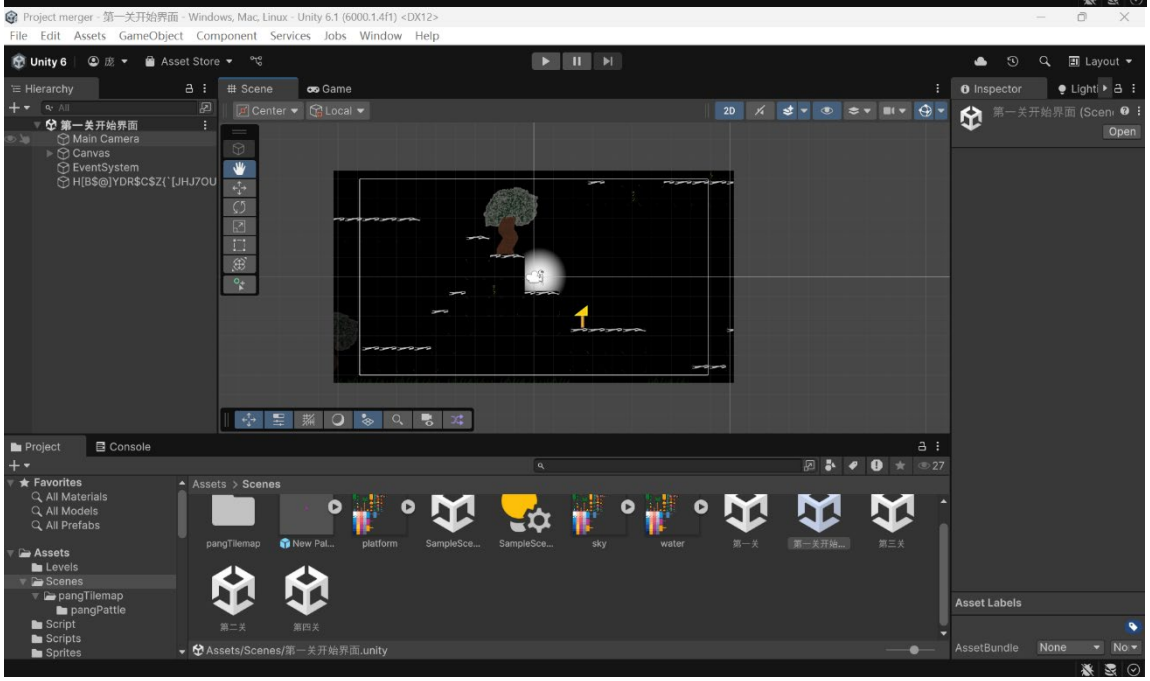
Team organization and contributions

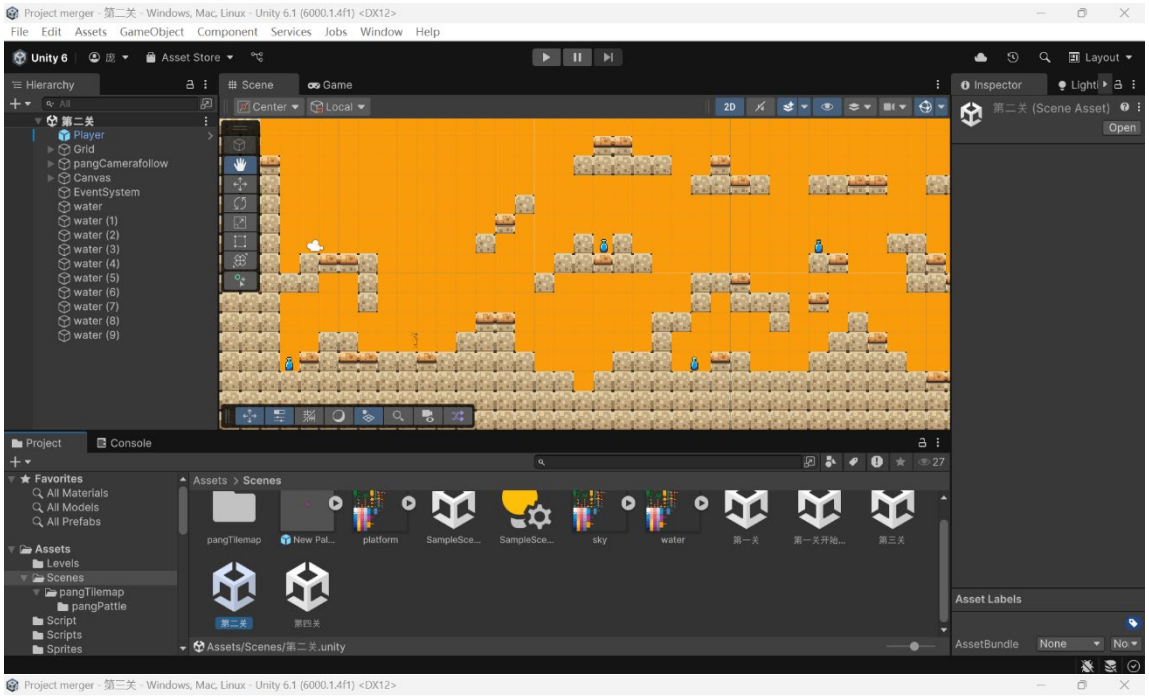
Name	Contribution
BAI JIAMING	Planning and designing the background and flow of the entire game, creating the start and end user interfaces, mapping and coding for the first level. Make final adjustments to the game. Recorded videos and uploaded them to YouTube. Completed UML
PANG YIYANG	Coordinated the full division of labour to map and code the second level. Make final adjustments to the game. Recorded videos and uploaded files for the entire game on github.
SONG XINGCHEN	Make final adjustments to the game. Help complete the maps for levels 1 and 2 Help with UML completion.

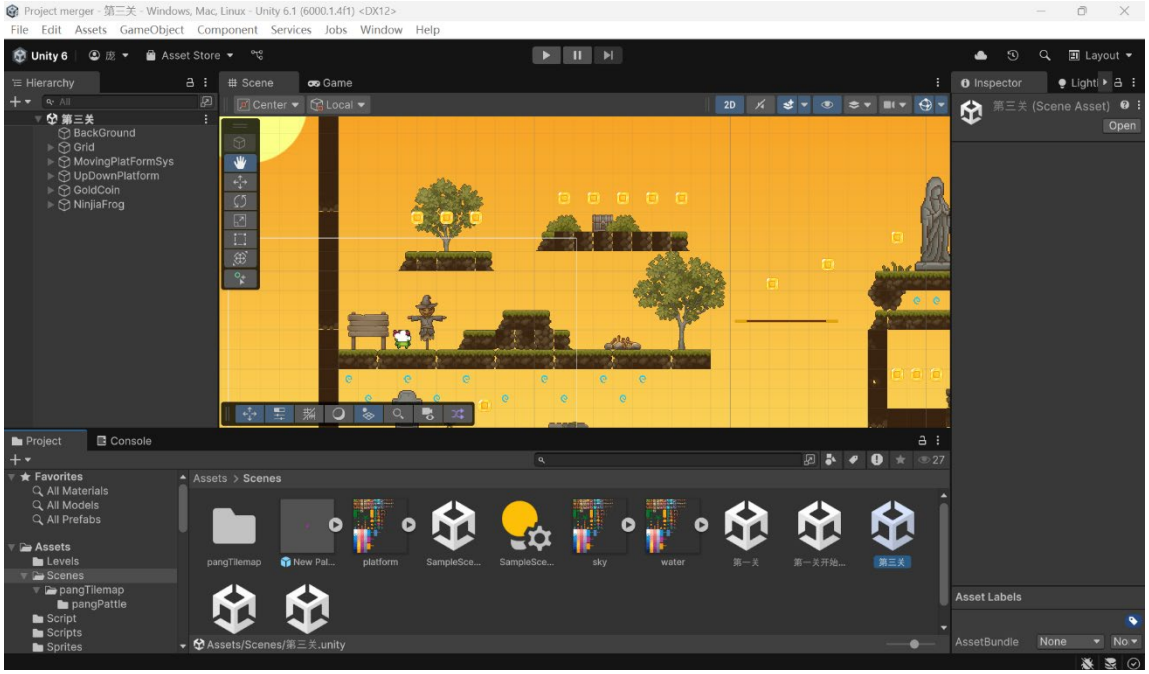
XU WEIKANG	Map and code the third level. Record video.
Ayman IsamEldinIbrahim AbuAgla	Map and code the fourth level. Record video.

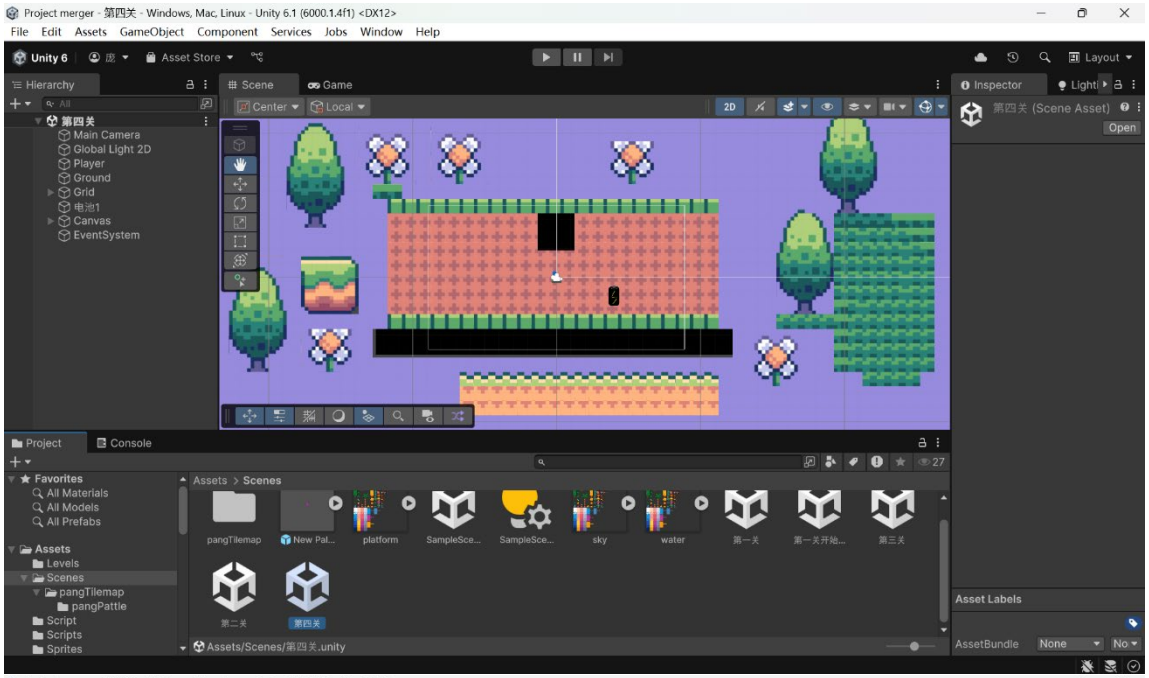
Screenshot

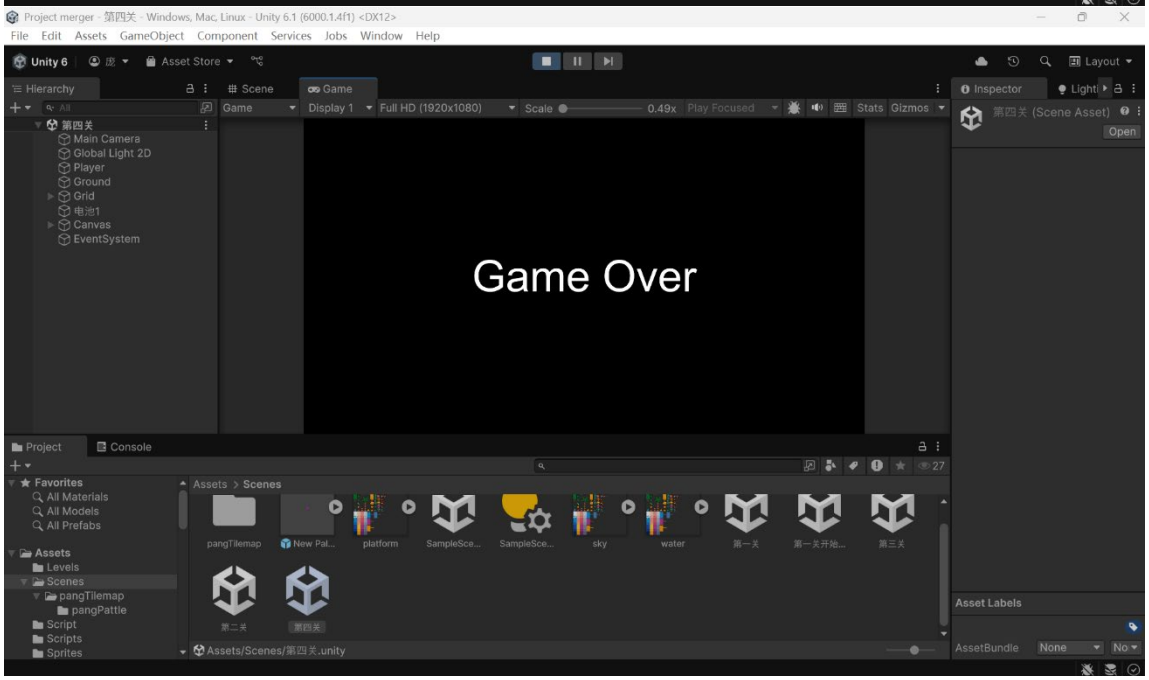




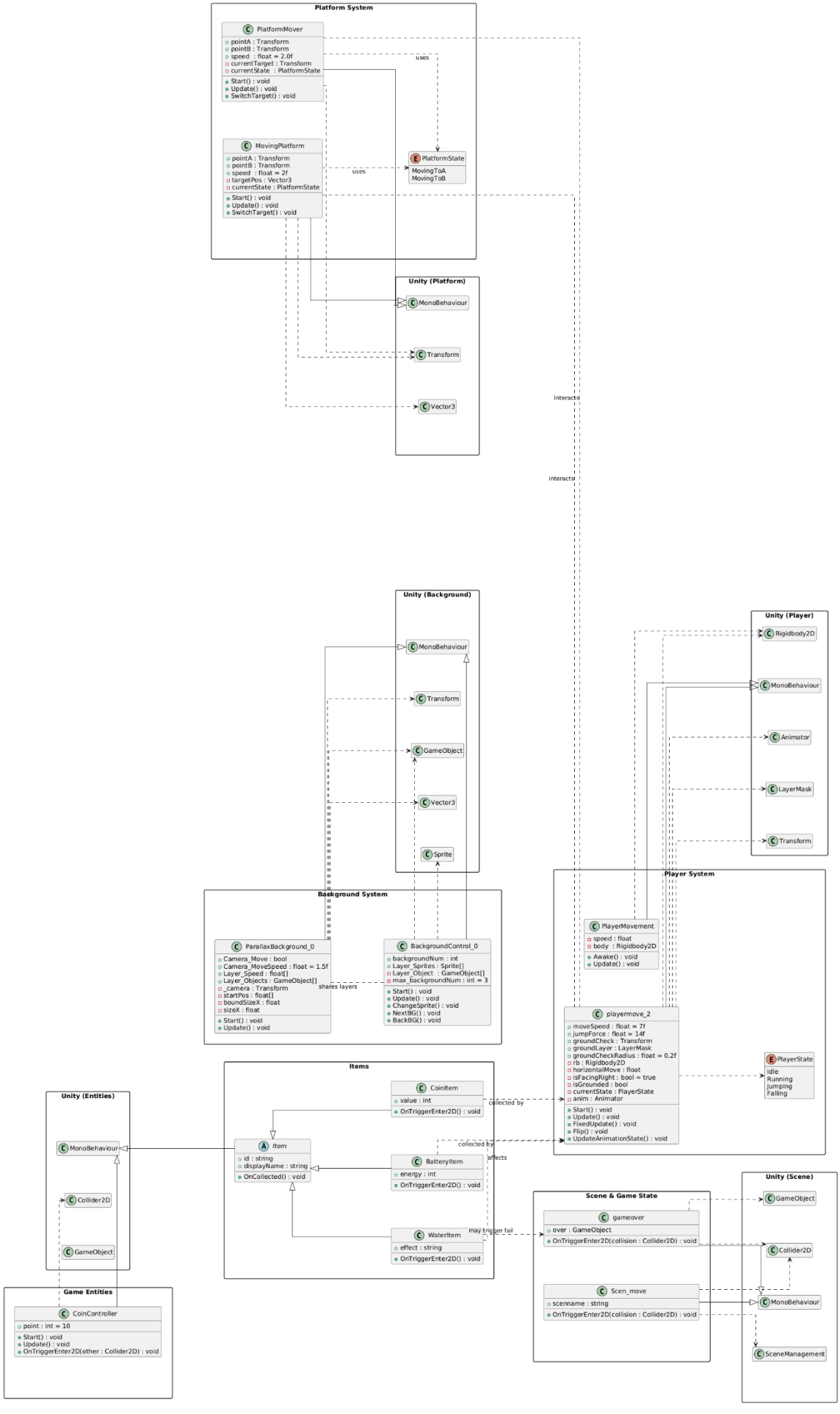

Project merger - 第二关 - Windows, Mac, Linux - Unity 6.1 (6000.1.4f1) <DX12>
File Edit Assets GameObject Component Services Jobs Window Help
Unity 6
Asset Store
Layout
Hierarchy
Scene
Game
Inspector
第二关
Player
Grid
pangCamerafollow
Canvas
EventSystem
water
water (1)
water (2)
water (3)
water (4)
water (5)
water (6)
water (7)
water (8)
water (9)
Center
Local
2D
第二关 (Scene Asset)
Open
Project
Console
Favorites
All Materials
All Models
All Prefabs
Assets
Levels
Scenes
pangTilemap
pangPattle
Script
Scripts
Sprites
Assets > Scenes
pangTilemap
New Pal...
platform
SampleSce...
SampleSce...
sky
water
第一关
第一关开始...
第三关
第二关
第四关
Assets/Scenes/第二关.unity
Asset Labels
AssetBundle
None
No


Project merger - 第三关 - Windows, Mac, Linux - Unity 6.1 (6000.1.4f1) <DX12>
File Edit Assets GameObject Component Services Jobs Window Help
Unity 6
Asset Store
Layout
Hierarchy
Scene
Game
Inspector
第三关
BackGround
Grid
MovingPlatFormSys
UpDownPlatform
GoldCoin
NinjiaFrog
Center
Local
2D
第三关 (Scene Asset)
Open
Project
Console
Favorites
All Materials
All Models
All Prefabs
Assets
Levels
Scenes
pangTilemap
pangPattle
Script
Scripts
Sprites
Assets > Scenes
pangTilemap
New Pal...
platform
SampleSce...
SampleSce...
sky
water
第一关
第一关开始...
第三关
Assets/Scenes/第三关.unity
Asset Labels
AssetBundle
None
No

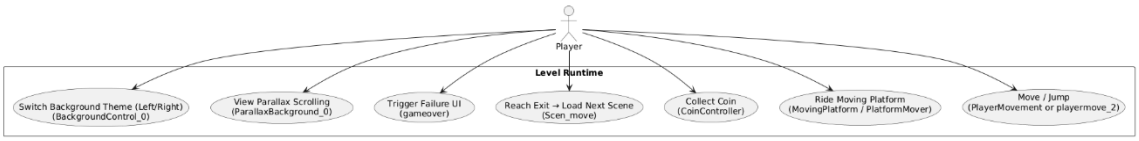

Project merger - 第四关 - Windows, Mac, Linux - Unity 6.1 (6000.1.4f1) <DX12>
File Edit Assets GameObject Component Services Jobs Window Help
Unity 6
Asset Store
Layout
Hierarchy
Scene
Game
Inspector
第四关
Main Camera
Global Light 2D
Player
Ground
Grid
电池1
Canvas
EventSystem
Project
Console
Favorites
All Materials
All Models
All Prefabs
Assets
Levels
Scenes
pangTilemap
pangPattle
Script
Scripts
Sprites
Assets > Scenes
Assets/Scenes/第四关.unity
Asset Labels
AssetBundle
None

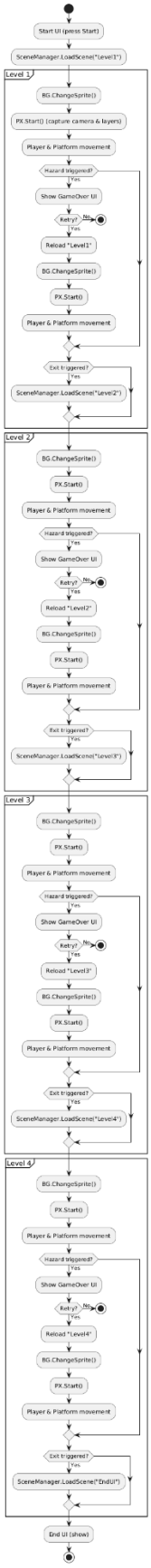

Project merger - 第四关 - Windows, Mac, Linux - Unity 6.1 (6000.1.4f1) <DX12>
File Edit Assets GameObject Component Services Jobs Window Help
Unity 6
Asset Store
Layout
Hierarchy
Scene
Game
Inspector
Game
Display 1
Full HD (1920x1080)
Scale
0.49x
Play Focused
Stats
Gizmos
Game Over
第四关
Main Camera
Global Light 2D
Player
Ground
Grid
电池1
Canvas
EventSystem
Project
Console
Favorites
All Materials
All Models
All Prefabs
Assets
Levels
Scenes
pangTilemap
pangPattle
Script
Scripts
Sprites
Assets > Scenes
Assets/Scenes/第四关.unity
Asset Labels
AssetBundle
None

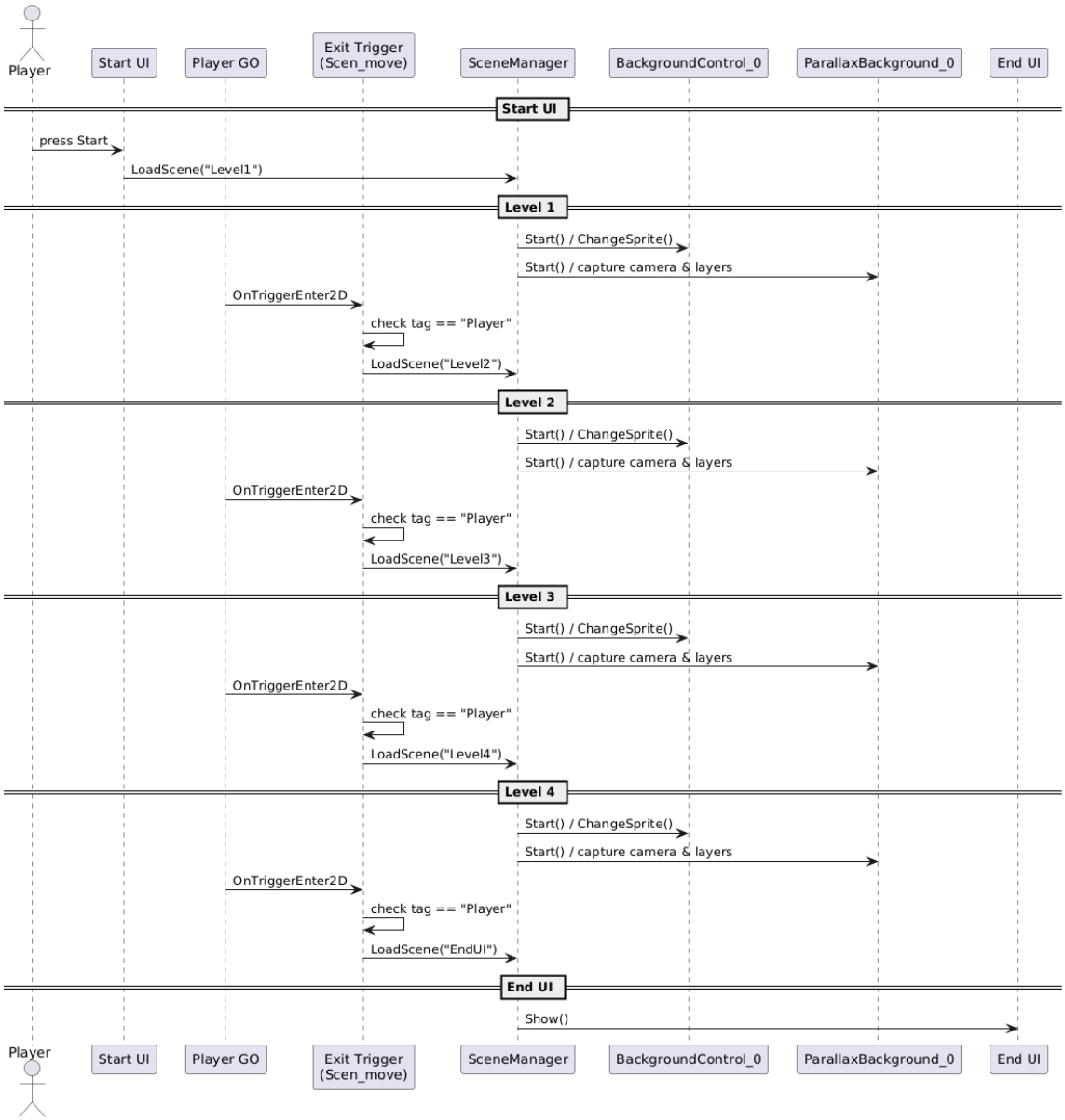
UML DIAGRAM


Platform System
PlatformMover
pointA : Transform
pointB : Transform
speed : float = 2.0f
currentTarget : Transform
currentState : PlatformState
Start() : void
Update() : void
SwitchTarget() : void
uses
MovingPlatform
pointA : Transform
pointB : Transform
speed : float = 2f
targetPos : Vector3
currentState : PlatformState
Start() : void
Update() : void
SwitchTarget() : void
uses
PlatformState
MovingToA
MovingToB
Unity (Platform)
MonoBehaviour
Transform
Vector3
interacts
interacts
Unity (Background)
MonoBehaviour
Transform
GameObject
Vector3
Sprite
Unity (Player)
Rigidbody2D
MonoBehaviour
Animator
LayerMask
Transform
Background System
ParallaxBackground_0
Camera_Move : bool
Camera_MoveSpeed : float = 1.5f
Layer_Speed : float[]
Layer_Objects : GameObject[]
_camera : Transform
startPos : float[]
boundSizeX : float
sizeX : float
Start() : void
Update() : void
shares layers
BackgroundControl_0
backgroundNum : int
Layer_Sprites : Sprite[]
Layer_Object : GameObject[]
max_backgroundNum : int = 3
Start() : void
Update() : void
ChangeSprite() : void
NextBG() : void
BackBG() : void
Player System
PlayerMovement
speed : float
body : Rigidbody2D
Awake() : void
Update() : void
playermove_2
moveSpeed : float = 7f
jumpForce : float = 14f
groundCheck : Transform
groundLayer : LayerMask
groundCheckRadius : float = 0.2f
rb : Rigidbody2D
horizontalMove : float
isFacingRight : bool = true
isGrounded : bool
currentState : PlayerState
anim : Animator
Start() : void
Update() : void
FixedUpdate() : void
Flip() : void
UpdateAnimationState() : void
PlayerState
Idle
Running
Jumping
Falling
Items
CoinItem
value : int
OnTriggerEnter2D() : void
collected by
Item
id : string
displayName : string
OnCollected() : void
collected by
affects
BatteryItem
energy : int
OnTriggerEnter2D() : void
WaterItem
effect : string
OnTriggerEnter2D() : void
may trigger fail
Unity (Entities)
MonoBehaviour
Collider2D
GameObject
Scene & Game State
gameover
over : GameObject
OnTriggerEnter2D(collision : Collider2D) : void
Scen_move
scenname : string
OnTriggerEnter2D(collision : Collider2D) : void
Unity (Scene)
GameObject
Collider2D
MonoBehaviour
SceneManagement
Game Entities
CoinController
point : int = 10
Start() : void
Update() : void
OnTriggerEnter2D(other : Collider2D) : void

OTHER DIAGRAM






Player
Start UI
Player GO
Exit Trigger (Scen_move)
SceneManager
BackgroundControl_0
ParallaxBackground_0
End UI
Start UI
press Start
LoadScene("Level1")
Level 1
Start() / ChangeSprite()
Start() / capture camera & layers
OnTriggerEnter2D
check tag == "Player"
LoadScene("Level2")
Level 2
Start() / ChangeSprite()
Start() / capture camera & layers
OnTriggerEnter2D
check tag == "Player"
LoadScene("Level3")
Level 3
Start() / ChangeSprite()
Start() / capture camera & layers
OnTriggerEnter2D
check tag == "Player"
LoadScene("Level4")
Level 4
Start() / ChangeSprite()
Start() / capture camera & layers
OnTriggerEnter2D
check tag == "Player"
LoadScene("EndUI")
End UI
Show()
Player
Start UI
Player GO
Exit Trigger (Scen_move)
SceneManager
BackgroundControl_0
ParallaxBackground_0
End UI

LINKS

GitHub link:

https://github.com/PANG499/OOP-group-project

https://github.com/PANG499/OOP-group-project.git

Video capture link:

https://youtu.be/A10jSzRz4P4