Meowrio Documentation

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Space War

Introduction

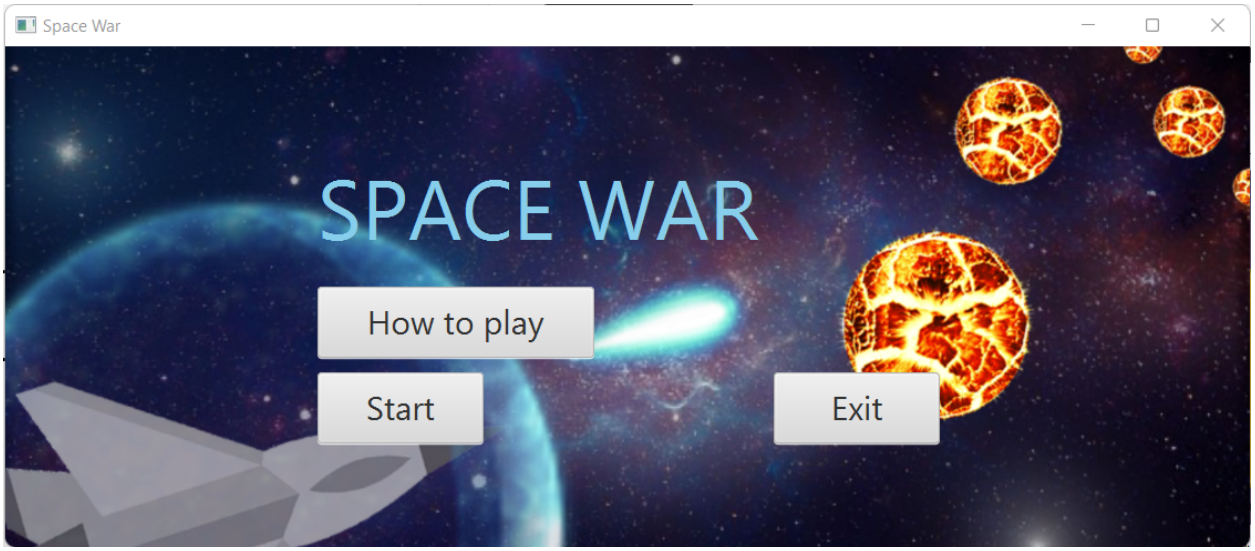
SpaceWar is inspired by games played to skip time and relax. The objective of the game is to dodge the meteors to get the most points.

Rules

Game rules is to control the plane to escape from all the meteorites. There are 4 keys of control: W(up), A(backward), S(down), D(forward) and there is also an Enter key used for laser shooting.

In addition, the game will have a lot of help items, such as shields and lasers, and players will only have one of these equipment on each example.But if the shield is destroyed New shields can be added by collecting shield items. But if the shield has not been destroyed and there is no laser Instead, add a laser. Therefore, if the equipment is complete Collecting shield items has no effect, and finally, collecting item points will increase your score by 50.

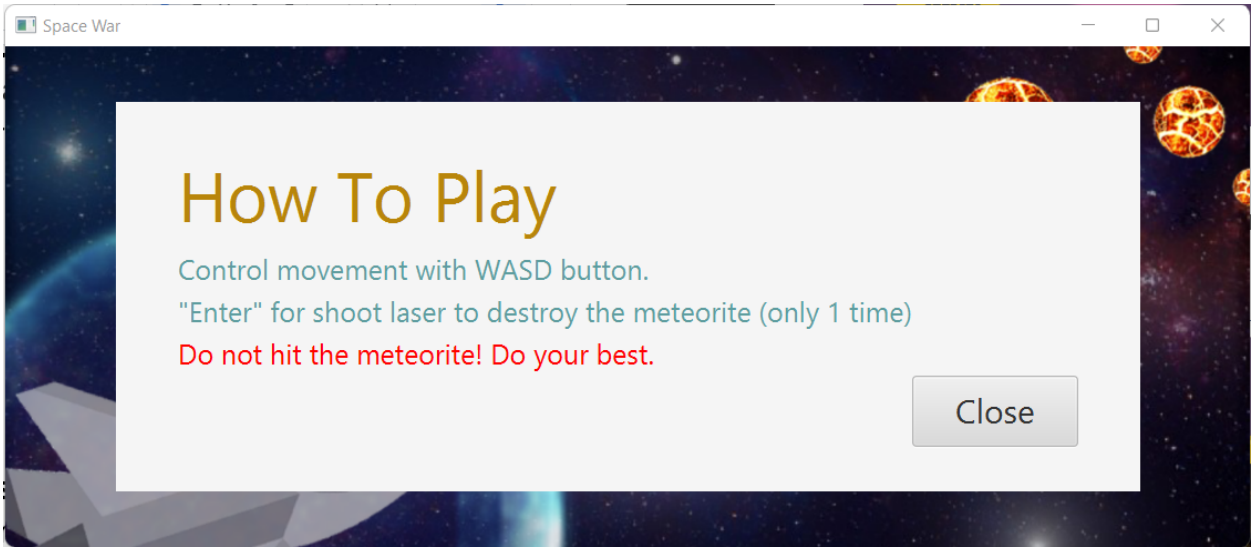
Homepage



In the homepage there are three buttons. to get different functions: How to play, Start and Exit.

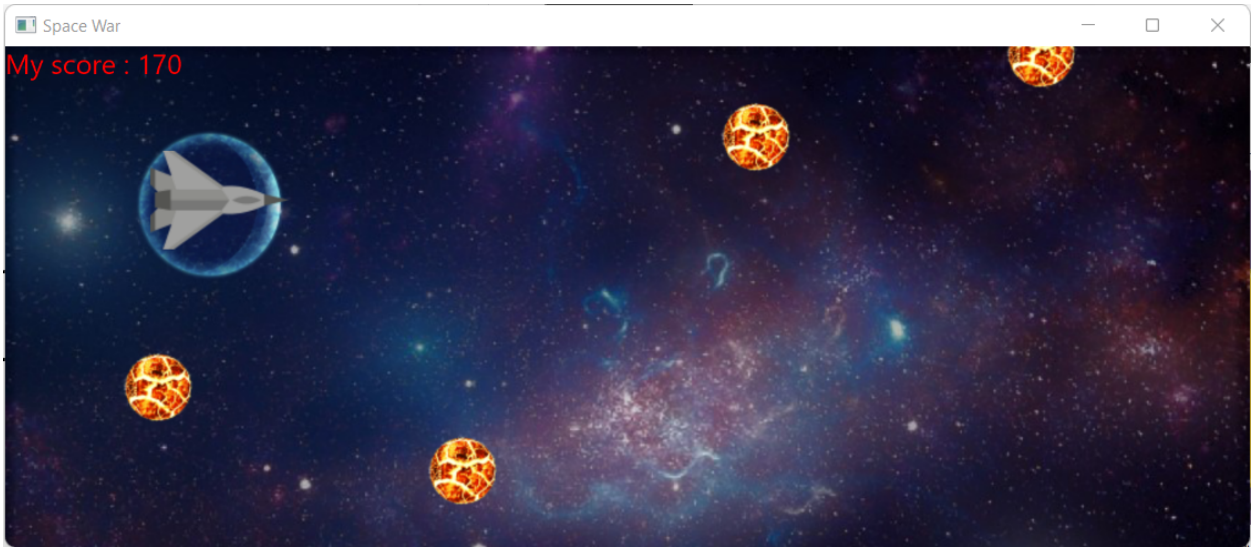
- Press How to play to show instructions and how to play the game.
- Press Start to start the game.
- Press Exit to exit the game.

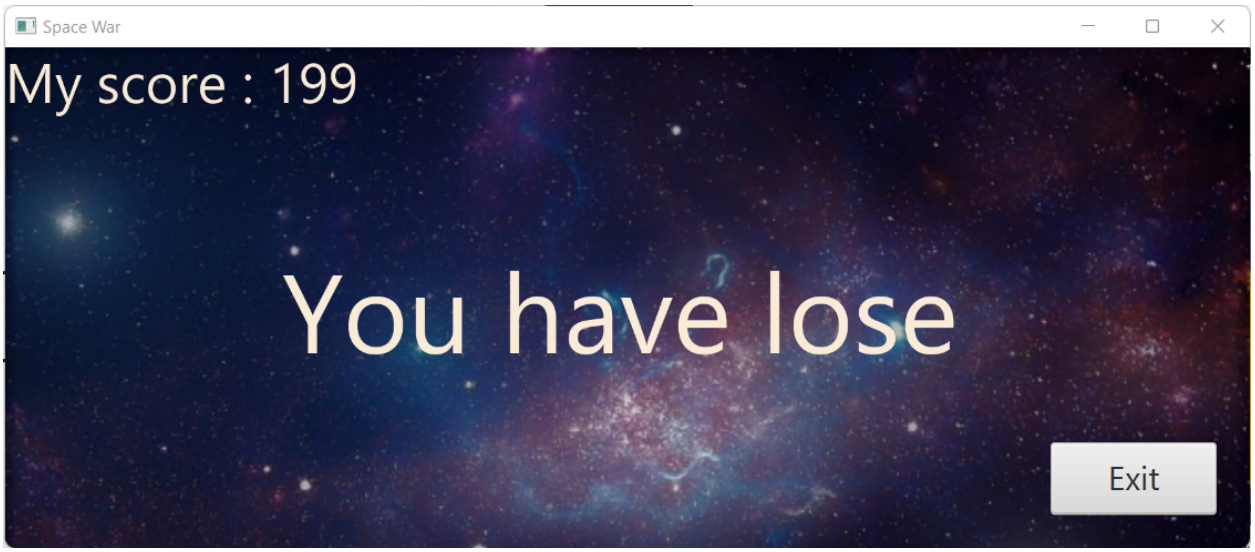
Howtoplaypage



You can press Close to return to the Homepage.

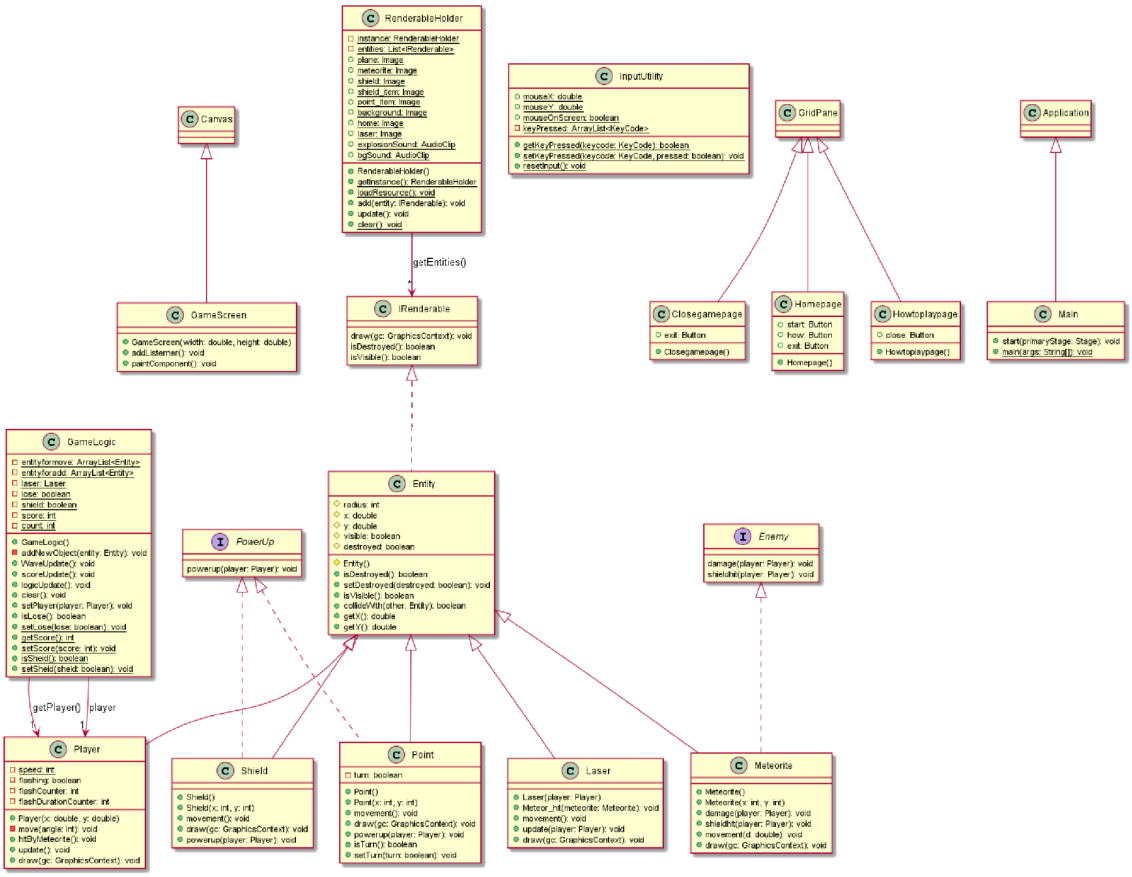
Gamescreen





When you lose, the game will stop and the score will be displayed more clearly. and there is an Exit button to exit the game.

Class diagram



1.Package sharedObject

1.1 interface IRenderable

1.1.1 Methods

+ void draw(GraphicsContext gc)	draw each irendable in canvas
+ boolean isDestroyed()	return destroyed
+ boolean isVisible()	return visible

1.2 class RenderaberHolder

1.2.1 Fields

# RenderableHolder instance	initialize new Renderableholder
# List<IRenderable> entities	use to store all of entities for drawing
+ Image plane	image of Player plane
+ Image meteorite	image of Meteorite
+ Image shield	image of Player shield
+ Image shield_item	image of Shield
+ Image point_item	image of Point
+ Image background	image of GameScreen
+ Image home	image of Homepage
+ Image laser	image of Laser
+ AudioClip explosionSound	audio for meteorite hit
+ AudioClip bgSound	audio for gameplay screen

1.2.2 Constructor

+ RenderableHolder()	initialize entities

1.2.3 Methods

+ static RenderableHolder getInstance()	return instance
+ static void loadResource()	initialize all image and audio
+ void add(IRenderable entity)	add entity to entities
+ void update()	remove the destroyed entity from entities

+ List<IRenderable> getEntities()	return entities

2.Package EntityBase

2.1 interface Enemy

2.1.1 Methods

+ void damage(Player player);	effect when the enemy hit player

2.2 interface PowerUp

2.2.1 Methods

+ vois powerup(Player player);	effect when the powerup hit player

2.3 class Entity implements IRenderable

2.3.1 Fields

# int radius	radius that two entities can collide
# double x	position of entity in x axis
# double y	position of entity in y axis
# boolean visible	visibility of entity
# boolean destroyed	state of entity

2.3.2 Constructor

# Entity()	initialize visible to true initialize destroyed to false

2.3.3 Methods

+ boolean isDestroyed()	return destroyed

+ void setDestroyed(boolean destroyed)	set destroyed
+ boolean isVisible()	return visible
+ boolean collodeWith(Entity)	return true if collide with other entity otherwise return false (collide when sum of two radius not less than distance between two entities)
+ double getX()	return x
+ double getY()	return y

3.Package Entity

3.1 class Player extends Entity implements Enemy

3.1.1 Fields

- final static int speed	speed of player
- boolean flashing	use to check when the player become flashing
- int flashCounter	number of flashing
- int flashDurationCounter	duration of flashing

3.1.2 Constructor

+ Player(double x, double y)	initialize position to (x,y) set radius to 40

3.1.3 Methods

+ void move(int angle)	change the position of the player using math.sin(angle) or

	math.cos(angle) with speed example if speed = 10 and angle = 0 player are moved by 10 to front the position of player cannot below (0,0) or exceed (900,360)
+ void hit()	set flashing to true set flashingCounter to 5 set flashingDurationCounter to 10
+ void update()	update flashing if flashing is true make player flashing by set visible to false for flashDurationCounter for flashingCounter times after finished set the flashing false again update position if press W move up if press A move left if press S move down if press D move right
+ void draw(GraphicsContext gc)	draw plane from RendableHolder if Shield are on (use GameLogic.isShield) draw the shield before that

3.2 class Meteorite extends Entity implements Enemy

3.2.1 Constructor

+ Meteorite()	initialize x to 900

	initialize y by random using math.random to cover all game screen initialize radius to 20

3.2.2 Methods

+ void damage(Player player)	make player hit play explosion sound set destroy to true
+ void movement(double d)	move left by d
+ void draw(GraphicsContext gc)	draw the meteorite

3.3 class Shield extends Entity implements PowerUp

3.3.1 Constructor

+ Shield()	initialize x to 900 initialize y by random using math.random to cover all game screen initialize radius to 20

3.3.2 Methods

+ void movement()	move left by 1.5
+ void draw(GraphicsContext gc)	draw the shield_item
+ void powerup(Player player)	make player hit set destroy to true

	set shield to true using GameLogic.setShield()

3.4 class Point extends Entity implements PowerUp

3.4.1 Fields

- boolean turn	Point moving direction

3.4.2 Constructor

+ Point()	initialize turn to false initialize x to 900 initialize y by random using math.random to cover all game screen initialize radius to 20

3.4.3 Methods

+ void movement()	move left by 2 if turn is false move up otherwise move down if Point hit the screen corner make point move opposite direction by set turn opposite
+ void draw(GraphicsContext gc)	draw the point_item
+ void powerup(Player player)	make player hit set destroy to true set shield to true using

	GameLogic.setShield()

3.5 class Laser extends Entity

3.5.1 Constructor

+ Laser(Player player)	initialize position to the same to player initialize radius to 10 initialize visible to false

3.5.2 Methods

+ void Meteor_hit(Meteorite meteorite)	play explosion sound destroyed the meteorite and laser that hit set visible to false
+ void movement()	move front by 5
+ void update(Player player)	update position if visible is false set position same as player if ENTER pressed set visible to true
+ void draw(GraphicsContext gc)	draw the laser

4.Package logic

4.1 class GameLogic

4.1.1 Fields

- Player player	
- static ArrayList<Entity> entityformove	to store entities that will call move
- static ArrayList<Entity> entityforadd	to store entities and update their status except player
- static Laser laser	
- static boolean lose	to state the game status
- static boolean shield	to state the shield status
- static int score	to count the game score
- static int count	to count the entities that spawn to adjust the game level

4.1.2 Constructor

+ GameLogic()	initialize all field (set count to 0 set lose to false set shield to false) add laser and player and new meteorite and shield by method addNewObject

4.1.3 Methods

+ void addNewObject(Entity entity)	add entity to - RendableHolder list - entityforadd add count by 1

+ void WaveUpdate()	while lose is false spawn powerup and enemy by addNewObject by thread (each entity has different spawnrate by different Thread.sleep and value of count) move all entity in entityformove by method movement in thread with different meteorite speed depend on count value
+ void scoreUpdate()	while lose is false increasing score by using thread with Thread.sleep(200)
+ void logicUpdate()	update player and laser check all entity status if anything out of the game screen destroy and remove it from entityforadd if anything not destroyed and collide with other entity do something depend on their class - meteorite with player call meteorite.damage(player) if shield on set shield off otherwise set lose to true and reset input - meteorite with laser call laser.meteor_hit(meteorite) - shield_item with player call shield.powerup(player) if shield on and player already

	shoot laser make player can shoot laser again - point with player call point.powerup(player)
+ boolean isLose()	return lose
+ static void setLose(boolean lose)	set lose
+ static int getScore()	return score
+ static void addScore(int s)	add score by s
+ static boolean isShield()	return shield
+ static void setShield(boolean shield)	set shield

5.Package input

5.1 class InputUtility

5.1.1 Fields

+ static ArrayList<KeyCode> keyPressed	store the KeyCode that are pressing

5.1.2 Methods

+ static boolean getKeyPressed(KeyCode keycode)	return true if In keypressed contain keycode, otherwise return false
+ static void setKeyPressed(KeyCode keycode, boolean pressed)	if pressed is true and keyPressed is not contain same keycode add keycode if pressed is false remove keycode and print keyPressed

+ static void resetInput()	clear keyPressed

6.Package drawing

6.1 class GameScreen extends Canvas

6.1.1 Constructor

+ GameScreen(double width, double height)	Initialize super constructor by super(width, height) addListener()

6.1.2 Methods

+ void addListener()	setOnKeyPressed is InputUtility.setKeyPressed(event.getCode, true);
	
	setOnKeyReleased is InputUtility.setKeyPressed(event.getCode, false);

+ void paintComponent()	clearRect on GameScreen setFill to Color.RED. setFont to “Loboto”,weight to LIGHT and size to 20. fillText is “Myscore : ” + GameLogic.getScore() draw all entity from entities in RenderableHolder, if entity is visible and isn’t destroyed.

7.Package graphic

7.1 class Homepage extends GridPane

7.1.1 Fields

+ Button start	used to start the game.
+ Button how	used to open the Howtoplaypage.
+ Button exit	used to exit the game.

7.1.2 Constructor

+ Homepage()	Initialize super constructor setAlignment to Pos.CENTER. setPadding to 25. setHgap, Vgap to 10. edit label topic is “SPACE WAR” setTextFill to Color.SKYBLUE. setFont to “Roboto” and size to 60. initialize start is Button(“Start”). setFont to “Roboto” and size to 24. setPrefSize width to 120 and height to 40. initialize how is Button(“How to play”). setFont to “Roboto” and size to 24. setPrefSize width to 200 and height to 40. initialize exit is Button(“Exit”). setFont to “Roboto” and size to 24. setPrefSize width to 120 and height to 40. add label and all button to

	Gridpane.

7.2 class Howtoplaypage extends GridPane

7.2.1 Fields

+ Button close	used to return to the Homepage.

7.2.2 Constructor

+ Howtoplaypage()	Initialize super constructor setAlignment to Pos.CENTER. edit label topic is “How To Play” setFont to “Roboto” and size to 50. setTextFill to Color.DARKGOLDENROD. edit label description 1, 2 and 3. initialize close is Button(“Close”) setFont to “Roboto” and size to 24. setPrefSize width to 120 and height to 40. edit HBox and setAlignment to Pos.BOTTOM_RIGHT. add close button to HBox. add all label and HBox to GridPane.

7.3 Closegamepage

7.3.1 Fields

+ Button exit	used to exit the game.

7.3.2 Constructor

+ Closegamepage()	Initialize super constructor setAlignment to Pos.CENTER. setPadding to 25. initialize exit is Button(“Exit”). setFont to “Roboto” and size to 24. setPrefSize width to 120 and height to 40. setVisible to false. add exit to Gridpane.

7.4 class Main extends Application

7.4.1 Methods

+ void start(Stage primaryStage)	set scene with new scene by new stack pane with 900 width and 360 height set title to Space War start with Homepage by use canvas to draw image home from RenderableHolder and add new Homepage to StackPane Homepage setup: set the start button in Homepage to start the game set the how button in Homepage to go to howtoplaypage set the exit button in Homepage to close the program Gamepage setup:

	start the game with add new GameScreen and new Closegamepage draw background, call waveupdate and scoreupdate create new Animationtimer and start - animationtimer if player not lose playing bgsound with loop update logic, paintComponent and Renderableholder if lose remove GameScreen, set exit button in Closegamepage visible and use canvas to draw score announcement Howtoplaypage setup: set fill color to WHITESMOKE fillrect at (80,40) with width 740 and 280 hight set close button to back to Homepage
+ static void main(String[] args)	main application