2110215 Programing Methodology Project 2017

Plane War

Developers

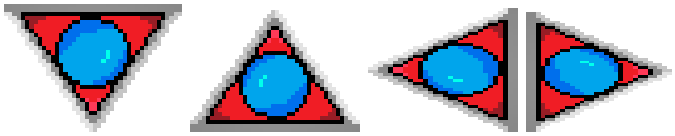
Akamate Chayapiwat 5931076021

Husakret Kertbundit 5931074821

1.Introduction

-This game you have to kill enemy leader to save the world

-There 1 main character call plane . you can control it up down left and right . you can fire bullet to kill enemy



-There are 3 level of enemy below

-There are 3 phase of boss below

-There are 1 item to increase Hp by one point

-There have laser follow plane if player afk laser will collide with player ,hp will decrease

-To kill enemy you must be shoot bullet to enemy level of Enemy times;

-If You can kill boss phase 3 you will winner of this game

-If your hp is zero game is over

2.How To Play

There are 4 screen

Main menu screen

This screen you will see when launch the game

press Enter to start the game

Escape to Exit game

Game Screen

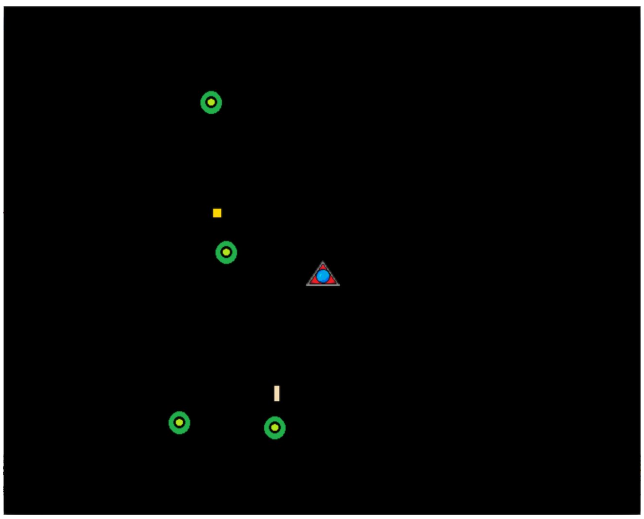
The screen where you play. player on bottom center of screen and enemy on the top of screen

UP/DOWN/RIGHT/LEFT - move character SPACE - shoot bullet

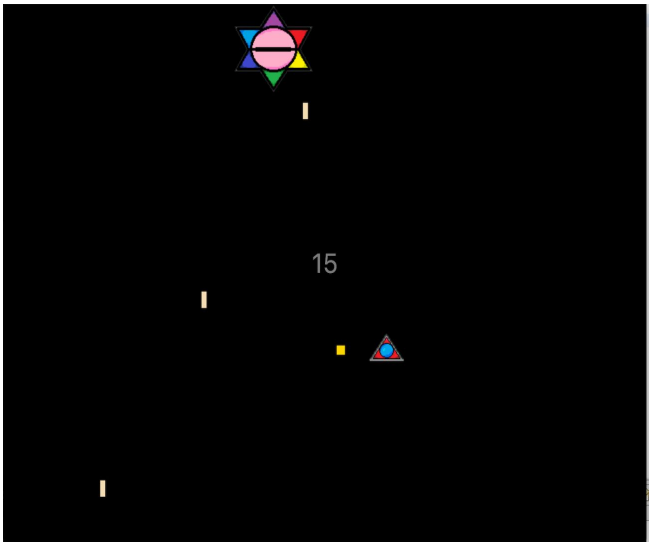
ESCAPE - Exit game Enter - Pause game

when pause press enter to resume game

Enemy Fight



Boss fight



End Game Screen

The screen where you game over

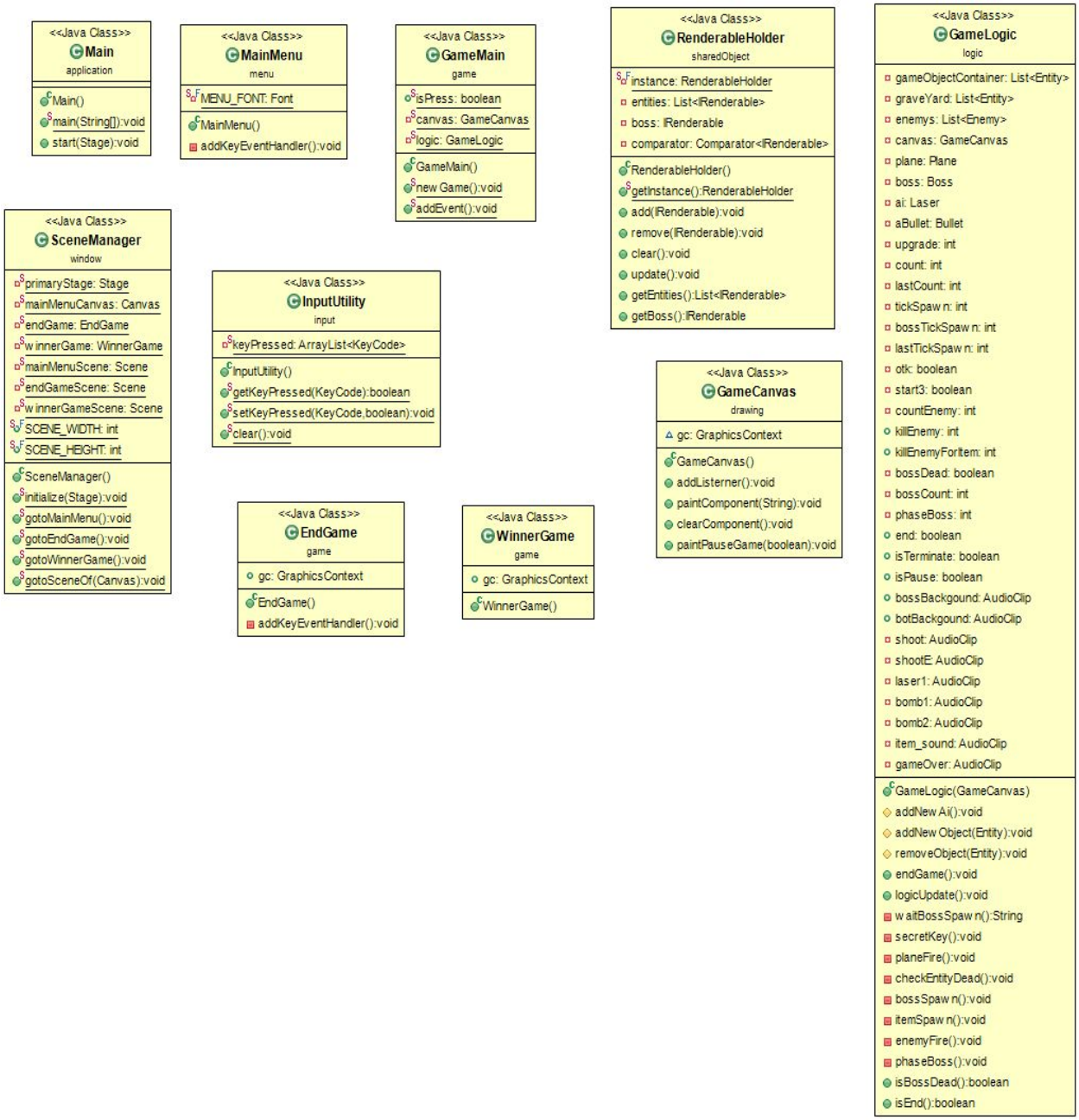
Enter - go to main menu Escape - Exit game

Winner Game Screen

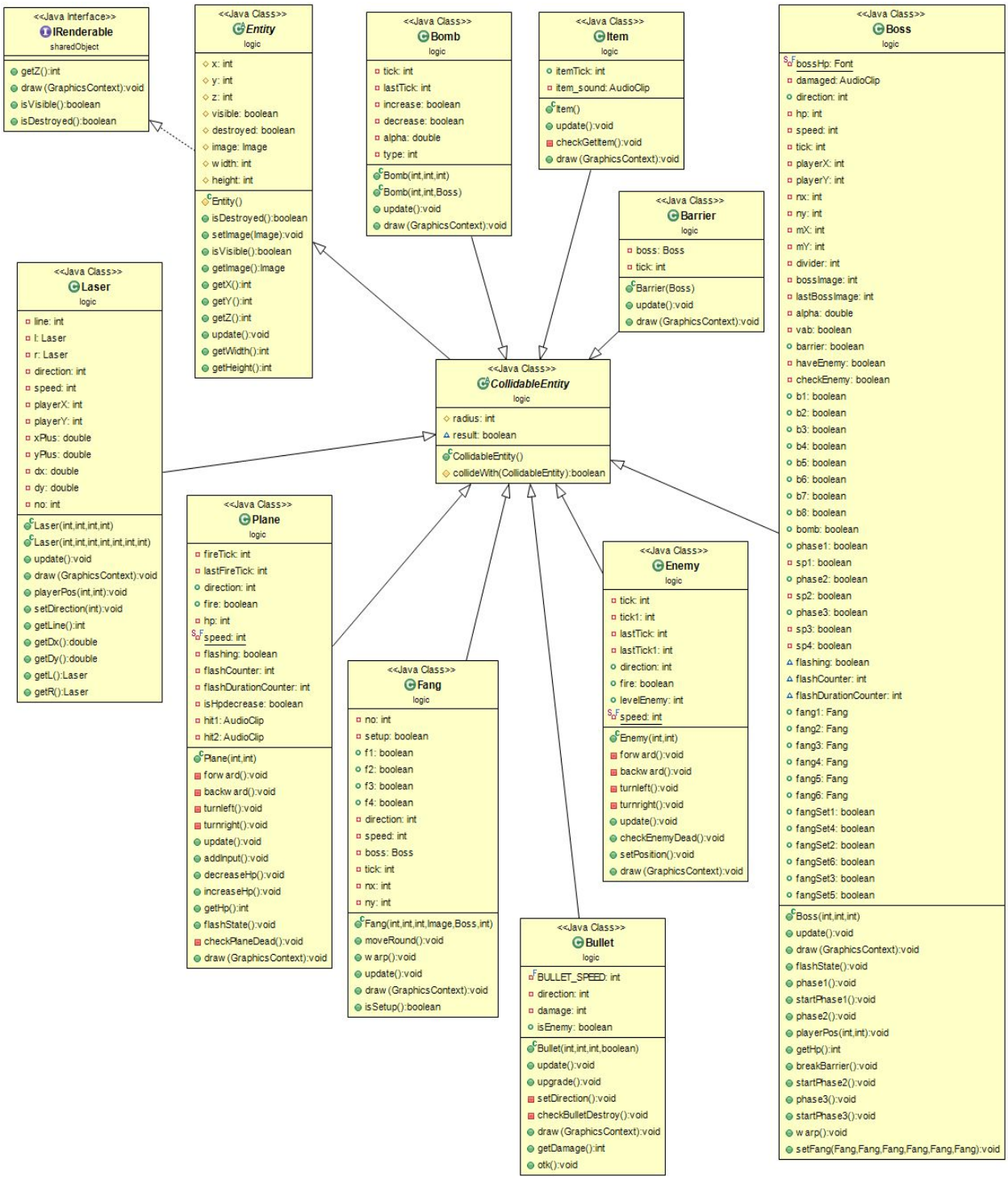
the screen where you won the last boss

Enter - go to main menu Escape - Exit game

3.Implementation Detail



UML Diagram 1



UML Diagram 2

3.1.Package application

3.1.1 Class Main

3.1.1.1 Method

void main(String[] args)	An entry point of the application
void start(Stage primaryStage)	The main entry point for the JavaFX applications

3.2.Package drawing

3.2.1 Class GameCanvas extends Canvas

3.2.1.1 Field

GraphicsContext gc	Initialize this GraphicsContext

3.2.1.2 Constructor

GameCanvas()	Initialize this canvas

3.2.1.3 Method

Void addListerner()	response to keyboard input
Void paintComponent()	draw every entity in RenderableHolder

3.3.Package game

3.3.1 Class EndGame

3.3.1.1 Field

GraphicsContext gc	Initialize this GraphicsContext

3.3.1.2 Constructor

EndGame()	show gameover screen

3.3.2 Class GameMain

3.3.2.1 Field

GameCanvas canvas	Initialize this GameCanvas
Gamelogic logic	Initialize this GameLogic

3.2.2 Method

Void newGame()	start new game
void addEvent()	response to keyboard input

3.3.3 Class WinnerGame

3.3.3.1 Field

GraphicsContext gc	Initialize this GraphicsContext

3.3.3.2 Constructor

WinnerGame()	show victory screen

3.4.Package input

3.4.1 Class InputUtility

3.4.1.1 Field

ArrayList<KeyCode> keyPressed	use to check keyPressed don't repeat

3.4.1.2 Method

Boolean getKeyPressed(KeyCode keyCode)	retrue if keyPressed contain keycode
void setKeyPressed(KeyCode keycode,boolean pressed)	receive keycode to keyPressed

3.5.Package logic

3.5.1 Class Barrier extends CollidableEntity

3.5.1.1 Field

Boss boss	Initialize this Boss
Int tick	use to count round repeat time

3.5.1.2 Constructor

Barrier(Boss boss)	Initialize x,y and Boss

3.5.1.3 Method

Void update()	update Barrier
Void draw(GraphicsContext gc)	draw Barrier

3.5.2 Class Bomb extends CollidableEntity

3.5.2.1 Field

Int tick	use to count round repeat time
Int lastTick	Time round length
Boolean increase	check Bomb increasing
Boolean decrease	check Bomb decreasing
Double alpha	control globalalpha
Int type	type of Bomb

3.5.2.2 Method

Bomb(int x,int y,int hp)	Initialize x,y and hp of Boss
Bomb(int x,int y,Boss boss)	Initialize x,y and Boss
Void update()	update Bomb
Void draw(GraphicsContext gc)	draw Bomb

3.5.3 Class Boss extends CollidableEntity

3.5.3.1 Field

Font bossHp	Font of Boss hp
AudioClip damaged	damaged sound
Int direction	Boss move direction
Int hp	Boss's hp
Int speed	Boss's speed
Int tick	use to count round repeat time
Int playerX	player's x
Int playerY	player's y
Int nx	next Boss x (warp)
Int ny	next Boss y (warp)
Int mX	middle screen
Int mY	middle screen
Int divider	define attack speed
Int bossImage	Boss's Image
Int lastBossImage	Boss's previous Image
Double alpha	control globalalpha
Boolean vab	control light blinking
Boolean barrier	control barrier
Boolean haveEnemy	check if enemy on the screen
Boolean checkEnemy	check if enemy status
Boolean b1,b2,b3,b4,b5,b6,b7,b8	control boss's attack styles
Boolean bomb	control spawn bomb
Boolean phase1,phase2,phase3	control phase boss
Boolean sp1,sp2,sp3,sp4	start phase boss
Boolean flashing	control boss's blinking
Int flashCounter	count boss's blinking time
Int flashDurationCounter	count boss's blinking time
Fang fang1, fang2, fang3, fang4, fang5, fang6	Initialize sub boss (Fang)
Boolean fangSet1, fangSet2, fangSet3, fangSet4, fangSet5	control setting up Fang

3.5.3.2 Method

Boss(int x,int y,int phase)	Initialize boss x,y and phase
Void update()	update boss gui
Void draw(GraphicsContext)	draw boss
Void flashState()	boss's blinking
Void phase1()	phase1 action
Void startPhase1()	set up and start phase1

Void phase2()	phase2 action
Void startPhase2()	set up and start phase2
Void playerPos(int x,int y)	return player x and y
Void getHp()	return boss's hp
Void breakBarrier()	breakBarrier
Void phase3();	phase3 action
Void startPhase3()	set up and start phase3
Void warp()	teleport boss
Void setFang(Fang fang1, Fang fang2, Fang fang3, Fang fang4, Fang fang5, Fang fang6)	setting up Fang

3.5.4 Class Enemy extends CollidableEntity

3.5.4.1 Field

int tick	count the time for fire bullet
int tick1	count the time for random direction
int lastTick	time to fire bullet for each time
int lastTick1	time to random direction for each time
int direction	enemy direction
boolean fire	check enemy fire
int levelEnemy	level of enemy
int speed	speed of enemy

3.5.4.2 Constructor

Enemy(int x, int y)	Initialize Enemy position x y and z width and height set Image and radius of enemy

3.5.4.3 Method

void forward()	move forward
void backward()	move backward
void turnleft()	move left
void turnright()	move right
void update()	update enemy gui
void checkEnemyDead()	check enemy collab with plane bullet
void setPosition()	set position of enemy
void draw(GraphicsContext)	draw enemy

3.5.5 Class Plane extends CollidableEntity

3.5.5.1 Field

int fireTick	count the time for fire bullet
int lastFireTick	time to fire bullet for each time
int direction	plane direction
boolean fire	check plane fire
int hp	life point of plane
int speed	speed of plane
boolean flashing	check plane was hit
int flashCounter	count plane's blinking time
int flashDurationCounter	count plane's blinking time
boolean isHpdecrese	check Hp decrease
AudioClip hit1	audio when plane was hitten
AudioClip hit2	audio when plane dead

3.5.5.2 Constructor

Plane(int x int y)	Initialize Plane position x y and z width and height set Image and radius of plane set plane's Hp to 4

3.5.5.3 Method

void forward()	move forward
void backward()	move backward
void turnleft()	move left
void turnright()	move right
void update()	update tank gui
void checkPlaneDead()	check Plane was hitten from enemy and boss
void addInput()	get Input from input utility
void decreaseHp()	decrease plane hp one point
void increaseHp()	increase plane hp one point
void getHp()	return plane hp
void flashState()	plane's blinking
void draw(GraphicsContext)	draw plane

3.5.6 Class Entity implements IRenderable

3.5.6.1 Field

int x	position x
int y	position y
int z	position z
boolean visible	check entity is visible
boolean destroyed	check entity destroyed
Image image	Image of entity
int width	width of image
int height	height of image

3.5.6.2 Constructor

Entity()	set Visible to true and set destroyed to false

3.5.6.3 Method

boolean isDestroyed()	return true if entity destroyed
void setImage(Image image)	set Entity's image to image
boolean isVisible()	return true if entity is visible
image getImage()	return entity image
int getX()	return position x
int getY()	return position y
int getZ()	return position z
void update()	update entity
int getWidth()	return image's width
int getHeight()	return image's height

3.5.7 Class Fang extends CollidableEntity

3.5.7.1 Field

int no	number of Fang
boolean setup	check Fang setting up
boolean f1,f2,f3,f4	control Fang's attack styles
int direction	direction of Fang
int speed	speed of Fang
Boss boss	this boss
int tick	use to count round repeat time
int nx	next x (warp)
int ny	next y (warp)

3.5.7.2 Constructor

Fang(int x, int y, int no, Image image, Boss boss, int direction)	Initialize x,y,no,image,direction and boss

3.5.7.3 Method

void moveRound()	Fang move around the screen
void warp()	Fang teleport
void update()	update Fang by no of Fang
void draw(GraphicsContext gc)	draw Fang
boolean isSetup()	return true if Fang finish setting up

3.5.8 Class GameLogic

3.5.8.1 Field

List<Entity> gameObjectContainer	list of entity
List<Entity> graveYard	list of destroy Entity
List<Enemy> enemys	list of enemy
GameCanvas canvas	Initialize gamecanvas
Plane plane	Initialize plane
Boss boss	Initialize boss

Laser ai	Initialize laser
Bullet aBullet	Initialize bullet
int upgrade	upgrade bullet
int count	delay upgrading bullet
int lastCount	delay upgrading bullet
int tickSpawn	count enemy spawn
int bossTickSpawn	count before boss spawn
int lastTickSpawn	time to spawn enemy
boolean otk	check if use otk bullet
boolean start3	Initialize Fang (before phase3)
int countEnemy	count enemy spawn in each time
int killEnemy	count number of kill Enemy
int killEnemyForItem	count number of kill Enemy to drop item
boolean bossDead	check boss is destroyed
int bossCount	count number of boss
int phaseBoss	phase boss
boolean end	check game end
boolean isTerminate	check game is terminate
boolean isPause	check game pause
AudioClip bossBackgorund,botBackground,shoot,shootE,laser1,bomb1,bomb2,item_sound,gameOver	Audio bossBackground,botBackground,plane shoot,boss shoot,laser,bomb , item,game over sound

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3.5.8.2 Constructor

GameLogic(GameCanvas canvas)	Initialize canvas plane,boss,laser,list of enemy list of graveYard, list of gameobjectcontainer set audio background

3.5.8.3 Method

void addNewAi()	spawn enemy
void addNewObject(Entity entity)	add entity in to list gameobjectcontainer and RenderableHolder
void removeObject(Entity entity)	remove entity from gameobjectcontainer and RenderableHolder
void endGame()	check game is end

void logicUpdate()	update all logic
String waitBossSpawn()	wait bossSpawn and return count time
void secretKey()	using secret key (secret)
void planeFire()	Plane fire bullet
void checkEntityDead()	check entity dead and add it in to list of graveYard
void bossSpawn()	Initialize boss and spawn boss
void itemSpawn()	Initialize item and spawn item
void enemyFire()	enemy fire bullet
void phaseBoss()	boss attack by phase
boolean isBossDead()	return bossDead
boolean isEnd()	return end

3.5.9 Class Item extends CollidableEntity

3.5.9.1 Field

int itemTick	count time to spawn item
AudioClip item_sound	audio item sound

3.5.9.2 Constructor

Item()	Initialize x , y

3.5.9.3 Method

void update()	update item gui
void checkGetItem()	check plane get item
void draw(GraphicsContext gc)	draw item

3.5.10 Class Laser extends CollidableEntity

3.5.10.1 Field

int line	define type of shoot line
Laser l	sub laser (left)
Laser r	sub laser (right)
int direction	laser’s direction

int speed	laser ‘s speed
int playerX	player’s x
int playerY	player’s y
double xPlus	speed of x relative to distance
double yPlus	speed of y relative to distance
double dx	x in double
double dy	y in double
int no	type of laser

3.5.10.2 Constructor

Laser(int x, int y, int line, int direction)	Initialize x,y,line and direction
Laser(int x,int y,int line,int direction,int px,int py,int no)	Initialize x,y,line, direction ,px,py and no

3.5.10.3 Method

void update()	update laser
void draw(GraphicsContext gc)	draw laser
void playerPos(int x, int y)	Initialize position of player
void setDirection(int direction)	set this direction
int getLine()	return this line
double getDx()	return this dx
double getDy()	return this dy
Laser getL()	return this Laser l
Laser getR()	return this Laser r

3.6 Package menu

3.6.1 Class MainMenu

3.6.1.1 Field

Font MENU_FONT	Initialize menu font

3.6.1.2 Constructor

MainMenu()	show main menu screen

3.6.1.3 Method

void addKeyEventHandler()	add Event when press Enter and Escape

3.7 Package sharedObject

3.7.1 Interface IRenderable

3.7.1.1 Method

void draw(GraphicsContext gc)	
boolean isVisible()	
boolean isDestroyed()	

3.7.2 Class RenderableHolder

3.7.2.1 Field

RenderableHolder instance	
List<IRenderable> entities	list of all entity on screen

3.7.2.2 Constructor

RenderableHolder()	Initialize list of entity

3.7.2.3 Method

RenderableHolder getInstance()	return instance
void add(IRenderable entity)	add entity in to list of entity

void remove(IRenderable entity)	remove entity from list of entity
void clear()	remove all entity from list of entity
void update()	update gui
List<IRenderable> getEntities()	return list of entity

3.8 Package window

3.8.1 Final Class SceneManager

3.8.1.1 Field

Stage primaryStage	This's program primary stage
Canvas mainMenuCanvas	Initialize Main Menu screen for this variable
EndGame endGame	Initialize end Game Screen for this variable
WinnerGame winnerGame	Initialize winner Game screen for this variable
Scene mainMenuScene	main menu scene Initialize this scene with a pane of main menu screen
Scene endGameScene	end game scene Initialize this scene with a pane of end game screen
Scene winnerGameScene	winner game scene Initialize this scene with a pane of winner game screen
public static final int SCENE_WIDTH	scene width of this program. set to 800
public static final int SCENE_HEIGHT	scene height of this program. set to 600

3.8.1.2 Method

void initialize(Stage stage)	Set primaryStage to stage and show it
void gotoMainMenu()	Request focus for main menu screen and set scene of primaryStage to mainMainScene
void gotoEndGame()	Request focus for end game screen and set scene of primaryStage to endGameScene
void gotoWinnerGame()	Request focus for winner game screen and set scene of primaryStage to winnerGameScene
void gotoSceneOf(Canvas canvas)	Create new scene with given canvas then request focus to that canvas then set scene of primaryStage to that scene