

# **Project Documentation**

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**2110215 Programming Methodology  
Semester 2 Year 2022  
Chulalongkorn University**

# THE GRAND WIZARD

## Introduction

The GRAND WIZARD is a turn-based game that features 2 sides in which you must choose your orbs to create combos and fight monsters. If the opponent's health reaches or below 0. You win the game.

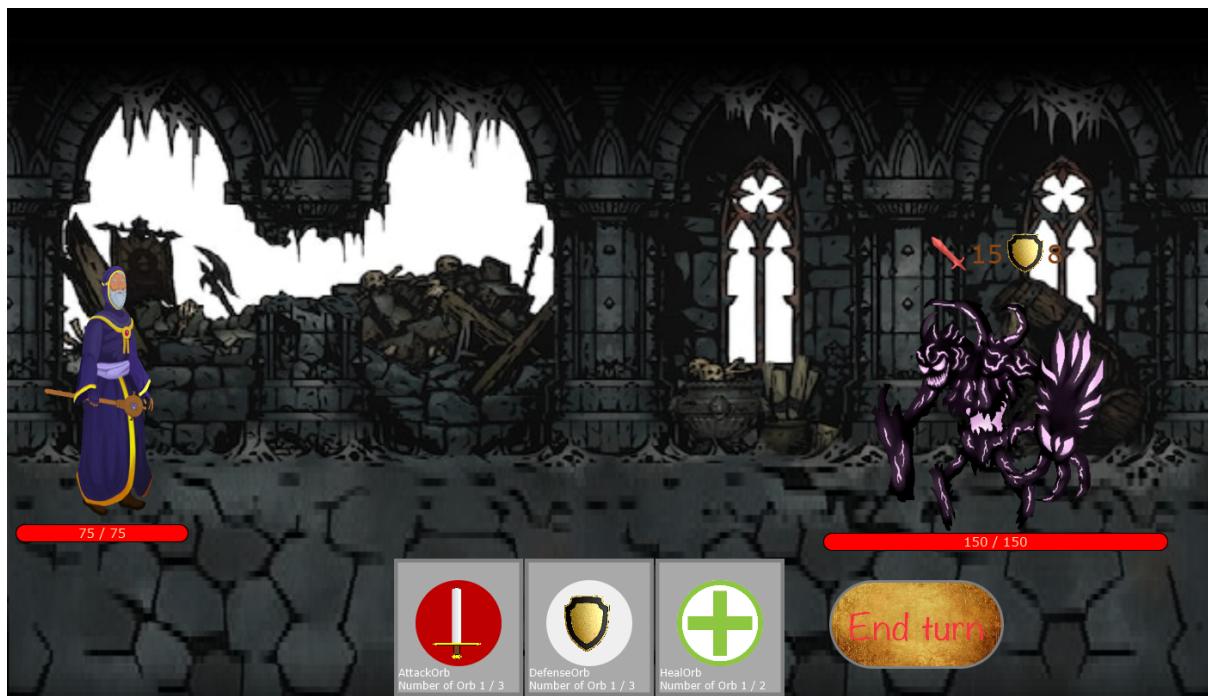
## Rules

At the start of the game you will be provided with 3 orbs. which consist of AttackOrb, DefenseOrb HealingOrb. Each orbs provide different abilities which are listed below :

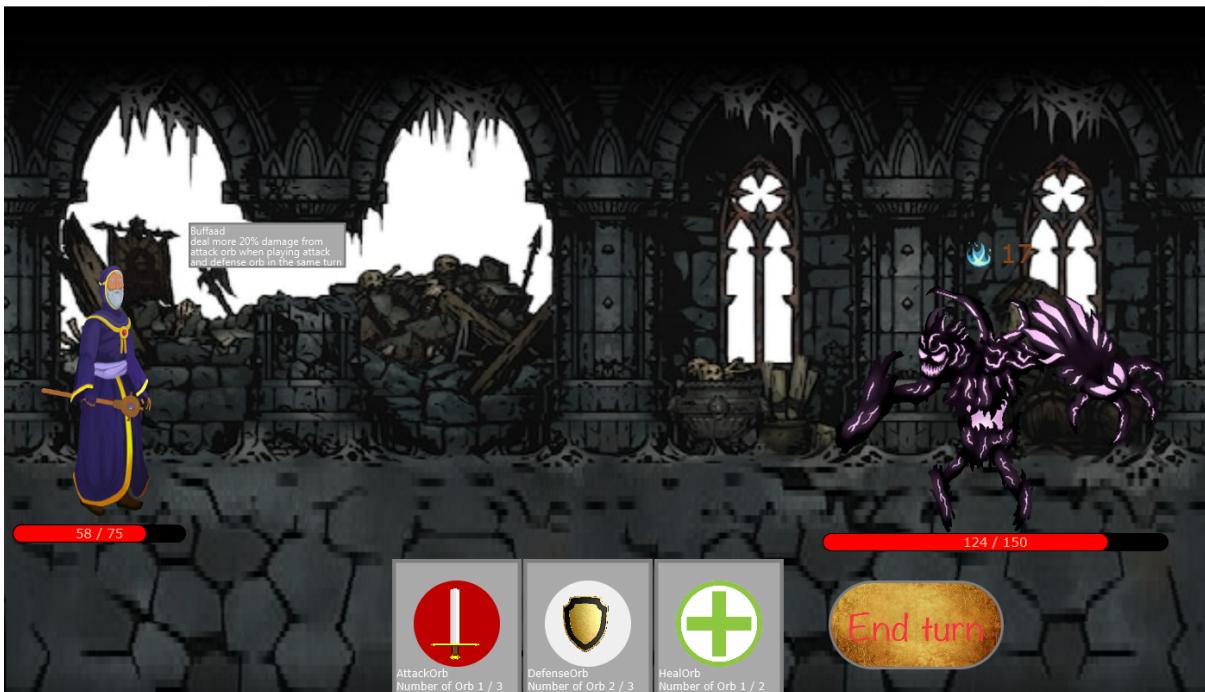
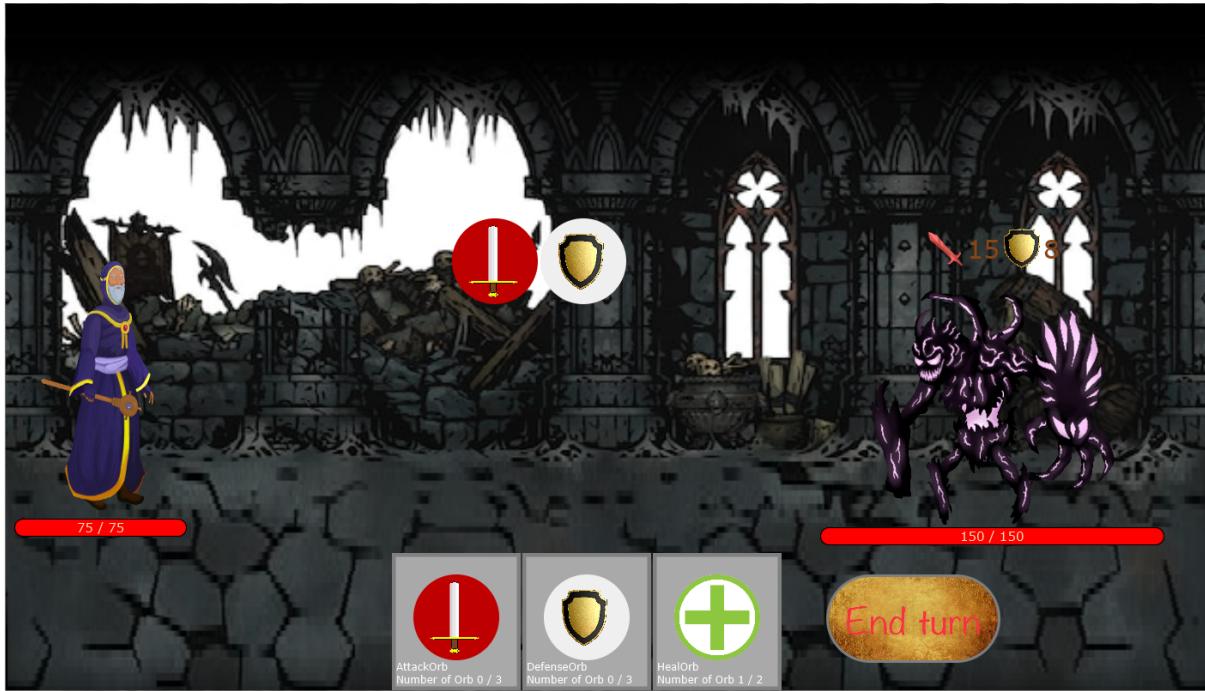
AttackOrb - Deal damage to enemy effect number is 12

DefenseOrb - Provide shield for yourself to prevent damages for 1 turn effect number is 8

HealingOrb - Healing yourself effecte number is 10



After every turn your orbs will be regenerate to be used again. AttarkOrb and DefenseOrb regen every 1 turn while HealOrb regen every 2 turn. you can use more than 1 orb per 1 attack (Maximum of 3 orbs) You will lose if your health reach 0 and you will win if opponent health reaches 0.



when you combo the buff with gain to you then play basic combo and you can read that buff by mouse over player character

## Combo list

use **a** for **Attack orb**, **b** for **defense orb** , **H** for **Heal orb**

1.Basic Combo(same orb are played)

1 orb provide effect value

2 orb provide 2.5 time of effect value

3 orb provide 4.5 time of effect value

other combos will provide a buff when you play the orb same as buff name

2.Buff **aab** player gain the following buff “deal more 20% damage from attack orb when playing attack and defense orb in the same turn”

3.Buff **aaH** player gain the following buff “hp gain from heal orb deal damage to enemy”

4.Buff **bba** player gain the following buff "gain more 20% shield from defense orb when playing attack and defense orb in the same turn";

5.Buff **bbH** player gain the following buff “hp gain from heal orb also give shield to you”

6.Buff **HHa** player gain the following buff “For each attack orb that plays, heal 4 HP”

7.Buff **HHb** player gain the following buff “For each defense orb that plays, heal 4 HP”

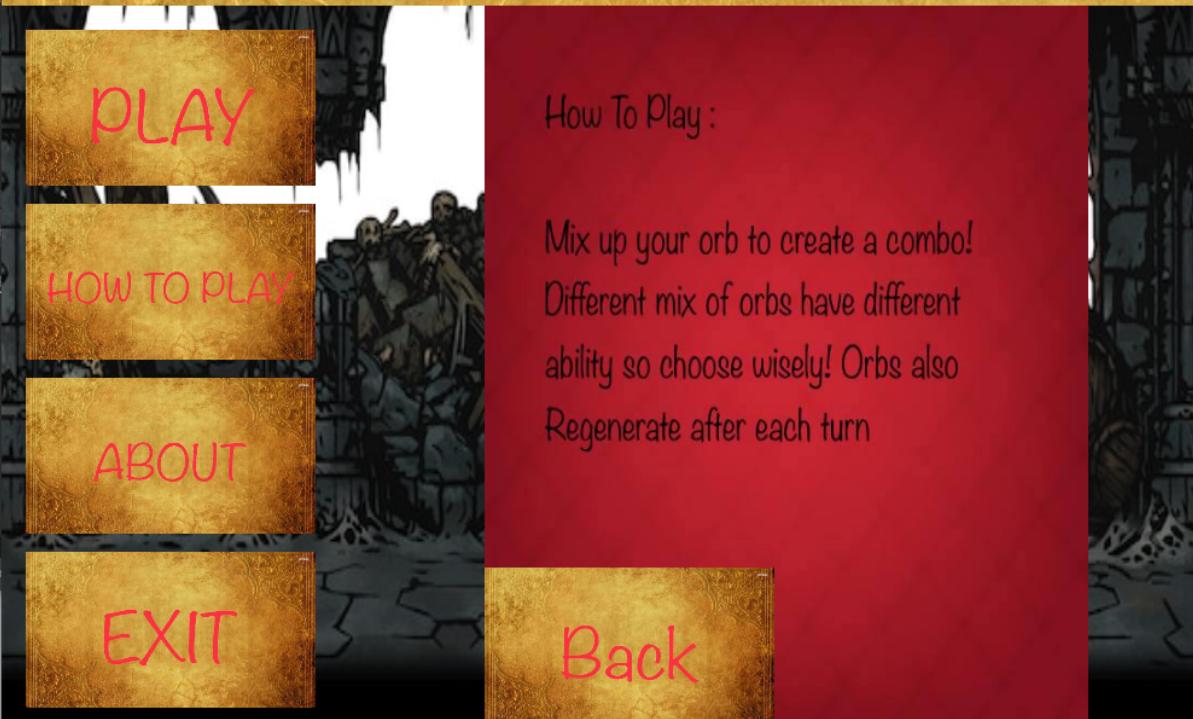
## MainMenu Screen



Mainmenu scene consists of 4 button. which are PlayButton, HowToPlayButton, AboutButton and ExitButton.

By pressing PlayButton, The scene will change and the game will start

# THE GRAND WIZARD



By pressing HowToPlayButton, The tab will be open to give you brief instruction of how to play the game.

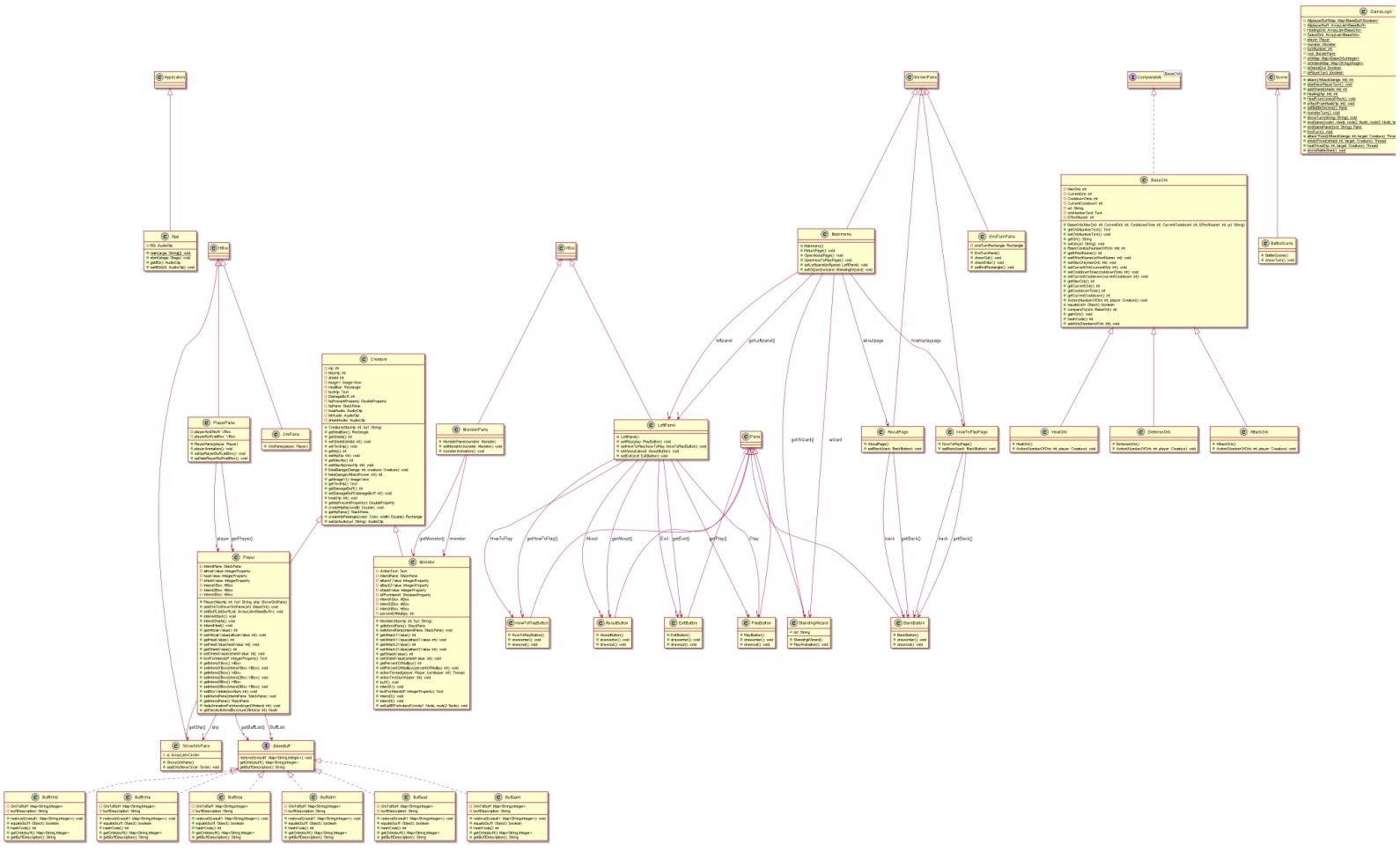
# THE GRAND WIZARD



By pressing AboutButton, The tab will be open to give you the credits of who made the game.

And by pressing ExitButton will close the program entirely.

# Class Diagram





About1.jpg



About2.jpg

## 1.Package MainMenuGui

### 1.1 Class AboutButton extends Pane

#### 1.1.1 Constructor

+ AboutButton()	-set PrefWidth 240 -set PrefHeight 135 -set Background to be image of "About1.jpg" -setOnMouseEntered to called method drawenter() -setOnMouseExited to called method drawout()
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#### 1.1.2 Methods

+ drawenter();	set Background to be image of "About1.jpg"
+ drawout();	set Background to be image of "About2.jpg"



## 1.2 Class AboutPage extends BorderPane

### 1.2.1 Fields

- BackButton back	represent BackButton
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### 1.2.2 Constructor

+ AboutPage()	-set Background to be image of "AboutPage.jpg" -setBottom back
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### 1.2.3 Methods

+ Getter Setter	
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Back1.jpg



Back2.jpg

## 1.3 Class BackButton extends Pane

### 1.3.1 Constructor

+ AboutButton()	-set PrefWidth 240 -set PrefHeight 135 -set Background to be image of "Back1.jpg" -setOnMouseEntered to called method drawenter() -setOnMouseExited to called method drawout()
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### 1.3.2 Methods

+ drawenter();	set Background to be image of "Back1.jpg"
+ drawout();	set Background to be image of "Back2.jpg"



Exit1.jpg



Exit2.jpg

## 1.4 Class ExitButton extends Pane

### 1.4.1 Constructor

+ ExitButton()	-set PrefWidth 240 -set PrefHeight 135 -set Background to be image of "Exit1.jpg" -setOnMouseEntered to called method drawenter() -setOnMouseExited to called method drawout()
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### 1.4.2 Methods

+ drawenter();	set Background to be image of "Exit1.jpg"
+ drawout();	set Background to be image of "Exit2.jpg"



Howtoplay1.jpg



Howtoplay2.jpg

## 1.5 Class HowToPlayButton extends Pane

### 1.5.1 Constructor

+ HowToPlayButton()	-set PrefWidth 240 -set PrefHeight 135 -set Background to be image of "Howtoplay1.jpg" -setOnMouseEntered to called method drawenter() -setOnMouseExited to called method drawout()
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### 1.5.2 Methods

+ drawenter();	set Background to be image of "Howtoplay1.jpg"
+ drawout();	set Background to be image of "Howtoplay2.jpg"

How To Play :

Mix up your orb to create a combo!  
Different mix of orbs have different  
ability so choose wisely! Orbs also  
Regenerate after each turn

Back

## 1.6 Class HowToPlayPage extends BorderPane

### 1.6.1 Fields

- BackButton back	represent BackButton
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### 1.6.2 Constructor

+ HowToPlayPage()	-set Background to be image of "Howtoplaypage.jpg" -setBottom back
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### 1.6.3 Methods

+ Getter Setter	
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## 1.7 Class LeftPanel extends VBox

### 1.7.1 Fields

- PlayButton Play	initialize new PlayButton
- HowToPlayButton HowToPlay	initialize new HowToPlayButton
- AboutButton About	initialize new AboutButton
- ExitButton Exit	initialize new ExitButton

### 1.7.2 Constructor

+ LeftPanel()	-set PrefWidth 400 -set PrefHeight 200 -set Spacing 15 -set Padding 20 -set Alignment Pos.CENTER -add Play,HowToPlay,About,Exit
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### 1.7.3 Methods

+ Getter Setter	
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## 1.8 Class Mainmenu extends BorderPane

### 1.8.1 Fields

- LeftPanel leftpanel	initialize new LeftPanel
- StandingWizard wizard	initialize new StandingWizard
- AboutPage aboutpage	initialize new AboutPage
- HowToPlayPage howtoplaypage	initialize new HowToPlayPage

### 1.8.2 Constructor

+ Mainmenu()	<ul style="list-style-type: none"> <li>-set Padding 0</li> <li>-set Left leftpanel</li> <li>-set Center wizard</li> <li>-called method PlayAnimation() for wizard</li> <li>-set Top "IMG-5037.jpg" image</li> </ul>
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-set Background  
 “Background.jpg” image  
 -setOnMouseClicked for  
 HowToPlayButton in leftpanel  
 to play audio  
 “SwordDraw.wav” and called  
 method  
 OpenHowToPlayPage();  
 -setOnMouseClicked for  
 AboutButton in leftpanel to  
 play audio “SwordDraw.wav”  
 and called method  
 OpenAboutPage();  
 -setOnMouseClicked for  
 AboutButton to play audio  
 “SwordDraw.wav” and called  
 method OpenAboutPage();  
 -setOnMouseClicked for  
 BackButton in aboutpage to  
 play audio “SwordDraw.wav”  
 and called method  
 ReturnPage();  
 -setOnMouseClicked for  
 BackButton in howtoplaypage  
 to play audio  
 “SwordDraw.wav” and called  
 method ReturnPage();

### 1.8.3 Methods

+ void ReturnPage();	close howtoplaypage or aboutpage
+ void OpenAboutPage();	open aboutpage
+ void OpenHowToPlayPage();	open howtoplaypage

+ Getter Setter	
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Play1.jpg



Play2.jpg

## 1.9 Class PlayButton extends Pane

### 1.9.1 Constructor

+ PlayButton()	-set PrefWidth 240 -set PrefHeight 135 -set Background to be image of "Play1.jpg" -setOnMouseEntered to called method drawenter() -setOnMouseExited to called method drawout()
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### 1.9.2 Methods

+ drawenter();	set Background to be image of "Play1.jpg"
+ drawout();	set Background to be image of "Play2.jpg"



## 1.10 Class StandingWizard extends Pane

### 1.10.1 Constructor

+ StandingWizard()	initialize StandingWizard
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### 1.10.2 Methods

+ void PlayAnimation()	play animation for wizard
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## 2.Package orb

### 2.1 Class BaseOrb implements Comparable<BaseOrb>

#### 2.1.1 Fields

- int maxOrb;	Max number of orbs player can hold
- int currentOrb;	Number of orbs currently have

- int cooldownTime;	Time to regen orb
- int currentCooldown;	Current cooldown time
- String url;	Image url
- Text orbNumberText;	Text show orb number
- int effectNumer	Effect Number

### 2.1.2 Constructor

+ BaseOrb(int MaxOrb, int CurrentOrb, int CooldownTime, int CurrentCooldown, int EffectNumber, String url)	initialize all fields
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### 2.1.3 Methods

+ int getbasicComboValue(int NumberofOrb);	Check orbs for Combo (2 orbs value times 2.5) (3 orbs value times 4.5)
+ boolean equals(Object orb);	Check for same Object
+ int compareTo(BaseOrb orb);	Check for same orb
+ int gainOrb();	if CurrentCooldown = 0 called method addOrb(1);
+ int hashCode();	get hashCode
+ void addOrb(int NumberofOrb)	increase CurrentOrb by NumberofOrb number
+ Getter and Setter	

## 2.2 Class AttackOrb extends BaseOrb

### 2.2.1 Constructor

+ AttackOrb()	Super Constructor(3, 0, 0, 0, 12, "AttackPic.png")
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## 2.3 Class DefenseOrb extends BaseOrb

### 2.3.1 Constructor

+ DefenseOrb()	Super Constructor(3, 0, 0, 0, 8, "shieldOrb.png")
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## 2.4 Class HealOrb extends BaseOrb

### 2.4.1 Constructor

+ HealOrb()	Super Constructor(2, 0, 2, 0, 10, "health.png")
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## 3.Packge buff

### 3.1 interface BaseBuff

#### 3.1.1 Methods

+ void resolve(Map<String, Integer> result1)	Method called by other class
+ Map<String, Integer> getOrbtobuff();	Get orb from map
+ String getBuffDescription();	Buff description

## 3.2 Class Buffaad implements BaseBuff

### 3.2.1 Fields

- Map<String, Integer> orbToBuff	Orbs name and number of it that required to gain this buff attack orb 2 , defense orb 1
- final String buffDescription	"deal more 20% damage from attack orb when playing attack and defense orb in the same turn"

### 3.2.2 Methods

+ void resolve(Map<String, Integer>);	Check for condition of this buff to activate this buff
+ boolean equals(Object buff);	check for same Object
+ int hashCode();	get hashCode
+ Getter and Setter	

## 3.3 Class BuffaaH implements BaseBuff

### 3.3.1 Fields

- Map<String, Integer> orbToBuff	Orbs name and number of it that required to gain this buff attack orb 2 , heal orb 1
- final String buffDescription	"hp gain from heal orb deal damage to enemy"

### 3.3.2 Methods

+ void resolve(Map<String, Integer>);	Check for condition of this buff to activate this buff
+ boolean equals(Object buff);	check for same Object
+ int hashCode();	get hashCode
+ Getter and Setter	

### 3.4 Class Buffdda implements BaseBuff

#### 3.4.1 Fields

- Map<String, Integer> orbToBuff	Orbs name and number of it that required to gain this buff defense orb 2 , attack orb 1
- final String buffDescription	"gain more 20% shield from defense orb when playing attack and defense orb in the same turn"

#### 3.4.2 Methods

+ void resolve(Map<String, Integer>);	Check for condition of this buff to activate this buff
+ boolean equals(Object buff);	check for same Object
+ int hashCode();	get hashCode
+ Getter and Setter	

### 3.5 Class BuffddH implements BaseBuff

#### 3.5.1 Fields

- Map<String, Integer> orbToBuff	Orbs name and number of it that required to gain this buff defense orb 2 , heal orb 1
- final String buffDescription	"hp gain from heal orb also give shield"

### 3.5.2 Methods

+ void resolve(Map<String, Integer>);	Check for condition of this buff to activate this buff
+ boolean equals(Object buff);	check for same Object
+ int hashCode();	get hashCode
+ Getter and Setter	

## 3.6 Class BuffHHa implements BaseBuff

### 3.6.1 Fields

- Map<String, Integer> orbToBuff	Orbs name and number of it that required to gain this buff heal orb 2 , attack orb 1
- final String buffDescription	"Heal 3 hp for each attack orb that plays "

### 3.6.2 Methods

+ void resolve(Map<String, Integer>);	Check for condition of this buff to activate this buff
+ boolean equals(Object buff);	check for same Object
+ int hashCode();	get hashCode
+ Getter and Setter	

### 3.7 Class BuffHHd implements BaseBuff

#### 3.7.1 Fields

- Map<String, Integer> OrbToBuff	Orbs name and number of it that required to gain this buff heal orb 2 , defense orb 1
- final String buffDescription	"Heal 3 hp for each defense orb that plays "

#### 3.7.2 Methods

+ void resolve(Map<String, Integer>);	Check for condition of this buff to activate this buff
+ boolean equals(Object buff);	check for same Object
+ int hashCode();	get hashCode
+ Getter and Setter	

## 4.Package creature

## 4.1 Class Creature

### 4.1.1 Fields

- int hp;	Creature Hp
- int maxHp;	Creature MaxHp
- int shield;	Creature shield
- ImageView imageView;	Creature ImageView
- Text textHp;	Creature textHp
- DoubleProperty hpPercentProperty	Creature Property
- StackPane hpPane;	Creature healthbar
- AudioClip healAudio;	HealAudio sound
- AudioClip hitAudio;	HitAudio sound
- AudioClip shieldAudio;	ShieldAudio Sound

### 4.1.2 Constructor

+ Creature(int MaxHp, String furl)	initialize all fields
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### 4.1.3 Methods

+ void addShield(int shield);	-add shield to Creature -if shield >0 play shieldAudio
+ int takeDamage(int AttackPower);	-reduce Creature Hp (or Shield) -if Hp reduce play HitAudio
+ void createHpBar(Double	create new hp pane, called method createHpRectangle();

width);	
+ Rectangle createHpRetangle(Color color,Double width)	create new hpbar
+ setUpAudio(String url)	set Audio, set volume 0.2
+ muteAll()	set all Audios volume to 0
+ heal(int Hp)	-if Creature can heal heal it add play HealAudio
+ setHp(int Hp)	-check condition -set textHp from it condition -set hpPercentProperty
+ Getter and Setter	

## 4.2 Class Monster extends Creature

### 4.2.1 Fields

- StackPane intendPane;	new StackPane
- IntegerProperty attackValueForMove1;	new SimpleIntegerProperty(15)
- IntegerProperty attackValueForMove2;	new SimpleIntegerProperty(10)
- IntegerProperty shieldValueForMove1;	new SimpleIntegerProperty(8)
- BooleanProperty bPForIntend1;	new SimpleBooleanProperty(true)
- HBox intendBoxForMove1;	Show monster activity1
- HBox intendBoxForMove2;	Show monster activity2
- HBox intendBoxForMove3;	Show monster activity3
- int percentageMultiplierOfEachMoveValue	set at 100

#### 4.2.2 Constructor

+ Monster(int MaxHp, String furl);	super Constructor(MaxHp, furl), called methods createHpBar(400.0); intend1(); intend2(); intend3();
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#### 4.2.3 Methods

+ Thread getActionThread(Player player, int turnNuber);	get Thread that take action on player depend on turn number
+ void showIntend(int turnNuber);	show intendBox depend on turn number
+ void setNewValue()	-add 15 to PercentOfMultiplyOfEachMov eValue -set new ,Attack1Value,Attak2Value,S hieldValue
+ void createIntendBoxForMov e1();	set intendBoxForMove1 new HBox with specific properties
+ void createIntendBoxForMov e2();	set intendBoxForMove2 new HBox with specific properties
+ void createIntendBoxForMov e2();	set intendBoxForMove3 new HBox with specific properties
+ Text getTextForIntend(Integer	create new Text for intendBox

Property iP)	
+ void + setUpIntendForBoxForMove1(Node node1, Node node2)	addlistener for IntendBoxForMove1 to remove 2 node
+ Getter and Setter	

## 4.3 Class Player extends Creature

### 4.3.1 Fields

- ShowOrbPane showOfPane;	show selected OrbPane
- ArrayList<BaseBuff> buffList;	List of Buff
- StackPane intendPane;	initialize new StackPane
- IntegerProperty attackValue;	attack value for use in intend1box
- IntegerProperty healValue	heal valuefor for use in intend2box
- IntegerProperty shieldValue	shield value for use in intend3box
- HBox intendToAttackBox;	for show action attack of player
- HBox intendToShieldBox;	for show action gain shield of player
- HBox intendToHealBox;	for show action heal of player

### 4.3.2 Constructor

+ Player(int MaxHp, String furl, ShowOrbPane)	Super Constructor(MaxHp, furl) called methods this.createHpBar(200.0) this.intendAttack(); this.intendHeal(); this.intendShield(); this.setBoxVisible(0)
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#### 4.3.3 Methods

+ void addOrbToShowOrbPane (BaseOrb orb);	add orb to ShowOrbPane add on clicked to it to remove it
+ void createIntendToAttackBox ();	set up for attack icon + attack value to intendToAttackBox;
+ void createIntendToShieldBox ();	set up for shield icon + defense value to intendToShieldBox
+ void createIntendToHealBox();	set up for heal icon + heal value to intendToHealBox
+ Text setTextForIntend(Integer Property iP)	create new Text for intendBox
+ void setBoxVisible(int boxNum)	set IntendBox with boxNum to visible other is to set all not visible
+ void setFadeAnimationForIntend(int intendnumber)	Play fadeout animation for IntendBox by intendnumber
+ Node	getter for IntendBox with

getSelectIntendBox(int intendnumber)	intendnumber
+void setAttackValue(int attcakValue)	-set attackValue -set intendToAttackBox to visible - fadeAnimationForIntend(1)
+void setShieldValue(int shieldValue) {	-set shieldValue -set intendToShieldBox to visible -FadeAnimationForIntend(2)
+ setHealValue(int healValue)	-for set healValue -set intendToHealBox to visible -FadeAnimationForIntend(3)
+ Getter and Setter	

## 4.Package pane

### 4.1 Class EndTurnPane extends BorderPane

#### 4.1.1 Fields

- Rectangle endTurnRectangle;	End turn tab
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#### 4.1.2 Constructor

+ EndTurnPane()	- setPadding(25,50,25,50) - setEndRectangle(); - setRight(endTurnRectan
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- gle)
- setOnMouseClicked to Endturn() and play Hitsound Audio
  - setOnMouseEntered to called method drawEnter(); if this is player turn
  - setOnMouseExited to called method drawOut(); if this is player turn

#### 4.1.3 Methods

+ drawOut()	Change image to “Endturn1.jpg”
+ drawEnter()	Change image to “Endturn2.jpg”
+ void setEndRectangle	set EndRectangle with specific properties

### 4.2 MonsterPane extends VBox

#### 4.2.1 Fields

- Monster monster	create new monster
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#### 4.2.2 Constructor

+ MonsterPane(Monster monster)	<ul style="list-style-type: none"> <li>-initializer new Monster</li> <li>-setPadding (250,50,0,0)</li> <li>-setFitHeight Monster Image 300</li> <li>-setFitWidth Monster Image 400</li> </ul>
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	<p>-setAlignment Pos.CENTER          -add          (monster.getIntentPane(),          monster.getImageV(),          monster.getHpPane()) to          MonsterPane          -called method          playerMonsterAnimation</p>
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#### 4.2.3 Methods

+ void playMonsterAnimation()	Play animation for monster
+ Getter and Setter	

### 4.3 Class OrbPane extends HBox

#### 4.3.1 Constructor

+ OrbPane(Player player)	<p>-setPadding (0,0,0,450)          -setSpacecing 2          -called method          createOrbBox(i) i from 0-2          for each holding orb</p>
+ createOrbBox(int orbNum)	<p>-create new VBox          -set specific properties to VBox          -set pictures of Orbs to VBox          -setOnMouseClicked on orb picture to create orb to showOrbPane          -add VBox to OrbPane</p>

### 4.4 Class PlayerPane extends HBox

#### 4.4.1 Fields

- Player player;	create new Player
- VBox playerAndStuff;	Pane showing Player
- VBox playerBuffListBox;	Pane showing all Buff

#### 4.4.2 Constructor

+ PlayerPane(Player player)	<p>-initialize new Player -setPadding (250,0,0,10) -setFitHeight Player Image 300 -setFitWidth Player Image 200 -add HoldingOrb for each type of orb -called method setUpPlayerBuffListBox(); -initialize playerAndStuff -add (player.getIntentPane(), player.getImageV(), this.getPlayer().getHpPane()) to playerAndStuff -setWidth 200 for playerBuffListBox -setWidth 400 -add (playerAndStuff, playerBuffListBox) to PlayerPane -called method playPlayerAnimation();</p>
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#### 4.4.3 Methods

+ playPlayerAnimation();	Play animation for Player
+ setUpPlayerBuffListBox() ;	-initialize playerBuffListBox -setOnMouseEntered to set playerBuffListBox visible = true -setOnMouseExited to set playerBuffListBox visible = false
+ void upDatePlayerBuffListBox() ();	update PlayerBuffListBox pane
+ Getter and Setter	

## 4.5 Class ShowOrbPane extends HBox

### 4.5.1 Constructor

+ ShowOrbPane();	-setPadding (250,0,0,520) -setSpacing 3
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### 4.5.2 Methods

+ addOrb(Circle NewCircle)	-add NewCircle to ShowOrbPane -SetOnMouseClicked NewCircle to be removed from ShowOrbPane
+ Getter and Setter	

## 5.Package logic

### 5.1 Class GameLogic

#### 5.1.1 Constructor

+ static Map<BaseBuff,Boolean> allplayerBuffthatActivate;	Map of buff and it activate or not for all buff
+ static ArrayList<BaseBuff> allplayerBuff;	List of all Buff
+ static ArrayList<BaseOrb> hholdingOrb;	List of HoldingOrb
+ static ArrayList<BaseOrb> selectOrb;	List of Selected Orb
+ static Player player;	new player
+ static Monster monster;	new monster
+ static int turnNumber;	Turn number
+ static BorderPane root;	root of scene
+ static Map<BaseOrb, Integer> orbMap;	Map of orb and number of it
+ static Map<String, Integer> orbNameMap;	Map of orb name and number of it
+ static Boolean isGameEnd;	Check if game is ended
+ static Boolean isPlayerTurn;	Check if this is player turn
+ static Scene mainMenuSecen;	Main menu Scene
+ static Stage stage;	Stage

### 5.1.2 Methods

+ static int attack(int AttackDamge);	-add damage from buff effect to AttackDamge if the buff is activated -return AttackDamge
+ static void startNewPlayerTurn();	Change to player turn
+ static int addShield(int shield);	-add shield from buff effect to shield if the buff is activated -return shield
+ static int heal(int hp);	return hp
+ static void healFromComboEffect();	-heal as the buff effect if that buff is activated
+ static void effectFromHeal(int Hp);	-do as the buff effect if that buff is activated
+ static Pane setBattleSecene(); throws Exception	Create new BattleScene
+ static void startMonsterTurn();	Change to monster turn
+ static void showTurn(String string)	Play fade animation for show turn text
+ static void setUpForGameEnd(String text, Creature target)	set up for End the Game
+ static Pane createGameEndPane(String text)	-create EndGamePane when the Game is ended -setOnMouseClicked quit to close the program

	-setOnMouseClicked returnToMainMenu to return to main menu
+ static void endTurn();	End player turn
+ static Thread getAttackThred(int AttackDamge, Creature target);	-create a thread for show Attacking the Creature
+ static Thread getShieldThred(int shield,Creature target);	-create a thread for show setShield the Creature
+ static Thread getHealThred(int hp,Creature target);	-create a thread for show Heal the Creature
+ static void showBattleStart();	Play fade animation of Text “Battle Start”
+ static void setUp();	-initialize new HoldingOrb,SelectOrb,orbMap,orbNameMap -set isGameEnd = false -set isPlayerTurn = true; -set turn number = 1

## 6.Package scene

### 6.1 Class BattleScene extends Scene

#### 6.1.1 Constructor

+ public BattleScene(); throws Exception	super Constructor(GameLogic.setBattleScene);
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## 7.Package gui

### 7.1 Class App extends Application

#### 7.1.1 Fields

- AudioClip BG;	set BG = "BGMusic.wav"
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#### 7.1.2 Methods

+ static void main(String[] args);	launch(args);
+ void start(Stage stage) throws Exception	- initialize root =new Mainmenu(); -initialize new Scene (root,1400,800) -set Resizable = false -setScene scene -setTitle "The Grand Wizard" -show stage -setOnCloseRequest System.exit(0); -set BG Volume 0.1 -set BG cyclecount 10000 -play BG -setOnMouseClicked for PlayButton to start the game
+ Getter and Setter	