

# [憤怒鳥] 資訊 108 級/尤辰因/F74046399

## ■ UML class diagram

MainWindow	
+ num: int	+ mouseX: float
+ count: int	+ mouseY: float
+ up: int	+ Vx: float
+ a: int	+ Vy: float
+ b: int	+ onSling: bool
+ c: float	+ shoot: bool
+ x1: float	+ done: bool
+ y1: float	+ canMove: bool
+ xb: float	+ skill: bool
+ yb: float	+ pigchange: bool
- ui:Ui::MainWindow	+ torestart: bool
- Scene:QGraphicsScene*	+ alivebird[4]: int
- world:b2World*	- S1:bool
- ltenList:QList<GameItem*>	- S2:bool
- Timer:QTimer	- Vxe: float
- Slingshot: QLabel *	- Vye: float

- birdie[4]: Bird \*
- enemy[2]: Enemy \*
- bar[4] :Bar \*
- number: QLabel \*
- score: QLabel \*
- life1: QLabel \*
- life[5]: QLabel \*
- slingbox :sling \*
- exit: QPushButton \*
- Restart: QPushButton \*

- Vxe1: float
- Vye1: float

<<constructor>> + MainWindow(parent : QWidget \*)

<<destructor>> + ~MainWindow ()

+ *showEvent* ( QShowEvent \*) : void

+ *eventFilter* ( QObject \*,QEvent \*event ) : bool

+ *closeEvent* (QCloseEvent \*) : void

+ generateElement () : void

+ destroy (): void

+ <<signals>> quitGame(): void

-<<slots>> tick(): void

-<<slots>>QUIT SLOT(): void

-<<slots>>Restart(): void

## Gameitem

#g\_body: b2Body \*

#g\_pixmap: QGraphicsPixmapItem

#g\_size: QSizeF

#g\_world: b2World \*

#g\_worldsize: static QSizeF

#g\_windowsize:static QSizeF

+GameItem(world:b2World \*)

+~GameItem()

+setGlobalSize(worldsize:QSizeF,windowsize:QSizeF):static void

+<<slots>> paint(): void

## Land

```
+Land(x:float,y:float,w:float,h:float,pixmap:QPixmap,world:b2World  
*,scene:QGraphicsScene *)
```

## Bird

```
+Bird(x:float,y:float,radius:float,timer:QTimer*,pixmap:QPixmap,world:b2World  
*,scene:QGraphicsScene *)  
  
+setLinearVelocity(velocity:b2Vec2): void  
  
+ability:virtual void  
  
+setTransform(loc: b2Vec2,angle: float ): void
```

## Bar

```
+ Bar (x:float,y:float,w:float,h:float,pixmap:QPixmap,world:b2World*,  
scene:QGraphicsScene *)
```

BBird
+BBird(x:float,y:float,radius:float,timer:QTimer  *,pixmap:QPixmap,world:b2World *,scene:QGraphicsScene *)  +ability: virtual void

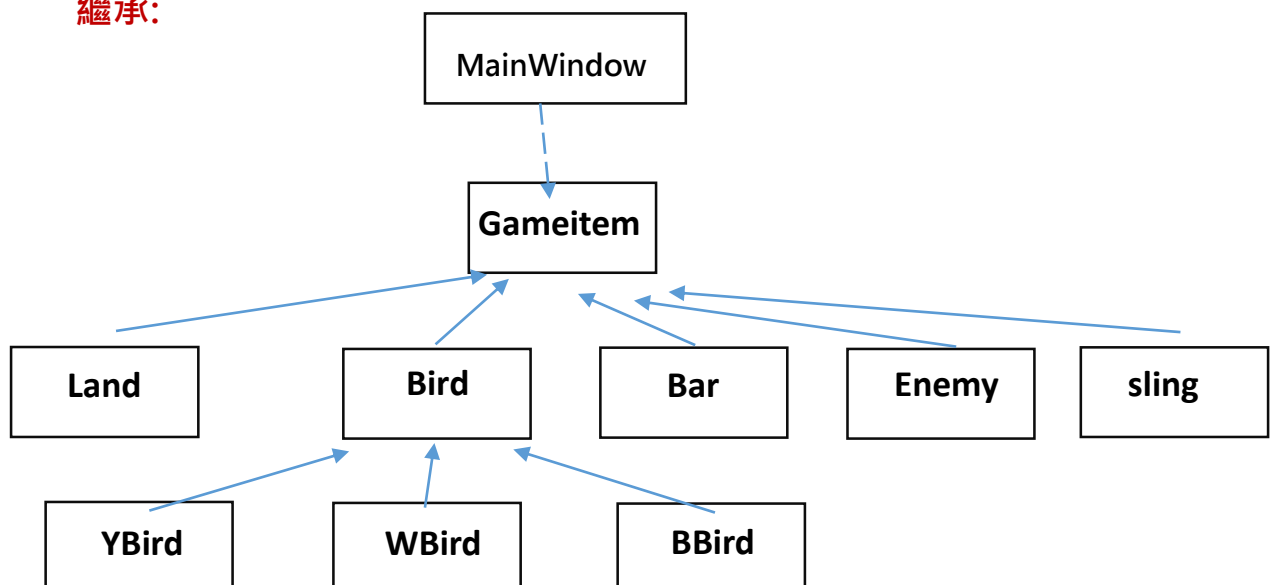
Enemy
+ Enemy (x:float,y:float,radius:float,timer:QTimer  *,pixmap:QPixmap,world:b2World *,scene:QGraphicsScene *)  +getlinearvelocity:b2Vec2

sling
+ sling(x:float,y:float,w:float,h:float,world:b2Worl*,scene:QGraphicsScene  *)

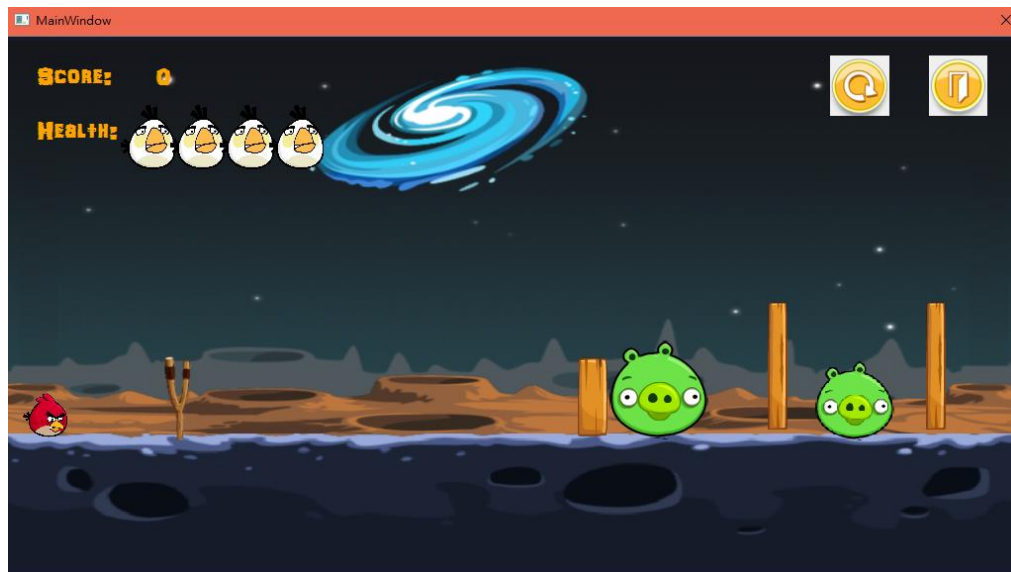
WBird
+WBird(x:float,y:float,radius:float,timer:QTimer  *,pixmap:QPixmap,world:b2World *,scene:QGraphicsScene *)  +ability: virtual void

YBird
+YBird(x:float,y:float,radius:float,timer:QTimer  *,pixmap:QPixmap,world:b2World *,scene:QGraphicsScene *)  +ability: virtual void

繼承:



## ■ Screen shot



## ■ How to play

按壓滑鼠左鍵鳥上彈弓，接著按壓住滑鼠拖曳至適當距離後放開，小鳥即射出，射出後按壓右鍵，除了紅色小鳥，其餘三種鳥都有特殊技能可使用。當敵人(豬)被木塊或小鳥撞擊分數加 200，敵人消失。

## ■ Program architecture

建立一個物理的世界，在 Gameltem 裡建立物理世界中物體的特性，還有利用其中的 paint()轉換座標，建立完世界即可套用至小鳥和木塊與敵人和地面，則這些物件即受重力作用。計算出在不同的角度拉弓所造成的初速，利用 Bird 中的 setLinearVelocity 設定射擊出鳥。

Slot:

void tick():更新畫面

void QUITSLLOT(): 印出結束遊戲訊息

**void Restart(): 重新開始遊戲**