Project 3 report : Angry Bird

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資訊一甲 108

# UML Diagram

MainWindow
-ui:MainWindow * -scene:QGraphicsScene * -world:b2World * -itemList:QList<GameItem *> -timer:QTimer -land:Land * -ybird:yellowbird * -bbird :bluebird * -a:bluebird * -b:bluebird * -wbird:whitebird * -rbird:Bird * -eggy:egg * -once:int -y_once:int -b_once:int -w_once:int -redgenerated:int -whichbird:int -timer_detect:QTimer * -timer_collide:QTimer * -piggy:enemy * -piggy2:enemy * -*ob1:obstacle -*ob2:obstacle -*ob3:obstacle -*ob4:obstacle -*ob5:obstacle -*ob6:obstacle -scoretext:QString -displayscore: int -launcher:invwall * -int defeat1: int -int defeat2: int
<<constructor>>MainWindow(QWidget *parent = 0) <<destructor>>~MainWindow() +showEvent(QShowEvent *): void +eventFilter(QObject *,QEvent *event): bool +closeEvent(QCloseEvent *): void +mousePressEvent(QMouseEvent *event): void +generate_nextbird(): void

```
   +showScore(): void
   +restartfunc(): void
   <<slots>>+ifcolliding(): void
   <<slots>>+on_pushButton_exit_clicked(): void
   <<slots>>+on_pushButton_restart_clicked(): void
   <<signals>>quitGame():void
   <<slots>>-tick(): void
   <<slots>>-QUITSLOT(): void
   <<slots>>-detect(): void
```

Land

```
   <<constructor>>Land(float x, float y, float w, float h, QPixmap pixmap,
b2World *world, QGraphicsScene *scene)
```

GameItem

```
   +g_body:b2Body *
   +g_pixmap: QGraphicsPixmapItem
   #g_size:QSizeF
   #g_world:b2World *
   #g_worldsize:static QsizeF
   #g_windowsize:static QSizeF
```

```
   <<constructor>>GameItem(b2World *world)
   <<destructor>>~GameItem()
   +setGlobalSize(QSizeF worldsize, QSizeF windowsize):static void
   <<slot>>+paint():void
```

bird

```
   <<constructor>>+Bird(float x, float y, float radius, QTimer *timer, QPixmap
pixmap, b2World *world, QGraphicsScene *scene)
   +setLinearVelocity(b2Vec2 velocity):void
```

bluebird

```
   +alreadyclicked:int
```

```
   <<constructor>>bluebird(float x, float y, float radius, QTimer *timer,
QPixmap pixmap, b2World *world, QGraphicsScene *scene)
   +setLinearVelocity(b2Vec2 velocity):void
   +morebird(b2World *world, QGraphicsScene *scene, int *once):void
```

yellowbird
<<constructor>>yellowbird(float x, float y, float radius, QTimer *timer, QPixmap pixmap, b2World *world, QGraphicsScene *scene) +setLinearVelocity(b2Vec2 velocity): void

whitebird
+alreadyclicked:int
<<constructor>>whitebird(float x, float y, float radius, QTimer *timer, QPixmap pixmap, b2World *world, QGraphicsScene *scene) +setLinearVelocity(b2Vec2 velocity):void

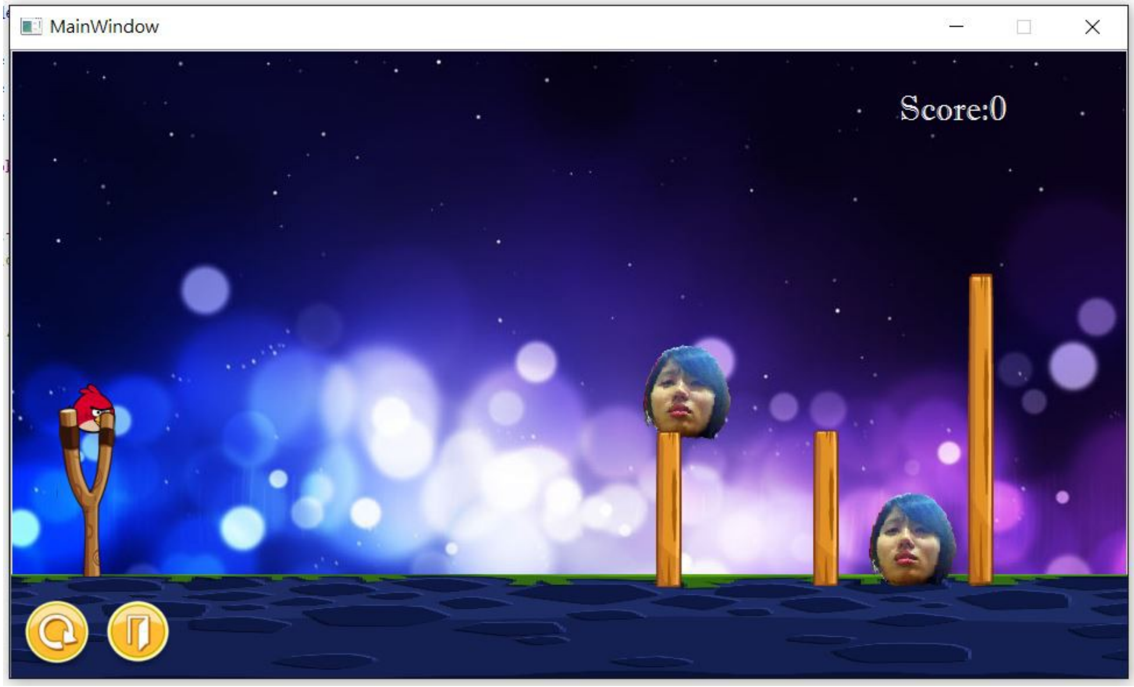
egg
<<constructor>>egg(float x, float y, float radius, QTimer *timer, QPixmap pixmap, b2World *world, QGraphicsScene *scene) +setLinearVelocity(b2Vec2 velocity):void

enemy
<<constructor>>enemy(float x, float y, float radius, QTimer *timer, QPixmap pixmap, b2World *world, QGraphicsScene *scene) +setLinearVelocity(b2Vec2 velocity): void

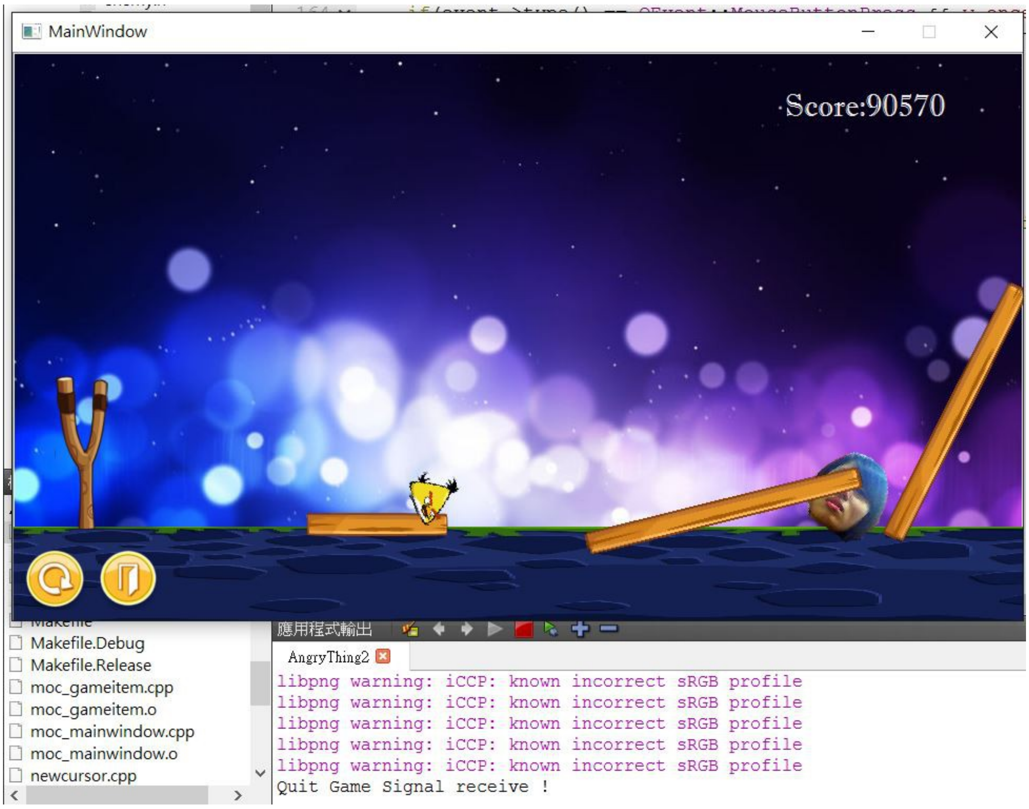
invwall
<<constructor>>invwall(float x, float y, float w, float h, b2World *world)

obstacle
<<constructor>>obstacle(float x, float y, float w, float h, QTimer *timer, QPixmap pixmap, b2World *world, QGraphicsScene *scene) +setLinearVelocity(b2Vec2 velocity): void

Screenshot



(the initial screen of the game)



```
Makefile.Debug
Makefile.Release
moc_gameitem.cpp
moc_gameitem.o
moc_mainwindow.cpp
moc_mainwindow.o
newcursor.cpp
```

```
libpng warning: iCCP: known incorrect sRGB profile
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Quit Game Signal receive !
```
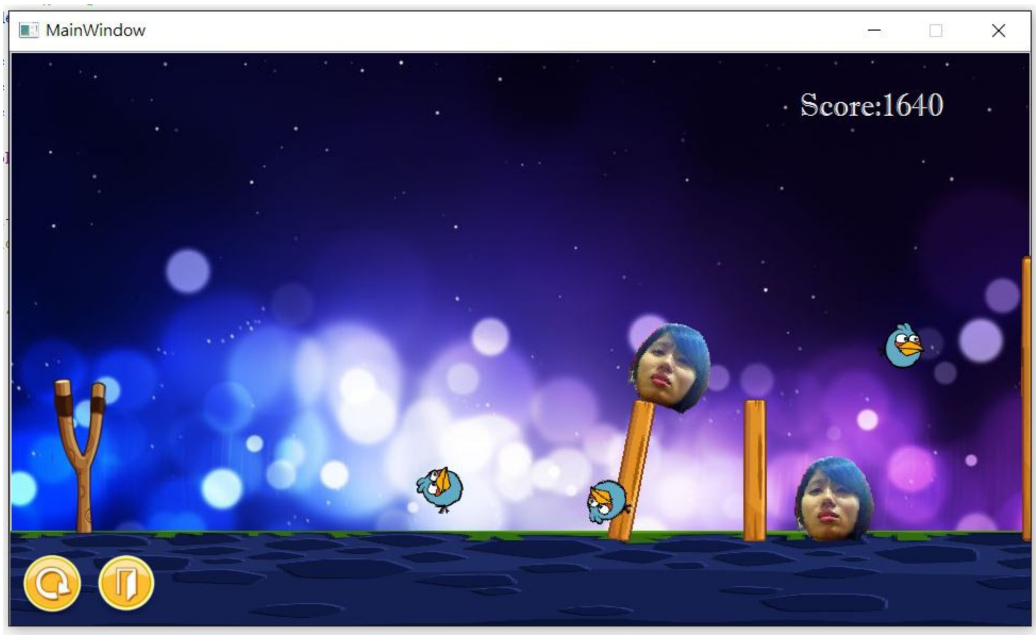
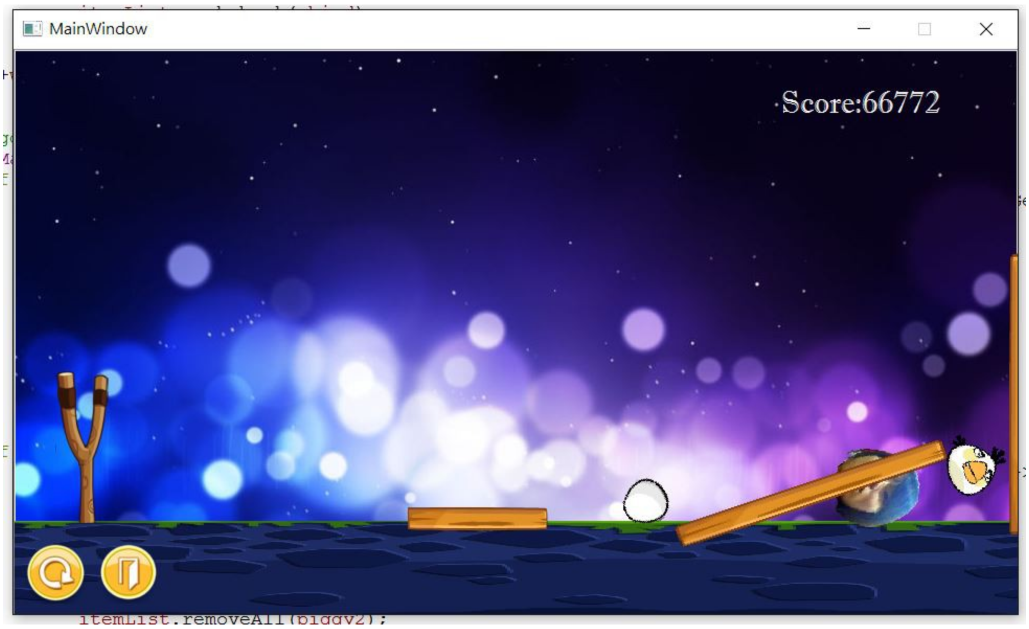

(if score>70000 or the two pigs are both defeated, then emit quitGame signal)



(the blue bird will come as three birds after clicking on the screen)



(the white bird will lay an egg after clicking on the screen)

# **How to play**

The game started with a red bird appeared after 1.5 seconds. Always click on the screen to launch the birds.

You can click on the screen after launching the birds to activate the special functions:
blue bird → it will come as three birds after clicking
yellow bird → it will accelerate based on the flying direction when clicking

white bird → it will lay an egg which falls vertically after clicking

Defeat a pig successfully → score + 35000
Push a pig successfully → add score

If the score reaches 70000 or the two pigs are defeated, then you win.

There are two buttons on the lower left corner, the left one is to restart no matter when, and the right one is to exit from this game level.

<u># Program Architecture</u>

main.cpp will let the mainwindow show, then the showevent function in the mainwindow and the constructor will do the initialization. All the necessary objects are the data member in the mainwindow class.

Inherits from GameItem:
bird
bluebird
yellowbird
whitebird
egg
enemy
obstacle

Inherits from Land:
invwall (the invisible boundaries on the right side and the left side)

A QList called ItemList records all the items required refreshing on the screen. If the restart button is clicked, it will delete all the items listed in the ItemList, then clear the ItemList and do the variable initialization.
No matter the player win or lose, as the game finished, it will emit a quitGame signal.