Report on

Game Application : CSB RUN

Made by

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Present to

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Chapter 1

Game detail

This game is about the student in computer science that run when he saw the police because he wants to steal the trophy cup in football club.

How to play

Use the “W”, “Spacebar” or “Up” to Jump

Chapter 2

Character

This character is my friend his name is Tanaphat

this is main character to run over the object in game

and he is Liverpool FC

This is a officer or police that want to

catch my friend Tanaphat

Object

This is and object to jump over

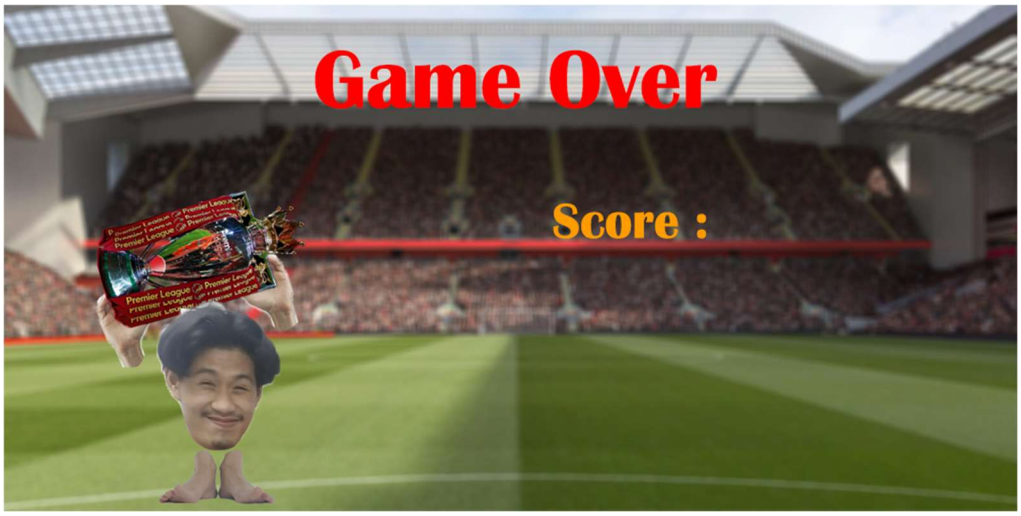
This is Manchester United Balloon

that Tanaphat very hate it

Place

This is Menu page that have to select plat or exit

This is a road that main character will run



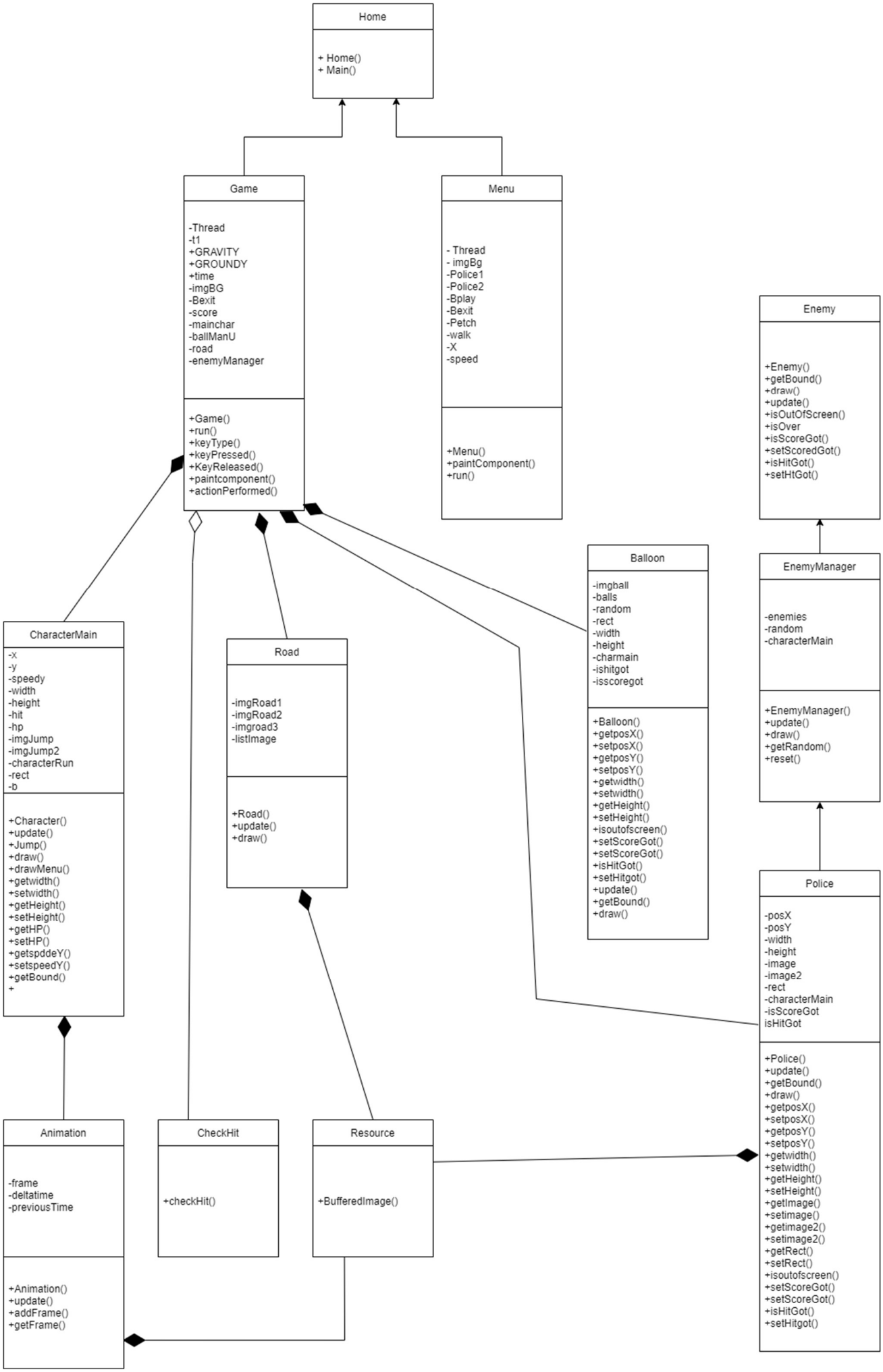
This is GameOver page that have to collect your scores and times

Advantage

1. **Just for Fun**
2. **Improve your skill**
3. **Learn how to escape the police**

Road Map

ลำดับ	รายการ	1-7	8-14	15-21	22-30
1	ออกแบบตัวละคร				
2	เขียนโค้ด				
3	ทดสอบ				
4	แก้ไข				


Home
+ Home()
+ Main()
Game
-Thread
-t1
+GRAVITY
+GROUNDY
+time
-imgBG
-Bexit
-score
-mainchar
-ballManU
-road
-enemyManager
+Game()
+run()
+keyType()
+keyPressed()
+KeyReleased()
+paintcomponent()
+actionPerformed()
Menu
- Thread
- imgBg
-Police1
-Police2
-Bplay
-Bexit
-Petch
-walk
-X
-speed
+Menu()
+paintComponent()
+run()
Enemy
+Enemy()
+getBound()
+draw()
+update()
+isOutOfScreen()
+isOver
+isScoreGot()
+setScoredGot()
+isHitGot()
+setHtGot()
Balloon
-imgball
-balls
-random
-rect
-width
-height
-charmain
-ishitgot
-isscoregot
+Balloon()
+getposX()
+setposX()
+getposY()
+setposY()
+getwidth()
+setwidth()
+getHeight()
+setHeight()
+isoutofscreen()
+setScoreGot()
+setScoreGot()
+isHitGot()
+setHitgot()
+update()
+getBound()
+draw()
EnemyManager
-enemies
-random
-characterMain
+EnemyManager()
+update()
+draw()
+getRandom()
+reset()
CharacterMain
-x
-y
-speedy
-width
-height
-hit
-hp
-imgJump
-imgJump2
-characterRun
-rect
-b
+Character()
+update()
+Jump()
+draw()
+drawMenu()
+getwidth()
+setwidth()
+getHeight()
+setHeight()
+getHP()
+setHP()
+getspddeY()
+setspeedY()
+getBound()
+
Road
-imgRoad1
-imgRoad2
-imgroad3
-listImage
+Road()
+update()
+draw()
Police
-posX
-posY
-width
-height
-image
-image2
-rect
-characterMain
-isScoreGot
isHitGot
+Police()
+update()
+getBound()
+draw()
+getposX()
+setposX()
+getposY()
+setposY()
+getwidth()
+setwidth()
+getHeight()
+setHeight()
+getImage()
+setimage()
+getimage2()
+setimage2()
+getRect()
+setRect()
+isoutofscreen()
+setScoreGot()
+setScoreGot()
+isHitGot()
+setHitgot()
Animation
-frame
-deltatime
-previousTime
+Animation()
+update()
+addFrame()
+getFrame()
CheckHit
+checkHit()
Resource
+BufferedImage()

Constructor

Home() for calling Menu() and Game()

Menu() for create menu page

Game() for create game page and create

CharacterMain() , Road() , EnemyManager(), Balloon()

CharacterMain() add animation

Balloon() create random balloon

Road() create road and loop

Police() set images of police

Animation() create arraylist of character animation

Enemy() don’t have anything to do

EnemyManager() add enemy with random postion

Encapsulation

```
public class Balloon extends Enemy {

 private class Ball{
        float posX;
        float posY;
    }
}
```

Composition

```
// Game over ----------------------
if (mainchar.getHP() <= 0) {
    mainchar.setHP(hP: 0);
    mainchar.draw(g);
    try {
        thread.sleep(millis: 1000);
    } catch (InterruptedException e) {
        e.printStackTrace();
    }
    ;
    thread.stop();
    t1.stop();
    g.drawImage(imgBg, x: 0, y: 0, width: 1000, height: 500, this);
    Bexit.setBounds(x: 500, y: 400, width: 100, height: 50);
    Bexit.addActionListener(this);
    add(Bexit);
    g.setFont(new Font(name: "TimesRoman", Font.PLAIN, size: 50));
    g.setColor(Color.orange);
    g.drawString("" + Score, x: 800, y: 230);
    g.drawString("Time : " + time + " sec", x: 520, y: 340);
}
```

Polymorphism

```
public class Balloon extends Enemy {

    public void draw(Graphics g){
        for(Ball ball: balls){
        g.drawImage(imgball,(int) ball.posX, (int)ball.posY,width,height ,null);

        }
    }
```

```
public CharacterMain() {

public void draw(Graphics g) {
        if ((int) y != 280) {
            if (getHit()) {
                g.drawImage(ImageJump2, (int) x, (int) y, (int) width, (int)
height, null);
            } else {
                g.drawImage(ImageJump, (int) x, (int) y, (int) width, (int)
height, null);

            }
        } else {
            g.drawImage(charecterRun.getFrame(), (int) x, (int) y, (int) width,
(int) height, null);
            setHit(false);

        }
        g.setColor(Color.white);
        g.setFont(new Font("TimesRoman", Font.PLAIN, 30));
        g.setColor(Color.red);
        if (HP > 0)
            g.fillRect(0, 0, HP * 5, 20);

    }
}
```

Have a same paint method but another function

Abstract

```
public abstract class Enemy {
    public Enemy() {
    }

    public abstract Rectangle getBound();
    public abstract void draw(Graphics g);
    public abstract void update();
    public abstract boolean isOutOfScreen();
    public abstract boolean isOver();
    public abstract boolean isScoreGot();// 1 time
    public abstract void setScoreGot(boolean isScoreGot);
    public abstract boolean isHitGot();
    public abstract void setHitGot(boolean isHitGot);

}
```

This class create a template of methods

```
public class Police extends Enemy {
    @Override
    public boolean isOutOfScreen() {
        return (posX + width < 0);

    }

    @Override
    public boolean isOver() {
        return (characterMain.getX() > getPosX());
    }

    @Override
    public boolean isScoreGot() {
        return isScoreGot;
    }

    @Override
    public void setScoreGot(boolean isScoreGot) {
        this.isScoreGot = isScoreGot;
```

```
    }

    @Override
    public boolean isHitGot() {
        return isHitGot;
    }

    @Override
    public void setHitGot(boolean isHitGot) {
        this.isHitGot = isHitGot;
    }

    @Override
    public void update(){
        posX-=2;
        rect.x = posX;
        rect.y = posY;
        rect.width = width;
        rect.height = height;
    }
    @Override
    public Rectangle getBound(){
        return rect;
    }
    @Override
    public void draw(Graphics g){
        // g.drawRect(posX, posY,width,height);
        g.drawImage(image, posX, posY,width,height, null);
    }
```

And when you extend abstract class you must override

Inheritance

```
class Home extends JFrame implements ActionListener {
public static void main(String[] args) {
        Home frame = new Home();
        frame.setSize(1000, 500);
        frame.setTitle("CSB RUN");
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frame.setLocationRelativeTo(null);
        frame.setVisible(true);
    }
}
```

Class Home extend Jframe

So you can use all methods in JFrame

For example :

frame is class Home but it can use the method setSize

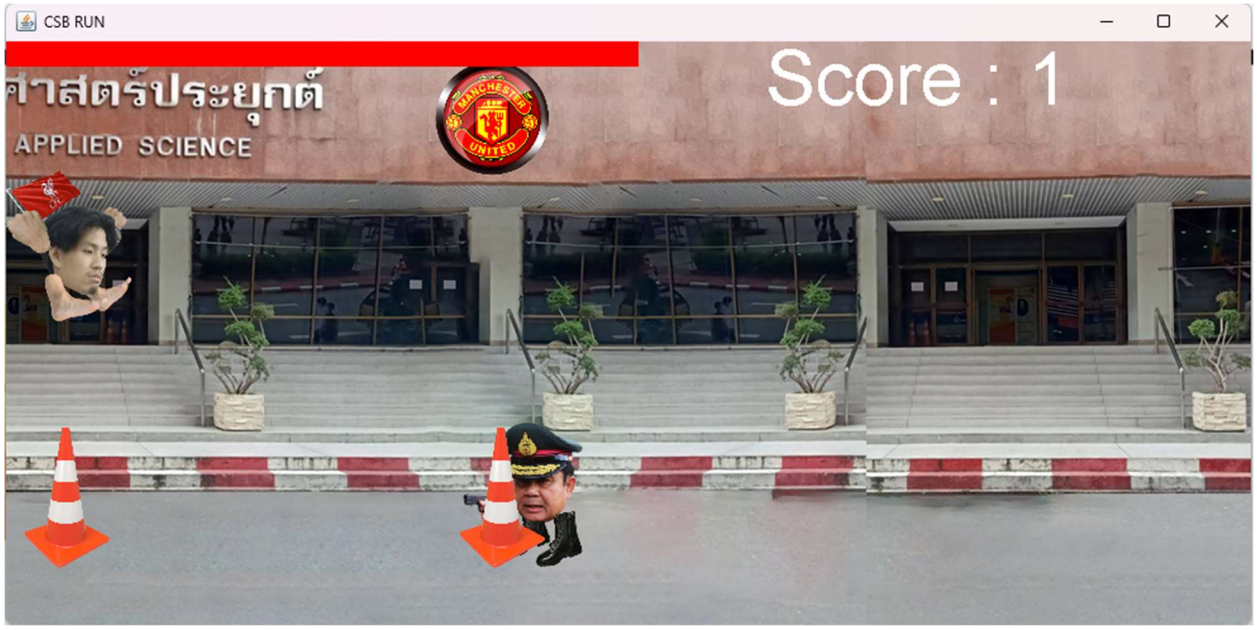
setSize is one of JFrame method

GUI

Component is

-Have a Button

-Have a image for background



Component is

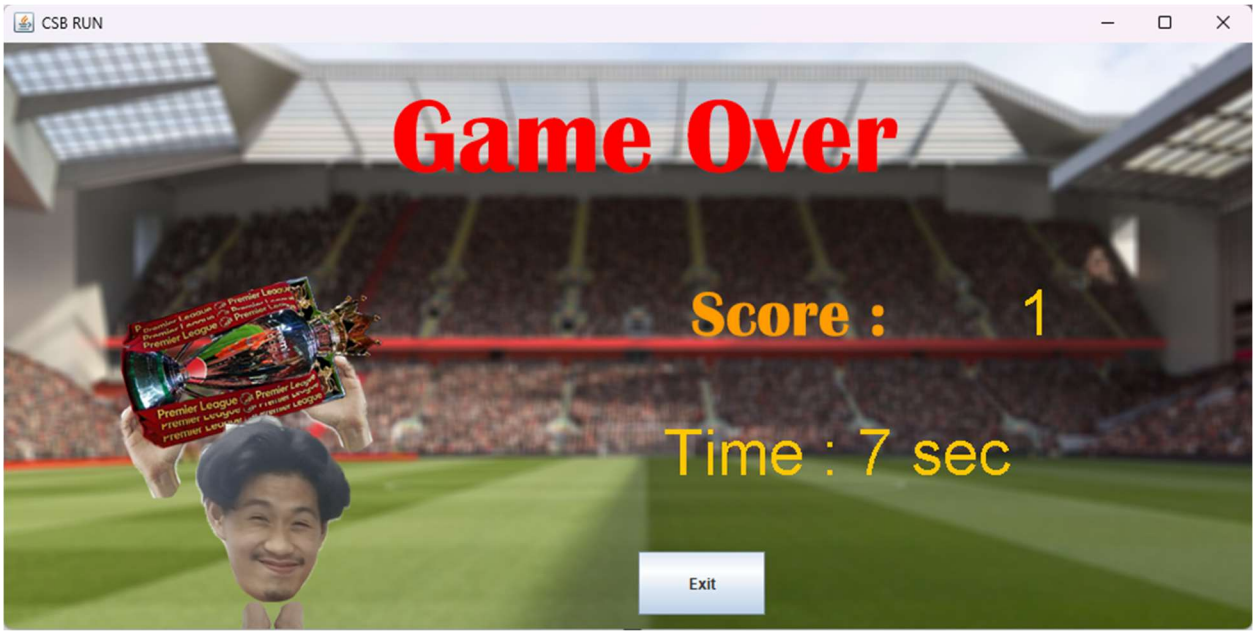
-Have character image

-Have a image for background

-Have a object Image that damage your character

-Have a Rectangle HP bar

-Have a String Score



Component is

-Have a Button

-Have a Score String and times

Event Handling

```
class Home extends JFrame implements ActionListener {
    Menu menu;
    Game game;

    @Override
    public void actionPerformed(ActionEvent e) {

        if (e.getSource() == menu.Bplay) {
            this.setLocationRelativeTo(null);
            this.remove(menu);
            this.setSize(1000, 500);
            game = new Game();
            this.add(game);
            game.addKeyListener(game);
            game.requestFocusInWindow();

        } else if (e.getSource() == menu.Bexit) {
            System.exit(0);
        }
        this.validate();
        this.repaint();
    }
}
```

actionPerformed

use to set the button command when you hit play and exit button

it will do the different command

Algorithm

```
if(enemies.get(0).isOver() && !e.isScoreGot()){
                    if(!characterMain.getHit())
                        Score++;
                        e.setScoreGot(true);
}



if(e.getBound().intersects(characterMain.getBound()) &&
   !e.isHitGot() && enemies.get(0).isOver()){
                    characterMain.jump();
                    characterMain.setHP(characterMain.getHP()-20);
                    e.setHitGot(true);
                    characterMain.setHit(true);
}
```

This algorithm is used to count the score when we jump over the object

The problem is if we didn't use this algorithm, it will count a lot score when we jump 1 object

First, we must check, did we jump over object already?

Second, we must check, did you got score already?

If we jump and not have a score it will it will count a score

But if you got a score, you will do nothing.

And Next is check hit already

The problem is if you hit 1 object you lose a lot of HP

The Algorithm is

First we check character and object intersects or not ?

Second we check, is it hit already ?

Third we check we pass the object or not ?

    If it true all it will -20 HP

    else it will do nothing

Chapter 3

The Problem

- Have a lot of damage when hit 1 object
- Very hard to coding a beautiful structure if you create all of class in the same class it will hard to edit
- Have a little time to coding a game because it has a lot of exams
- Don’t know how to change a character

Highlight of my game

I use my friend to create a character, So I very happy when I saw his face