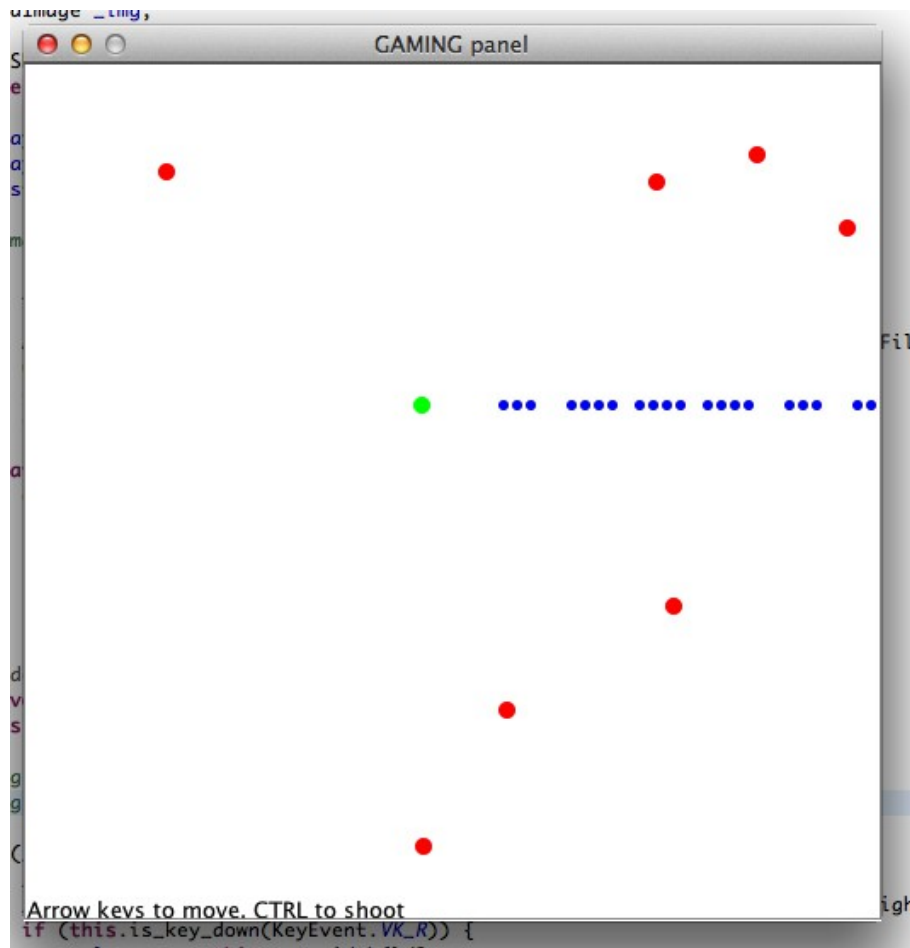


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Let's make a shooter game



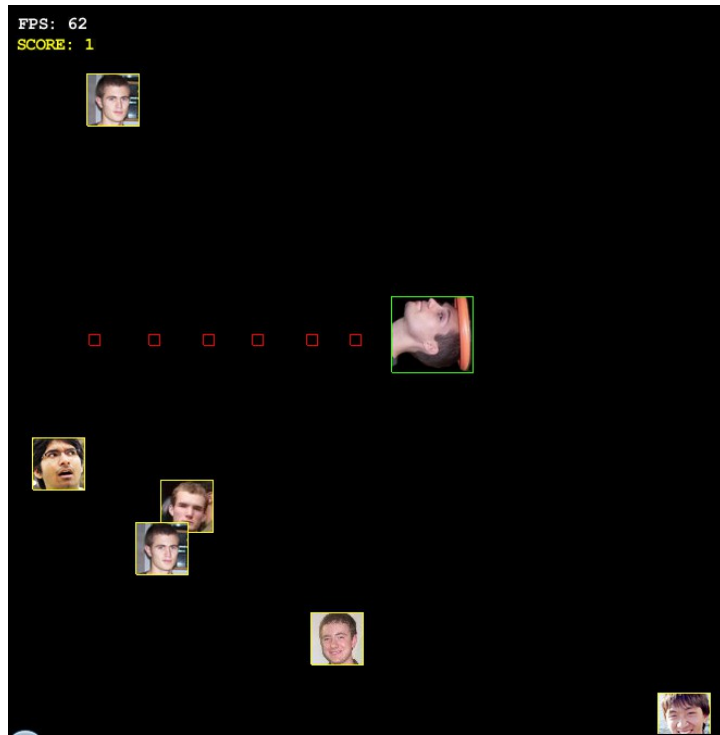
Object-oriented design with gamepanel

+

Misc gamepanel stuff

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Outline:



You shoot bullets from the last direction you moved. Keep track of direction (as an enum), keep track of bullets (as a list of bullet objects). Remove the bullets if they're offscreen.

There are enemies on the screen (keep track of them as a list of enemy objects). Spawn enemies every once in a while. They'll move at the player (make some dumb AI).

If a bullet hits an enemy, remove both.
If an enemy hits the player, game over.
(Use intersecting circles for hit detection!)

Demo:

<http://spotcos.com/misc/martygame.html>

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Designing a bullet class:

```
public class Bullet {  
    public int _x, _y, _vx, _vy;  
    public Bullet(int x, int y, int vx, int vy) {  
        _x = x;  
        _y = y;  
        _vx = vx;  
        _vy = vy;  
    }  
    public void update(ShooterGame game) {  
        _x += _vx;  
        _y += _vy;  
        game._g.setColor(Color.blue);  
        game._g.fillOval(this._x-3, this._y-3, 6, 6);  
    }  
}
```

Every bullet will keep track of it's position and velocity. It'll also “know” how to draw itself as well.

We'll keep a list of these. Then, every (game) update cycle, we'll call update on every bullet.

```
for (int i_bullet = 0; i_bullet < _player_bullets.size(); i_bullet++) {  
    Bullet itr_bullet = _player_bullets.get(i_bullet);  
    itr_bullet.update(this);  
}
```

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Designing a bullet class:

If the bullet is offscreen, remove it from the list.
This'll break though, why?

```
for (int i_bullet = 0; i_bullet < _player_bullets.size(); i_bullet++) {  
    Bullet itr_bullet = _player_bullets.get(i_bullet);  
    itr_bullet.update(this);  
  
    if (!this.point_on_screen(itr_bullet._x, itr_bullet._y)) {  
        _player_bullets.remove(itr_bullet);  
    }  
}
```

And how do we fix this?
(Hint: think backwards!)

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How to Make Bullet

Keep track of your last movement direction (I recommend an enum like this)

```
public enum Side {  
    LEFT, RIGHT, UP, DOWN  
}
```

Then just modify the movement code from last time:

```
if (this.is_key_down(KEY_UP)) {  
    _player_y-=3;  
    _last_facing = Side.UP;  
}  
if (this.is_key_down(KEY_DOWN)) {  
    _player_y+=3;  
    _last_facing = Side.DOWN;  
}  
if (this.is_key_down(KEY_LEFT)) {  
    _player_x-=3;  
    _last_facing = Side.LEFT;  
}  
if (this.is_key_down(KEY_RIGHT)) {  
    _player_x+=3;  
    _last_facing = Side.RIGHT;  
}
```

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How to Make Bullet

Keep track of your last movement direction (I recommend an enum like this)

```
public enum Side {  
    LEFT, RIGHT, UP, DOWN  
}
```

Then just modify the movement code from last time:

```
if (this.is_key_down(KEY_UP)) {  
    _player_y-=3;  
    _last_facing = Side.UP;  
}  
if (this.is_key_down(KEY_DOWN)) {  
    _player_y+=3;  
    _last_facing = Side.DOWN;  
}  
if (this.is_key_down(KEY_LEFT)) {  
    _player_x-=3;  
    _last_facing = Side.LEFT;  
}  
if (this.is_key_down(KEY_RIGHT)) {  
    _player_x+=3;  
    _last_facing = Side.RIGHT;  
}
```

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How to Make Bullet

When you press the “shoot” button, add a bullet to the list.
(Decide it's velocity based on your last facing)

```
if (this.is_key_down(KeyEvent.VK_SPACE)) {  
    int bvx = 0, bvy = 0;  
    if (_last_facing == Side.LEFT) {  
        bvx = -8;  
    } else if (_last_facing == Side.RIGHT) {  
        bvx = 8;  
    }  
  
    if (_last_facing == Side.UP) {  
        bvy = -8;  
    } else if (_last_facing == Side.DOWN) {  
        bvy = 8;  
    }  
  
    Bullet neu = new Bullet(_player_x, _player_y, bvx, bvy);  
    _player_bullets.add(neu);  
}
```

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Making an enemy class

Do something similar to what was just done with the bullet

```
public class Enemy {  
    public int _x, _y;  
    public Enemy(int x, int y) {  
        _x = x;  
        _y = y;  
    }  
    public void update(ShooterGame game) {  
        //We'll put enemy AI in here later!  
  
        game._g.setColor(Color.red);  
        game._g.fillOval(_x-5, _y-5, 10, 10);  
    }  
}
```

And update them similarly in every update cycle.

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Enemies die when you kill them

For every enemy, loop through all the bullets.

If the enemy and the bullet are colliding, remove both.

```
for (int i_enemy = _enemies.size()-1; i_enemy >= 0; i_enemy--) {
    Enemy itr_enemy = _enemies.get(i_enemy);
    itr_enemy.update(this);

    boolean do_remove = false;
    for (int i_bullet = _player_bullets.size()-1; i_bullet >= 0; i_bullet--) {
        Bullet itr_bullet = _player_bullets.get(i_bullet);
        if (is_collide(itr_enemy._x, itr_enemy._y, itr_bullet._x, itr_bullet._y, 5 + 3)) {
            _player_bullets.remove(itr_bullet);
            do_remove = true;
            break;
        }
    }
    if (do_remove) {
        _enemies.remove(itr_enemy);
        continue;
    }
}
```

Do the enemy-player collision here, too!

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The simplest enemy AI possible:

```
public void update(ShooterGame game) {  
    if (rand.nextInt(2)==0) {  
        if (_x > game._player_x) {  
            _x-=2;  
        } else {  
            _x+=2;  
        }  
  
        if (_y > game._player_y) {  
            _y-=2;  
        } else {  
            _y+=2;  
        }  
    }  
  
    //...
```

This could be improved...

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Misc GamePanel Stuff

Want to draw an image?

```
BufferedImage _img = ImageIO.read(new File("doge.jpeg"));  
  
...  
  
_g.drawImage(_img, 0, 0, 100, 100, null);
```

Want to play a sound?

```
AudioInputStream audioInputStream = AudioSystem.getAudioInputStream(new File("goober.wav"));  
Clip clip = AudioSystem.getClip();  
clip.open(audioInputStream);  
clip.start();
```

(This only supports .wav files)

Want to set the font?

```
_g.setFont(new Font("Comic Sans MS", Font.BOLD, 45));
```

(Due to an odd quirk in DrawingPanel, you gotta do this in the update cycle. Thanks, Marty.)

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Resource Files

Include the resource files you're loading in the root directory of your eclipse project.



← Like this

If running standalone JAR, include them in the same folder as the JAR.

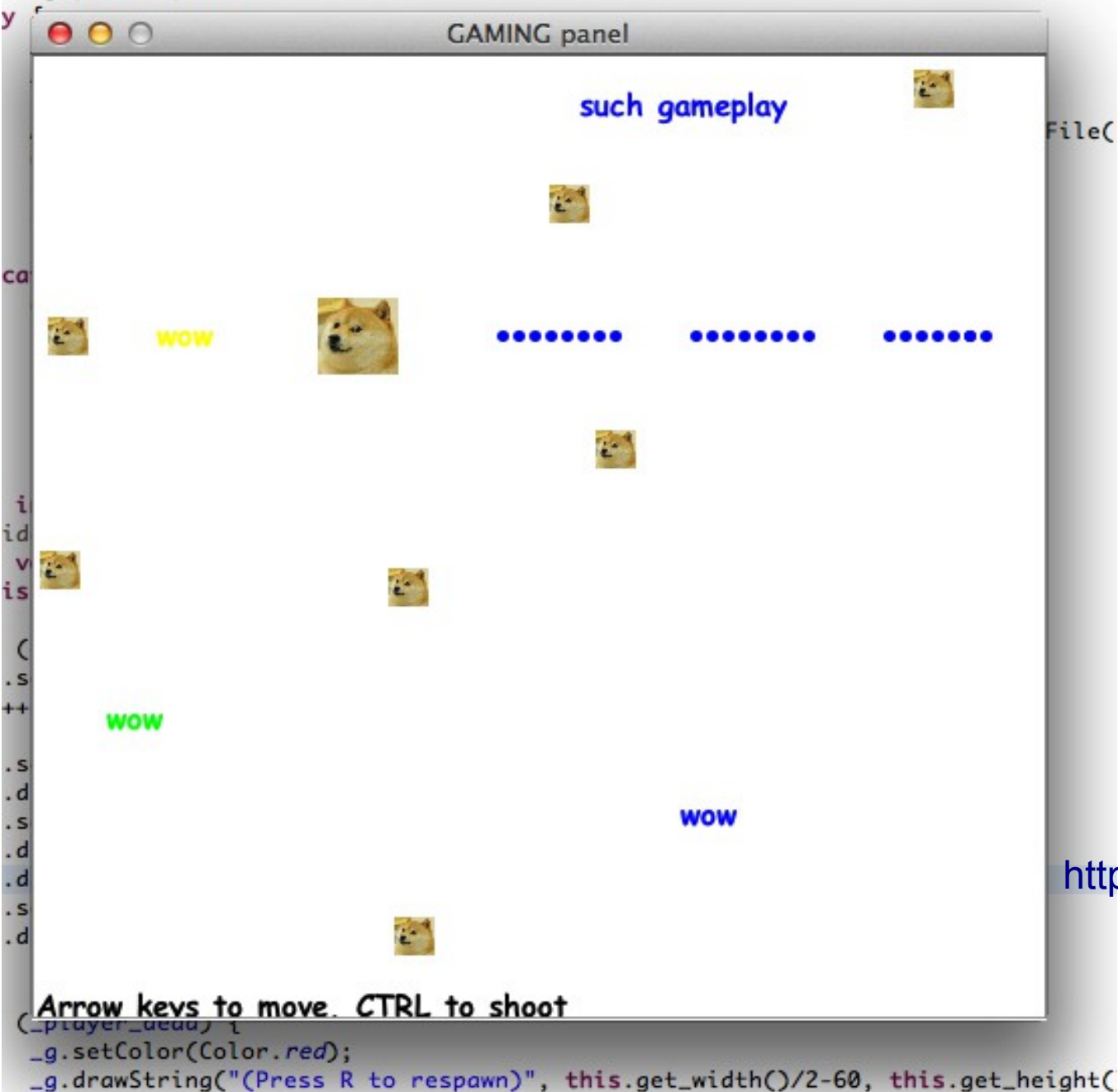


← Like this

There's also a way to embed the file INTO the JAR, but it's pretty ridiculous.

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image, audio, font



Activity:

Add SOME sort of feature or spin onto the game in 30 minutes.

wow

such creative

group acitivityt

maknig the gmae

<https://gist.github.com/spotco/8452705>