Big Space Game



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Program Operation

- -Follow the menu to play the game
- -Up to 32 player multiplayer
- -Right click to thrust
- -Left click to shoot
- -Middle click to special shoot (big ships only)

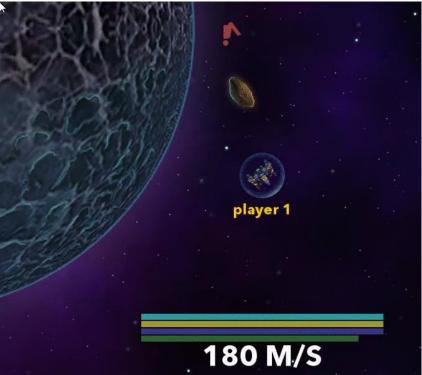
Demonstration

Multiplayer:

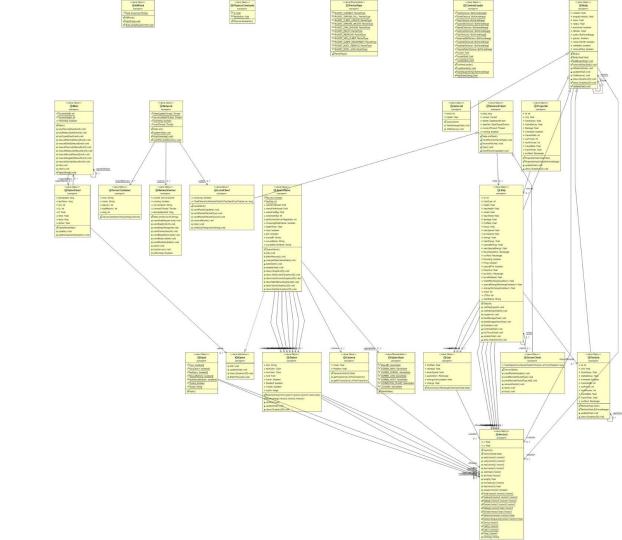


Demonstration

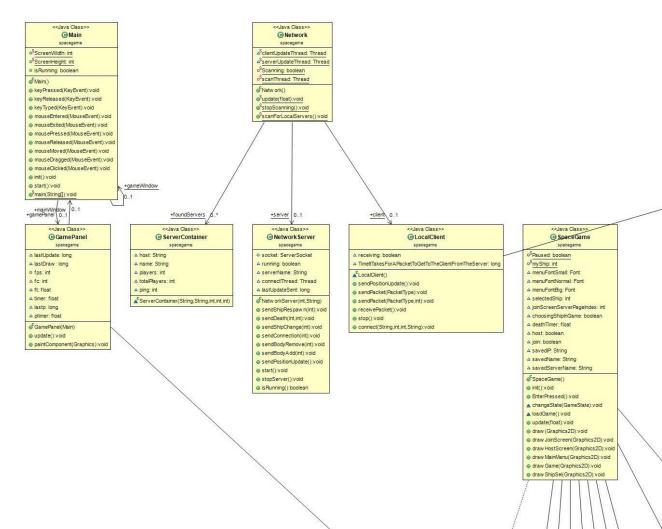
Planets and orbits (single-player only):



Too big for one slide

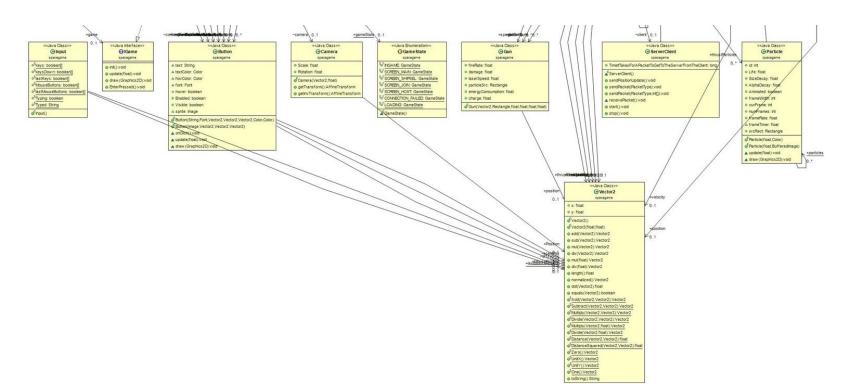


The basics

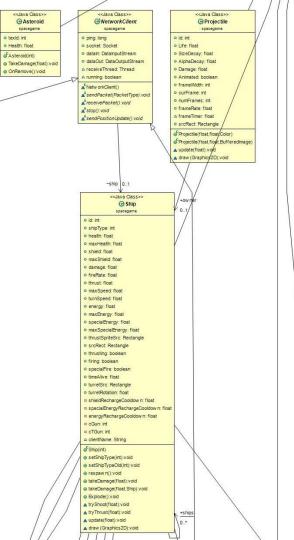


UI and more basics

Also some network stuff



Network client and projectiles



o texid int

o Health: float

SAsteroid(int)

Static things (constants, resources) and Bodies

«Java Enumeration»

③ PacketType

spacegame

FACKET_CONNECT. PacketType

√ FACKET_SERVER_FULL: PacketType

√ FACKET_SERVER_UPDATE PacketType

√ FACKET_DEATH PacketType

√ FACKET_BODY_ADD: PacketType

<<Java Class>> **⊕** ContentLoader spacegame oSshipTextures: BufferedImage[] oSshieldTexture: BufferedImage oSlaserTexture: Bufferedimage oSspaceBGTexture: BufferedImage oSplanetTextures: BufferedImage[] SasteroidTextures: BufferedImage[] oSstarTextures: Bufferedimage[] oSasteroidGibTexture: BufferedImage oSexplodeTexture0: BufferedImage oSexplodeTexture1: BufferedImage oSmuzzleFlashTexture: BufferedImage oSAvenir: Font oSAvenirBold: Font oSAvenirDemi: Font ContentLoader() @SLoadContent():void Sloadlmage(String): BufferedImage SloadFont(String):Font

Body spacegame o rotation: float o angular Velocity: float o mass: float o radius: float o anchored boolean o fillColor: Color o sprite: Bufferedimage o gravity: boolean o removeOnHit boolean o collidable: boolean o removalFlag: boolean Body() Body(float.float) @addBody(Body);void @removeBody(Body):void m hitDetect(Body):void ▲ update(float):void OnRemove():void ▲ draw (Graphics2D):void SDraw (Graphics2D):void SUpdate(float):void

Classes

- Vector2
- Body
- Asteroid extends Body
- Projectile extends Body
- Ship extends Body
- Gun
- Button
- Camera
- ContentLoader
- KillFeed
- Network

Class Interaction

Program starts in Main -> creates a Main class (the main window)

Main takes input and stores it in Input

Main class creates GamePanel (for graphics within the main window)

Main class calls the GamePanel's Draw() and Update() method

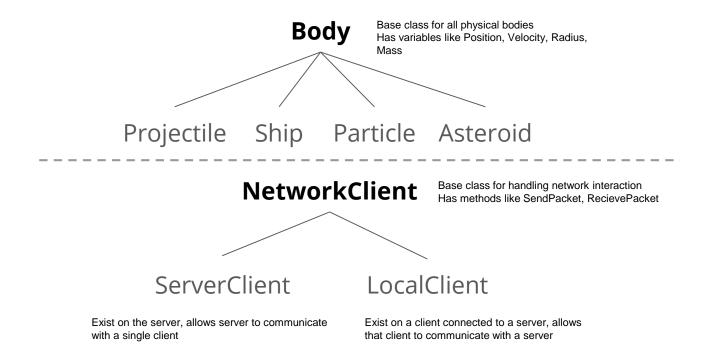
Tries to call Draw() 60 times per second, and Update() in between.

GamePanel creates IGame interface, relays Draw() and Update()

SpaceGame implements IGame, receiving Update and Draw calls

SpaceGame calls Update() on Body, Projectile, Ship, Particle, NetworkServer, LocalClient, and any active Buttons

Inheritance Hierarchy



Polymorphism

takeDamage() makes a ship take damage, gets called when a ship hits another body.

The first takeDamage() method simply calls the other takeDamage() giving it null for the other parameter.

```
@param dmg Damage to take
public void takeDamage(float dmg){
   takeDamage(dmg, null);
  @param dmg Damage to take
public void takeDamage(float dmg, Ship other){
   if (health > 0) {
       if (shield > 0) {
            shield -= dmg;
           if (shield < 0) {
                health += shield;
                shield = 0;
       }else{
            health -= dmg;
       shieldRechargeCooldown = 2;
```

Interfaces

IGame is used to create an interface for GamePanel so that GamePanel can update and draw and class that implements IGame, creating an outline for any game to be made with this platform.

Special Features

Can scan the local network (to a degree) for any servers running, and lists them.

Uses TCP for maximum reliability with data sent across the network.

A variable in LocalClient is:

TimeItTakesForAPacketToGetToTheClientFromTheServer Allowing for the client (and server!) to calculate ping

When a third player joins, sometimes the game crashes. If it doesn't crash, the second player who connected to the server will have planets flying across their screen for no reason. I did not implement this. I do not know why this happens.

Known bugs

Local server browser won't find servers with IP addresses that have different first 3 numbers.

When a new client joins, there's a chance the entire game will crash for everyone but the host of the server.

It's written in Java, so it will run out of memory or have a NullPointerException because of JVM garbage collection after a while.

"Second-party" code

- Didn't use any
- I barely know what "second-party" means
- If you count JVM as third-party code, then sure... still not second party tho

Conclusion

Pretty fun game

Java is slow

Questions

Why would anyone write a real game in Java

Minecraft was written in Java

It's really slow