Model Class Diagram

GUI
-controller: Controller
-frame: JFrame
-panelMapa: BackgroundPanel
-panelGeneral: BackgroundPanel
-powerUpsButtons: JButton
-lblNivel: JLabel
-lblGold: JLabel
-lblScore: JLabel
-btnPlay: JLabel
-panelTutorial: JPanel
+GUI()
-initialize()
+DisableAllPowerUps()
+EnablePowerUp(index: int)
+ActualizarGrafica()
+showLose()
+ShowWin()
+UpdatePanelScore()
+Operation1()

Controller
#_generator: Generator
#_store: Store
#_enemies: HiloHordas extends Thread
#_dataStorage: DataStorage
#_gui: Gui
#_currentIndex: int
#_currentPowerUp: int
#INSTANCE
#_mapWidth: int
#_roundEnded: boolean
#_alreadyStarted: boolean
#_isAOE: boolean
#_dificultad: int
-Controller(gui: Gui)
+GetInstance(gui: GUI): Controller
+GetInstrance(): Controller
+AddAOEPowerUp(v: Visitor)
+AddDisparo(d: Disparo)
+CanPurchase(index: int): boolean
+CanPurchasePowerUp(index: int): boolean
+ControlBounds()
+Empty(): boolean
+EnemyDeath(e: Enemy)
+GetCurrentMoney(): String
+GetDataStorage(): DataStorage
+GetDificultad(): int
+GetGenerator(): Generator
+GetIcon(index: int): Icon
+GetNivel(): int
+GetPowerUpName(index: int): String
+GetScore(): int
+GetHitboxes(index: int): Pair<ImageIcon, Rectangle>()
+Intersection()
+Invoke(x: int, y: int)
+Lose()
+Purchase(index: int)
+PurchasePowerUp(index: int)
+Remove(go)
+SelAlly(a: Ally)
+SetMapWidth(width: int)
+Size(): int
+SpawnInMap(x, y: int, go)
+ToggleRound()
+Update()
+Win()

DataStorage
#_gos: Collection<GameObject>
#INSTANCE: DataStorage
#_currentMoney: int
-DataStorage()
+GetInstance(): DataStorage
+Buy(cost: int)
+get_score(): int
+GetAllObjects(): Collection<GameObject>
+GetCurrentMoney(): int
+Remove(go)
+Reset()
+set_score(score: int)
+Store(go)
+Store(money: int)
+Sell(int)

HiloHordas extends Thread
-_controller: Controller
-_generator: Generator
-_dificultad: int
-_freno: int
-cantidadSpawneada: int
-_nivel: int
-_end: boolean
-_alreadyStarted: boolean
+_rng: Random
+HiloHordas()
+crearHordas(dificultad: int)
+End()
+GetNivel(): int
+run+()
+SetController(c: Controller)
+SubEnemy()
-SpawnEnemies()
-SpawnMapElements()

GameObject implements IOBserved Clonable
#_sprite: ImageIcon
#_hitbox: Rectangle
#_visitor: Visitor
#_range: int
#_boundingBox: Visitor
#_visible: boolean
#GameObject()
-Init()
+get_hitbox(): Rectangle
+set_hitbox(Rectangle)
+get_visitor(): Visitor
+set_visitor(Visitor): Visitor
+get_range(): int
+set_renge(int)
+get_boundingBox(): Visitor
+set_boundingBox(Visitor)
+notificar+()
+*Clone()*
+GetSprite(): ImageIcon
+SetX(int)
+SetY(int)
+GetVisitorRange(): Visitor
+*Update()*
+NotVisible()
+isVisible(): Boolean
+accept(Visitor)
+agregarObservador+(IObserver)
+eliminarObservador+(IObserver)

Character extends GameObject implements IObserver
#_cost: int
#_health: int
#_shoot: Disparo
#_state: StateCharacter
#_observers: ArrayList<IObserver>
#_baseDelay: int
#_baseMovementSpeed: int
+Attribute1
#Character()
+set_atributos()
+get_cost(): int
+set_shoot(Disparo)
+get_health(): int
+get_shoot(): Disparo
+set_health(int)
+SetSprite(ImageIcon)
+ChangeState(StateCharacter)
+*accept+(Visitor)*
+GetState(): StateCharacter
+receive_attack(int)
+GetAttackSpeed(): int
+GetStrength(): int
+receive_attack(Disparo)
+Die()
+Update()
+notificar()
+StopShooting()
+eliminarObservador(IObserver)
+agregarObservador(IObserver)
+acceptObserver(VisitorObserver)
+get_delay(): int
+get_strength(): int
+get_velocidad(): int

MapObject extends GameObject
#_health: int
#_observers: ArrayList<IObserver>
#receive_attack(int)
+acceptObserver(VisitorObserver)
+agregarObservador(IObserver)
+eliminarObservador(IObserver)
+notificar(): boolean
+set_atributos(MapObject)
+get_health(): int
+set_health(int)
+*Clone(): MapObject*

Ally extends Character
#Enemy()
+Clone(): Enemy
+accept(Visitor)
+set_atributos(Ally)

AllyFat extends Ally
+AllyFat(int, int)
+Clone(): Ally
+ChangeState(StateCharacter)
+GetIcon(): Icon

AllyBase extends Ally
+AllyBase(int, int)
+Clone(): Ally
+ChangeState(StateCharacter)
+GetIcon(): Icon

AllyStrong extends Ally
+AllyStrong(int, int)
+Clone(): Ally
+ChangeState(StateCharacter)
+GetIcon(): Icon

AllyFast extends Ally
+AllyFast(int, int)
+Clone(): Ally
+ChangeState(StateCharacter)
+GetIcon(): Icon

AllySlim extends Ally
+AllySlim(int, int)
+Clone(): Ally
+ChangeState(StateCharacter)
+GetIcon(): Icon

HiloPrincipal extends Thread
-all: ArrayList<GameObject>
-g: GameObject
-size: int
+run+()

Store
-_alliesToClone: Collection<Ally>
+Attribute1
+CreateAlly(index, x, y: int): Ally
+GetCost(index: int): int
+GetIcon(index: int): Icon
+Operation1()
+Operation2()

Generator
#_enemies: Collection<Enemy>
#_powerUps: Collection<ImmovableObject>
#_mapItems: Collection<MapObject>
#_mainThread: HiloPrincipal
#_dataStorage: DataStorage
+Generator()
+GetCost(index: int): int
+GetEnemy(x, y: int): ImageIcon
+GetHitboxes(): Collection<Rectangle>
+GetMapElement(index: int): MapObject
+GetPowerUp(index, x, y: int): ImmovableObject
+GetPowerUpName(index: int): String
+IsAOE(index: int): boolean

«Interface» IObserved
+agregarObservador(IObserver)
+agregarObservado(IObserved)
+notificar(): boolean

«Interface» IObserver
+StopShooting()

LagoMapa extends MapObject
-_deathTimer: int
+LagoMapa()
+Clone(): MapObject
+set_atributos(MapObject)
+accept(Visitor)
+Update()
+set_deathTimer(int)
+get_deathTimer(): int

Notificar redefine lo heredado pero no nos deja señalizarlo como corresponde

PiedraMapa extends MapObject
+PiedraMapa()
+Clone(): MapObject
+set_atributos(MapObject)
+accept(Visitor)

Enemy extends Character
#Enemy()
+Init()
+Clone(): Enemy
+Die()
+accept(Visitor)
+set_atributos(Enemy)

EnemyBoss extends Enemy
+EnemyBoss(int, int)
+Clone(): Ally
+ChangeState(StateCharacter)

EnemyFast extends Enemy
+EnemyFast(int, int)
+Clone(): Ally
+ChangeState(StateCharacter)

EnemyFat extends Enemy
+EnemyFat(int, int)
+Clone(): Ally
+ChangeState(StateCharacter)

EnemySlim extends Enemy
+EnemySlim(int, int)
+Clone(): Ally
+ChangeState(StateCharacter)

EnemyBase extends Enemy
+EnemyBase(int, int)
+Clone(): Ally
+ChangeState(StateCharacter)

EnemyStrong extends Enemy
+EnemyStrong(int, int)
+Clone(): Ally
+ChangeState(StateCharacter)

Visitor
+visitAlly(Ally)
+visitEnemy(Enemy)
+visitShoot(Disparo)
+visitAllyShoot(DisparoAliado)
+visitEnemyShoot(DisparoEnemigo)
+visitLose()
+visitBarricada(Barricada)
+visitVendedor(Vendedor)
+visitPiedraMapa(PiedraMapa)
+visitLagoMapa(LagoMapa)

VisitorPowerUp extends Visitor

VisitorAlly extends Visitor
-miAliado: Ally
+VisitorAlly(Ally)
+visitVendedor(Vendedor)
+visitEnemyShoot(DisparoEnemigo)

VisitorEnemy extends Visitor
-miEnemigo: Enemy
+VisitorEnemy(Enemy)
+visitLose()
+visitAllyShoot(DisparoAliado)

VisitorObserver
#_observer: IObserver
+Attribute1
+VisitorObserver(IObserver, IObserved)
+VisitorObserver(IObserved)
+visitAllyObservador(IObserver)
+visitAllyObservado(IObserved)

«T,U» Pair
#x: T
#y: U
+Pair(T, U)
+getX(): T
+getY(): U

Disparo extends GameObject
#_strength: int
#_velocidad: int
+Disparo(int, int, int)
+get_strength(): int
+set_strength(int)
+Update()
+getVisitorDisparo(): Visitor
+setVisitorDisparo(Visitor)
+vanish()
+Clone(): Disparo

ImmovableObject extends GameObject
#_cost: int
#_deathTimer: int
#Immovable()
+get_deathTimer(): int
+set_deathTimer(int)
+set_atributos(ImmovableObject)
+receive_attack(int)
+Update()
+*IsAOE(): boolean*
+get_cost(): int
+*Clone(): ImmovableObject*

Barricada extends ImmovableObject
-_health: int
-_observers: ArrayList<IObserver>
+Barricada()
+set_health(int)
+set_observers(ArrayList)
+toString(): String
+Clone(): ImmovableObject
+accept(Visitor)
+receive_attack(int)
+agregarObservador(IObserver)
+eliminarObservador(IObserver)
+notificar(): boolean
+IsAOE(): boolean

VisitorRangeEnemigo extends VisitorRange
-miEnemy: Enemy
+VisitorRangeEnemigo(Enemy)
+visitBarricada(Barricada)
+visitVendedor(Vendedor)
+visitPiedraMapa(PiedraMapa)
+visitLagoMapa(LagoMapa)

VisitorBombaAtomica extends Visitor
+visitAlly(Ally)
+visitEnemy(Enemy)

VisitorCongelado extends VisitorPowerUp
+visitEnemy(Enemy)

VisitorSquanchy extends VisitorPowerUp
+visitAlly(Ally)

VisitorRangeAliado extends VisitorRange
-miAlly: Ally
+VisitorRangeAliado(Ally)
+visitEnemy(Enemy)

VisitorAllyShoot extends Visitor
+miDisparo: Disparo
+VisitorAllyShoot(Disparo)
+visitEnemy(Enemy)
+visitEnemyShoot(DisparoEnemigo)

VisitorEnemyShoot extends Visitor
+miDisparo: Disparo
+VisitorEnemyShoot(Disparo)
+visitAlly(Ally)
+visitAllyShoot(DisparoAliado)
+visitBarricada(Barricada)
+visitPiedraMapa(PiedraMapa)
+visitLagoMapa(LagoMapa)

VisitorSquanchyState extends VisitorState
+visitNormal(NormalState)
+visitDisparando(EstadoDisparando)

VisitorProtector extends Visitor
-shield: EscudoProtector
+VisitorProtector(Escudo Protector)
+visitEnemy(Enemy)
+visitAlly(Ally)

VisitorDisparando extends VisitorState
+visitNormal(NormalState)
+visitProtegidoCaminando(EstadoProtegidoCaminando)

VisitorBarricada extends Visitor
+visitEnemyShoot(DisparoEnemigo)

VisitorState
+visitNormal(NormalState)
+visitDisparando(EstadoDisparando)
+visitCongelado(Congelado)
+visitSquanchy(DienteSquanchy)
+visitProtegidoAtacando(EstadoProtegidoAtacando)
+visitProtegidoCaminando(EstadoProtegidoCaminando)

DisparoEnemigo extends Disparo
+DisparoEnemigo(int, int)
+Clone(): Disparo
+accept(Visitor)

DisparoAliado extends Disparo
+DisparoAliado(int, int)
+Clone(): Disparo
+accept(Visitor)

EscudoProtector extends ImmovableObject
+EscudoProtector()
+toString(): String
+receive_attack(int)
+Clone(): ImmovableObject
+IsAOE(): boolean

Diente extends ImmovableObject
+Diente()
+toString(): String
+Clone(): ImmovableObject
+IsAOE(): boolean

VisitorCongeladoState extends VisitorState
+visitNormal(NormalState)
+visitDisparando(EstadoDisparando)

BombaAtomica extends ImmovableObject
+BombaAtomica()
+toString(): String
+Clone(): ImmovableObject
+IsAOE(): boolean

Vendedor extends ImmovableObject
+Vendedor()
+receive_attack(int)
+Clone(): ImmovableObject
+IsAOE(): boolean

BombaCongelante extends ImmovableObject
+BombaCongelante()
+toString(): String
+Clone(): ImmovableObject
+IsAOE(): boolean

VisitorNormalState extends VisitorState
+visitDisparando(EstadoDisparando)
+visitCongelado(Congelado)
+visitSquanchy(DienteSquanchy)
+visitProtegidoAtacando(EstadoProtegidoAtacando)
+visitProtegidoCaminando(EstadoProtegidoCaminando)

StateCharacter
#miCh: Character
#_visitorS: VisitorState
#_strength: int
#_delay: int
#_velocidad: int
#_delta: int
#_prev: StateCharacter
#_bank: Bank
+StateCharacter(Character, int, int, int)
+update()
+Disparar(): Disparo
+GetBaseDelay(): int
+GetBaseStrength(): int
+GetBaseVelocidad(): int
+GetDelay(): int
+GetStrength(): int
+GetVelocidad(): int
+accept(VisitorState)
+GetCharacter(): Character
+GetVisitor(): VisitorState
+receive_attack(int)
+*GetSprite(AllyBase)*
+*GetSprite(AllyFast)*
+*GetSprite(AllyFat)*
+*GetSprite(AllySlim)*
+*GetSprite(AllyStrong)*
+*GetSprite(EnemyBase)*
+*GetSprite(EnemyBoss)*
+*GetSprite(EnemyFast)*
+*GetSprite(EnemyFat)*
+*GetSprite(EnemySlim)*
+*GetSprite(EnemyStrong)*

VisitorProtegidoAtacando extends VisitorState
+visitProtegidoCaminando(EstadoProtegidoCaminando)

VisitorProtegidoNormal extends VisitorState
+visitNormal(NormalState)
+visitDisparando(EstadoDisparando)
+visitProtegidoAtacando(EstadoProtegidoAtacando)

VisitorVendedor extends Visitor
-v: Vendedor
+visitAlly(Ally)

EstadoDisparando extends StateCharacter
+EstadoDisparando(Character, int, int, int)
+update()
+accept(VisitorState)
+receive_attack(int)
+GetSprite(AllyBase)
+GetSprite(AllyFast)
+GetSprite(AllyFat)
+GetSprite(AllySlim)
+GetSprite(AllyStrong)
+GetSprite(EnemyBase)
+GetSprite(EnemyBoss)
+GetSprite(EnemyFast)
+GetSprite(EnemyFat)
+GetSprite(EnemySlim)
+GetSprite(EnemyStrong)

DienteSquanchy extends StateCharacter
#_powerUpLife: int
+DienteSquanchy(Character, int, int, int)
+update()
+accept(VisitorState)
+receive_attack(int)
+GetSprite(AllyBase)
+GetSprite(AllyFast)
+GetSprite(AllyFat)
+GetSprite(AllySlim)
+GetSprite(AllyStrong)
+GetSprite(EnemyBase)
+GetSprite(EnemyBoss)
+GetSprite(EnemyFast)
+GetSprite(EnemyFat)
+GetSprite(EnemySlim)
+GetSprite(EnemyStrong)
+ChangeState(StateCharacter)

Congelado extends StateCharacter
#_powerUpLife: int
+Congelado(Character, int, int, int)
+update()
+accept(VisitorState)
+receive_attack(int)
+GetSprite(AllyBase)
+GetSprite(AllyFast)
+GetSprite(AllyFat)
+GetSprite(AllySlim)
+GetSprite(AllyStrong)
+GetSprite(EnemyBase)
+GetSprite(EnemyBoss)
+GetSprite(EnemyFast)
+GetSprite(EnemyFat)
+GetSprite(EnemySlim)
+GetSprite(EnemyStrong)
+ChangeState(StateCharacter)

NormalState extends StateCharacter
+NormalState(Character, int, int, int)
+update()
+accept(VisitorState)
+receive_attack(int)
+GetSprite(AllyBase)
+GetSprite(AllyFast)
+GetSprite(AllyFat)
+GetSprite(AllySlim)
+GetSprite(AllyStrong)
+GetSprite(EnemyBase)
+GetSprite(EnemyBoss)
+GetSprite(EnemyFast)
+GetSprite(EnemyFat)
+GetSprite(EnemySlim)
+GetSprite(EnemyStrong)

EstadoProtegidoAtacando extends StateCharacter
#ataquesRecibidos: int
+EstadoProtegidoAtacando(Character, int, int, int)
+update()
+accept(VisitorState)
+receive_attack(int)
+GetSprite(AllyBase)
+GetSprite(AllyFast)
+GetSprite(AllyFat)
+GetSprite(AllySlim)
+GetSprite(AllyStrong)
+GetSprite(EnemyBase)
+GetSprite(EnemyBoss)
+GetSprite(EnemyFast)
+GetSprite(EnemyFat)
+GetSprite(EnemySlim)
+GetSprite(EnemyStrong)
+setAtaquesRecibidos(int)
+getAtaquesRecibidos()

EstadoProtegidoCaminando extends StateCharacter
#ataquesRecibidos: int
+EstadoProtegidoCaminando(Character, int, int, int)
+update()
+accept(VisitorState)
+receive_attack(int)
+GetSprite(AllyBase)
+GetSprite(AllyFast)
+GetSprite(AllyFat)
+GetSprite(AllySlim)
+GetSprite(AllyStrong)
+GetSprite(EnemyBase)
+GetSprite(EnemyBoss)
+GetSprite(EnemyFast)
+GetSprite(EnemyFat)
+GetSprite(EnemySlim)
+GetSprite(EnemyStrong)
+setAtaquesRecibidos(int)
+getAtaquesRecibidos()

Muerte extends StateCharacter
#_deathTimer: int
+Muerte(Character, int, int, int)
+update()
+accept(VisitorState)
+receive_attack(int)
+GetSprite(AllyBase)
+GetSprite(AllyFast)
+GetSprite(AllyFat)
+GetSprite(AllySlim)
+GetSprite(AllyStrong)
+GetSprite(EnemyBase)
+GetSprite(EnemyBoss)
+GetSprite(EnemyFast)
+GetSprite(EnemyFat)
+GetSprite(EnemySlim)
+GetSprite(EnemyStrong)
+ChangeState(StateCharacter)