**InfinityBug : Ja Boom Mine**

**Created by**

Chomtana Chanjaraswichai 6131307621

Pongsakorn Pengboon 6131326521

2110215 Programming Methodology

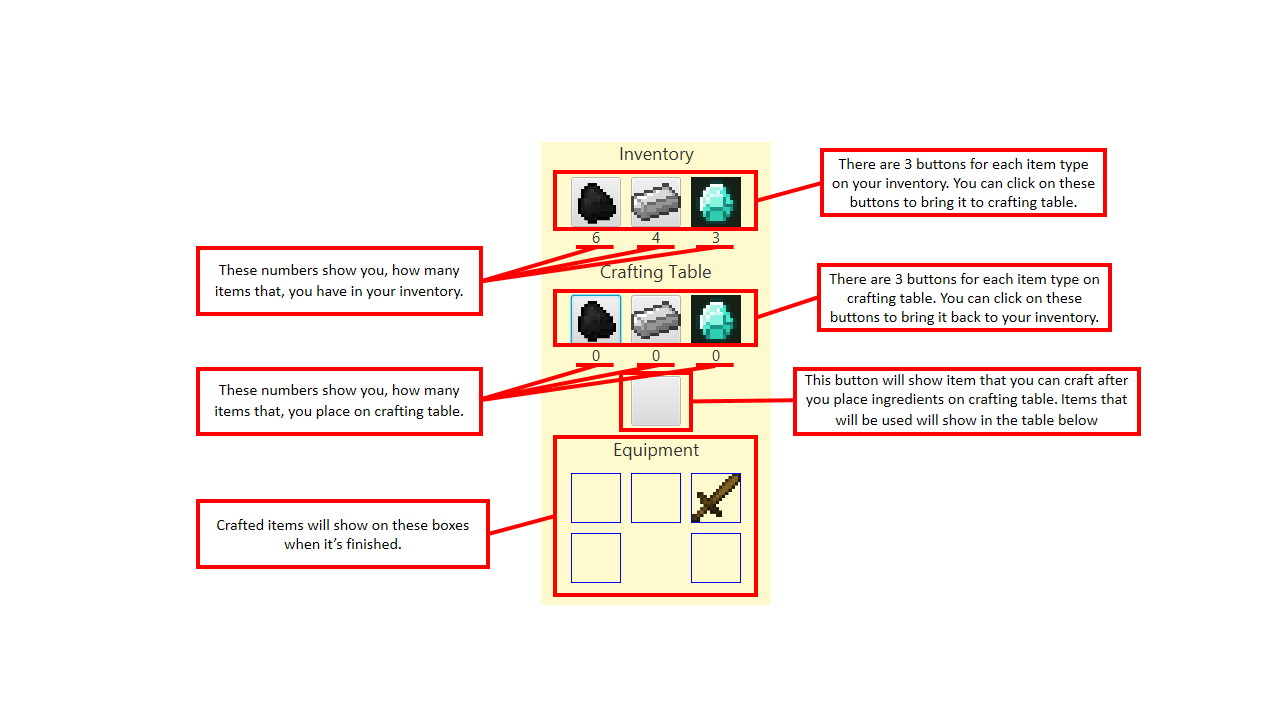
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**About this game**

|  |  |  |  |
| --- | --- | --- | --- |
| Category | Name | Picture | Note |
| Player’s Character | Player |  | Can attack on range 1 block. |
| Player’s Bomb | D:\FinalProject\res\img\bomb.png | It can be damage only player and ore. |
| Ore | Coal Ore | D:\FinalProject\res\img\coalblock.png | Can be destroyed by player’s bomb, attacking and boomer. |
| Iron Ore | D:\FinalProject\res\img\ironblock.png | Can be destroyed by player’s bomb, attacking and boomer. |
| Diamond Ore | D:\FinalProject\res\img\diamondblock.png | Can be destroyed by player’s bomb, attacking and boomer. |
| Item | Coal | D:\FinalProject\res\img\coal.png | Drop by destroying coal ore. |
| Iron | D:\FinalProject\res\img\iron.png | Drop by destroying iron ore. |
| Diamond | à¸à¸¥à¸à¸²à¸£à¸à¹à¸à¸«à¸²à¸£à¸¹à¸à¸ à¸²à¸à¸ªà¸³à¸«à¸£à¸±à¸ diamond minecraft | Drop by destroying diamond ore. |
| Equipment | Wooden Sword | D:\FinalProject\res\img\WoodenSword.png | Starting item |
| Iron Sword | D:\FinalProject\res\img\IronSword.png | Can be Crafted.  Increase your physical damage. |
| Iron Helmet | D:\FinalProject\res\img\IronHelmet.png | Can be Crafted.  Increase your physical armor. |
| Iron Armor | D:\FinalProject\res\img\IronArmor.png | Can be Crafted.  Increase your physical armor. |
| Iron Pant | D:\FinalProject\res\img\IronPant.png | Can be Crafted.  Increase your physical armor. |
| Equipment | Iron Boots | D:\FinalProject\res\img\IronBoot.png | Can be Crafted.  Increase your physical armor and movement speed. |
| Diamond Sword | D:\FinalProject\res\img\DiamondSword.png | Can be Crafted.  Increase your physical damage. |
| Diamond Helmet | D:\FinalProject\res\img\DiamondHelmet.png | Can be Crafted.  Increase your physical armor. |
| Diamond Armor | D:\FinalProject\res\img\DiamondArmor.png | Can be Crafted.  Increase your physical armor. |
| Diamond Pant | D:\FinalProject\res\img\DiamondPant.png | Can be Crafted.  Increase your physical armor. |
| Diamond Boots | D:\FinalProject\res\img\DiamondBoot.png | Can be Crafted.  Increase your physical armor and movement speed. |
| Monster | Zombie | D:\FinalProject\res\img\zombieD.png | Can be attack to player on range 1 block. |
| Boomer | D:\FinalProject\res\img\boomerD.png | Charge 1.5 second before blow up when player is in range 2 block |

**Crafting & Inventory System**



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Item | picture | Ingredients | | | Note |
| **Coal** | **Iron** | **Diamond** |
| D:\FinalProject\res\img\coal.png | D:\FinalProject\res\img\iron.png | à¸à¸¥à¸à¸²à¸£à¸à¹à¸à¸«à¸²à¸£à¸¹à¸à¸ à¸²à¸à¸ªà¸³à¸«à¸£à¸±à¸ diamond minecraft |
| Iron Sword | D:\FinalProject\res\img\IronSword.png | 0 | 3 | 0 | - |
| Iron Helmet | D:\FinalProject\res\img\IronHelmet.png | 2 | 2 | 0 | - |
| Iron Armor | D:\FinalProject\res\img\IronArmor.png | 1 | 3 | 0 | - |
| Iron Pant | D:\FinalProject\res\img\IronPant.png | 3 | 2 | 0 | - |
| Iron Boots | D:\FinalProject\res\img\IronBoot.png | 4 | 2 | 0 | - |
| Diamond Sword | D:\FinalProject\res\img\DiamondSword.png | 0 | 2 | 3 | You can craft diamond sword after you have Iron sword. |
| Diamond Helmet | D:\FinalProject\res\img\DiamondHelmet.png | 4 | 0 | 2 | You can craft diamond helmet after you have Iron helmet. |
| Diamond Armor | D:\FinalProject\res\img\DiamondArmor.png | 2 | 0 | 3 | You can craft diamond armor after you have Iron armor. |
| Diamond Pant | D:\FinalProject\res\img\DiamondPant.png | 6 | 0 | 2 | You can craft diamond pant after you have Iron pant. |
| Diamond Boots | D:\FinalProject\res\img\DiamondBoot.png | 8 | 0 | 2 | You can craft boots armor after you have Iron boots. |

**Level System**

When you kill monster, then they will drop EXP for you to collect and level up. Your status (max HP, HP regeneration, damage and armor) will be increase by increasing level.

**Monster**

The more you play the game, the more stronger monster get.

**Key for playing**

|  |  |
| --- | --- |
| Action | Key |
| Move left | “A” or “LEFT” |
| Move right | “D” or “RIGHT” |
| Move up | “W’ or “UP” |
| Move down | “S” or “DOWN” |
| Facing to left direction | Scroll mouse to left side of player’s character |
| Facing to right direction | Scroll mouse to right side of player’s character |
| Facing to top direction | Scroll mouse to top side of player’s character |
| Facing to bottom direction | Scroll mouse to bottom side of player’s character |
| Attack to facing direction | LEFT-Click |
| Placing player’s bomb | RIGHT-Click |
| Unlimited HP command | “P” |

**Implementation Details**

**Package** application

**Class** Main **Extends** Application

Field

|  |  |
| --- | --- |
| + GameArea gameArea | Center of GUI |
| + StackPane eventPane | Transparent Pane in center of GUI for event handing. |
| + Random random | Random number generator object. |
| + CameraController cameraController | Object for control camera view. |
| + ControlPanel controlPanel | Window at left side of GUI. |
| + Main instance | Instance of class Main. |
| + StackPane root | Root pane in scene. |

Method

|  |  |
| --- | --- |
| + Main getInstance() | Return Instance of class Main. |
| + void main(String[] args) | An entry point of the application. |
| + void endgame() | This method use to exit program. |
| + void start(Stage primaryStage) | Start Javafx. |
| + StackPane getEventPane() | Return event pane component. |
| + void playBgSound() | Play background sound. |

**Package** controller

**Class** CameraController

Field

|  |  |
| --- | --- |
| - Entity center | Entity that must be center point of view. |
| - GameArea area | Center of GUI. |
| + CameraController cameraController | Object for control camera. |

Constructor

|  |  |
| --- | --- |
| + CameraController(Entity center,GameArea area) | Generate cameracontroller, there is entity center to be center point of game area. |
| + CameraController() | Initial player to be center point of game area. |

Method

|  |  |
| --- | --- |
| + void performSetCenter() | Set view to entity center must be center point. |
| + CameraController getInstance() | Get camera controller instance. |
| + void registerInstance(CameraController camm) | Register (Set) camera controller instance |

**Class** EventController

Field

|  |  |
| --- | --- |
| - Scene scene | Scene of javafx GUI. |
| - AnimationTimer timer | Register event from keyboard. |
| - boolean LEFT | Check if either "Left" or "a" key is being pressed. |
| - boolean RIGHT | Check if either "Right" or "d" key is being pressed. |
| - boolean UP | Check if “Up” or “w” key is being pressed. |
| - boolean DOWN | Check if “Down” or “s” key is being pressed. |
| - ArrayList<Runnable> onLoadRunnable | Function run when onload. |
| - Boolean onLoedRunned | Check is onload running? |

Constructor

|  |  |
| --- | --- |
| + EventController(Scene S) | EventController instance with Scene s. |

Method

|  |  |
| --- | --- |
| - void registerAnimationTimer() | Register animation timer instance. |
| - void registerOnKey() | Register keyboard event. |
| - void registerMouse() | Register mouse event. |
| + Scene getScene() | Get scene of javafx gui. |
| + void onLoad(Runnable r) | Add function from r to onLoadRunnable. |
| + void performOnLoad() | Run function that should run on onload. |

**Class** SpawnController

Field

|  |  |
| --- | --- |
| + double spawnDelayStart | Initialize time delay for spawning a monster. |
| + int spawnRadius | Determine the distance between the player and the monster spawn points. |

Constructor

|  |  |
| --- | --- |
| + SpawnController() | Create spawn controller instance. |

Method

|  |  |
| --- | --- |
| - void doMoveAI() | Perform Move AI. |
| - void spawn() | Spawn monster. |

**Class** TimeController

Field

|  |  |
| --- | --- |
| + long startingTime | Time at beginning program |

Method

|  |  |
| --- | --- |
| + long getCurrentTime() | Return how long is program running. |
| + void resetCurrentTime() | Reset startingTime to current time |

**Package** effect

**Class** AttackEffect **extends** AutokillEffect

Field

|  |  |
| --- | --- |
| - double atkDamage | Attack damage |
| - Entity attacker | Attacker |

Constructor

|  |  |
| --- | --- |
| + AttackEffect(Entity target, double atkDamage, Entity attacker) | Create attack effect for attacker attack target with damage atkDamage. |
| + AttackEffect(int row, int col, double atkDamage, Entity attacker) | Create attack effect for attacker attack at (row, col) with damage atkDamage |

Method

|  |  |
| --- | --- |
| + synchronized void playSound() | Play attack sound |
| + void onCollideWith(Entity target) | Run when effect collide with something at starting of effect, in this case attack target with physical damage atkDamage. |
| + String getIcon() | Return effect icon. |
| Getter & Setter | Getter & Setter for each Field. |

**Class** BombEffect **extends** AutokillEffect

Field

|  |  |
| --- | --- |
| - double atkDamage | Attack damage |
| - Entity attacker | Attacker |
| - Thread bombStarter | Bomb start delay thread |
| - int radius | Bomb radius |

Constructor

|  |  |
| --- | --- |
| + BombEffect(Entity e, double atkDamage, int radius) | Initial attack effect for attacker e place bomb with damage atkDamage and radius. |
| + BombEffect(int row, int col, double atdDamage, int radius, Entity attacker) | Initial attack effect for attacker place bomb at (row, col) with damage atkDamage and radius. |

Method

|  |  |
| --- | --- |
| + void onCollideWith(Entity target) | Run if effect collide with something at starting of effect. |
| + String getIcon() | Return effect icon. |
| Getter & Setter | Getter & Setter for every field except bombStarter. |

**Class** FireEffect **extends** AutokillEffect

Field

|  |  |
| --- | --- |
| - double atkDamage | Attack damage |
| - Entity attacker | Attacker |

Constructor

|  |  |
| --- | --- |
| + FireEffect(Entity e, double atkDamage) | Initial bomb fire effect for attacker e with damage atkDamage. |
| + FireEffect(int row, int col, double atkDamage, Entity attacker) | Initial bomb fire effect for attacker attacking at (row, col) with damage atkDamage. |

Method

|  |  |
| --- | --- |
| + sytnchronized void playSound() | Play bomb fire sound. |
| + void onCollideWith(Entity target) | Run if effect collide with something at starting of effect, in this case attack target with bomb damage atkDamage. |
| + String getIcon() | Return effect icon. |
| Getter & Setter | Getter & Setter for each field. |

**Class** AutokillEffect **extends** Effect

Field

|  |  |
| --- | --- |
| - int duration | Duration of this effect. |
| - Thread autokillTimer | Control autokill delay. |

Constructor

|  |  |
| --- | --- |
| + AutokillEffect(int row, int col, int duration) | Create effect at row col for duration. |

Method

|  |  |
| --- | --- |
| Getter & Setter | Getter & Setter for duration. |

**Class** Effect **extends** Entity

Field

|  |  |
| --- | --- |
| - Block effectBlock | Block containing effect. |
| - int row | Row effect. |
| - int col | Column effect. |

Constructor

|  |  |
| --- | --- |
| + Effect(int row, int col) | Create Effect at (row, col) |

Method

|  |  |
| --- | --- |
| + abstract void onCollideWith(Entity target) | Run when effect collide with something at starting of effect. |
| Getter & Setter | Getter & Setter for each field. |

**Package** entity

**Interface** Attackable

Method

|  |  |
| --- | --- |
| + abstract void attack(CanTakePhysicalDamage target) | Attack to target. |
| + abstract Boolean canAttack(CanTakePhysicalDamage target) | Check can attack to target. |

**Interface** CanTakeBombDamage **extends** HasHP

Method

|  |  |
| --- | --- |
| + double takeBombDamage(double damage) | Take bomb damage. |

**Interface** CanTakePhysicalDamage **extends** HasHP

Method

|  |  |
| --- | --- |
| + double takePhysicalDamage(double damage) | Take physical damage. |

**Interface** GiveEXPOnDead

Method

|  |  |
| --- | --- |
| + int getExpGived() | The number of EXP that given to killer when this entity has been killed. |

**Interface** HasArmor

Method

|  |  |
| --- | --- |
| + double getArmor() | Return current armor of this entity. |
| + void setArmor(double armor) | Set armor of this entity. |

**Interface** HasHP

Method

|  |  |
| --- | --- |
| + double getHP() | Return current HP. |
| + void setHP(double hp) | Set current HP. |
| + boolean isAlive() | Check entity has HP more than 0 or not. |

**Interface** HasInventory

Method

|  |  |
| --- | --- |
| + Inventory getInventory() | Return inventory instance of this entity. |

**Interface** HasLevel

Method

|  |  |
| --- | --- |
| + int getLevel() | Return current level. |
| + void setLevel(int level) | Set current level. |
| + int getCurrentLevelEXPNeeded() | Return the number of EXP to next level |
| + void receiveEXP(int exp) | this entity receive EXP |
| + int getExp() | Get Current EXP |
| + void setExp(int exp) | Set Current EXP |

**Interface** Moveable

Method

|  |  |
| --- | --- |
| + boolean canMoveTo(int row,int col) | This entity can move to row col ? if cannot move, throw UnmoveableException |
| + boolean moveTo(int row,int col) | move this entity to row col if cannot move, thrown UnmoveableException |
| + double getRenderRow() | Return row used for rendering. |
| + double getRenderCol() | Return col used for rendering. |
| + int getRow() | Return row of this entity. |
| + int getCol() | Return col of this entity. |

**Class** MoveCollideException **extends** UnmoveableException

MoveCollideException will be thrown, when an entity collide with another entity. It has message and contains action for another time getWith(): get what this exception thrower collide with

Field

|  |  |
| --- | --- |
| - Entity with | The entity, that’s collided. |

Constructor

|  |  |
| --- | --- |
| + MoveCollideException(Entity with) | Initialize the entity, that’s collided. |
| + MoveCollideException(Entity with, String msg) | Initialize message and entity, that’s collided. |
| + MoveCollideException(Entity with, String msg, Runnable action) | Initialize message, action and entity, that’s collide. |
| + MoveCollideException(Entity with, Runnable action) | Initialize action and entity, that’s collide. |

Method

|  |  |
| --- | --- |
| Getter | Getter for field with |

**Class** MoveOutOfBoundException **extends** UnmoveableException

MoveOutOfBoundException will be thrown, when you move out of bound with message and contains action for another time.

Constructor

|  |  |
| --- | --- |
| + MoveOutOfBoundException() | Message "Cannot move out of bound" to the exception |
| + MoveOutOfBoundException(String msg) | Initial message to the exception. |
| + MoveOutOfBoundException(String msg, Runnable action) | Initial message and action to the exception. |
| + MoveOutOfBoundException(Runnable action) | Initial action to the exception. |

**Class** NullEntity **extends** Entity

Field

|  |  |
| --- | --- |
| - int row | Row space. |
| - int col | Column space. |

Constructor

|  |  |
| --- | --- |
| + NullEntity(int row, int col) | Initial row and column space. |

Method

|  |  |
| --- | --- |
| + String getIcon() | Return empty string. |
| + void render(Block b) | Render this entity to block b and remove background of block b. |
| Getter & Setter | Getter & Setter for each field. |

**Enum** Direction

LEFT, RIGHT, UP, DOWN

**Class** Player **extends** Monster **implements** HasHP, HasArmor, CanTakePhysicalDamage, CanTakeBombDamage, HasInventory, HasLevel, Attackable

Field

|  |  |
| --- | --- |
| + int START\_ROW | Starting player’s row. |
| + int START\_COL | Starting player’s column. |
| + Player mainPlayer | Main player. |
| - Direction facing | Direction that, player’s facing. |
| - double hp | Number of player’s HP. |
| - double maxhp | Number of player’s max HP. |
| - double regenhp | Number of player’s HP regeneration. |
| - double armor | Number of player’s armor. |
| - double atkDamage | Number of player’s damage. |
| - double bombDamage | Number of damage that, player’s taken by bomb. |
| - int bombRadius | Radius of player’s bomb. |
| - Inventory inventory | Player’s inventory. |
| - Crafter crafter | Player’s crafter. |
| - int level | Player’s level. |
| - int exptable[] | EXP for each level. |
| - int exp | Number of player’s EXP. |
| - Thread bombThrottle | Thread used for delay bomb. |

Method

|  |  |
| --- | --- |
| + int getCurrentLevelEXPNeeded() | Return number of EXP to next level. |
| + void receiveEXP(int exp) | Receive EXP. |
| + int getExp() | Return current EXP. |
| + void setExp(int exp) | Set current EXP. |
| + double getMaxhp() | Return current max HP. |
| + void setMaxhp(double maxhp) | Set current max HP. |
| + double getRegenhp() | Return current HP regeneration. |
| + void setRegenhp(double regenhp) | Set current HP regeneration. |
| + void attack(CanTakePhysicalDamage target) | Attack to target with physical damage. |
| + void attack() | Attack in direction that, player’s facing. |
| + void bomb() | Placing player’s bomb. |
| + boolean canAttack(CanTakePhysicalDamage target) | Check can player attack to target. |
| + String getIcon() | Return player’s icon. |
| + void handleUnmoveableException(UnmoveableException e) | Reaction when UnmoveableException was thrown. |
| + void moveLeft() | Move player to the left direction of map. |
| + void moveRight() | Move player to the right direction of map. |
| + void moveUp() | Move player to the up direction of map. |
| + void moveDown() | Move player to the down direction of map. |
| + boolean moveTo(int row,int col) | Check can player move to (row, col) location. |
| + int getMoveDelay() | Return player’s delay for another move. |
| + Direction getFacing() | Return direction that, player facing. |
| + void setFacing(Direction facing) | Set direction that, player facing. |
| + ArrayList<EnemyMonster> getSurroundingEnemies() | Return surrounding monsters. |
| + double getArmor() | Return number of current armor. |
| + void setArmor(double armor) | Set number or current armor. |
| + double getAtkDamage() | Return current attack damage. |
| + void setAtkDamage(double atkDamage) | Set current attack damage. |
| + double getBombDamage() | Return current bomb damage. |
| + void setBombDamage(double bombDamage) | Set current bomb damage. |
| + int getBombRadius() | Return radius of bomb effect. |
| + void setBombRadius(int bombRadius) | Set radius of bomb effect. |
| + double takePhysicalDamage(double damage) | Player take physical damage. |
| + double takeBombDamage(double damage) | Player take bomb damage. |
| + double getHP() | Return current HP. |
| + void setHP(double hp) | Set current HP. |
| + Inventory getInventory() | Return player’s inventory. |
| + Crafter getCrafter() | Return player’s crafter |

**Class** UnmoveableException **extends** ExceptionWithAction

UnmoveableException throw, when you cannot move to some place with message and contains action for another time.

Constructor

|  |  |
| --- | --- |
| + UnmoveableException() | Initial ExceptionWithAction. |
| + UnmoveableException(String msg) | Initial message to ExceptionWithAction. |
| + UnmoveableException(String msg, Runnable action) | Initial message and action to ExceptionWithAction. |
| + UnmoveableException(Runnable action) | Initial action to ExceptionWithAction. |

**Package** entity.monster

**Class** Boomer **extends** EnemyMonster

Field

|  |  |
| --- | --- |
| - double bombDmg | Number of damage when boomer blew up. |
| - int bombRadius | Radius of boomer’s bomb effect. |
| - Thread bombThrottle | Thread used to delay bombing |

Constructor

|  |  |
| --- | --- |
| + Boomer(int row,int col) | Spawn at (row, col). |

Method

|  |  |
| --- | --- |
| + void handleUnmoveableException(UnmoveableException e) | Handle UnmoveableException. In this case we do nothing if cannot move. |
| + boolean moveTo(int row,int col) | Check can boomer move to (row, col) location. And if player in bomb radius It will charge for 1.5 second then bomb |
| + void attack(CanTakePhysicalDamage target) | Attack (blew up) to target. |
| + boolean canAttack(CanTakePhysicalDamage target) | Check can boomer do physical attack to target. |
| + String getIcon() | Return boomer’s icon. |
| + int getExpGived() | Return EXP drop when boomer was killed. |

**Class** EnemyMonster **extends** Monster **implements** GiveEXPOnDead

Field

|  |  |
| --- | --- |
| - Direction facing | Direction that, monster is facing. |
| # int moveDelay | Monster’s delay for another move. |

Constructor

|  |  |
| --- | --- |
| + EnemyMonster(int row,int col) | Spawn monster at (row, col) location. |

Method

|  |  |
| --- | --- |
| + abstract void handleUnmoveableException(UnmoveableException e) | Handle UnmoveableException. |
| + void moveLeft() | Move monster to the left direction of map. |
| + void moveRight() | Move monster to the right direction of map. |
| + void moveUp() | Move monster to the up direction of map. |
| + void moveDown() | Move monster to the down direction of map. |
| + boolean moveTo(int row,int col) | Check can monster move to (row, col) location. |
| + int getMoveDelay() | Return MoveDelay. |
| + Direction getFacing() | Return direction that, monster facing. |
| + void setFacing(Direction facing) | Set direction that, monster facing. |

**Class** Zombie **extends** EnemyMonster **implements** Attackable

Field

|  |  |
| --- | --- |
| - double atkDamage | Number of damage when zombie attack. |

Constructor

|  |  |
| --- | --- |
| + Zombie(int row,int col) | Spawn zombie at (row, col) location. |

Method

|  |  |
| --- | --- |
| + double getAtkDamage() | Return current damage from zombie attacking. |
| + void setAtkDamage(double atkDamage) | Set base zombie attack damage. |
| + boolean canAttack(CanTakePhysicalDamage target) | Check can zombie attack to target. |
| + void handleUnmoveableException(UnmoveableException e) | Handle UnmoveableException. In this case we try to attack target if MoveCollideException has been thrown. |
| + String getIcon() | Return zombie’s icon. |
| + int getExpGived() | Return EXP drop when zombie was killed. |

**Package** entity.ore

**Class** Coal **extends** Ore

Field

|  |  |
| --- | --- |
| - double hp | Durability of coal ore. |
| - double armor | Armor of coal ore |

Constructor

|  |  |
| --- | --- |
| + Coal(int row, int col) | Generate coal ore to (row, col) location. |

Method

|  |  |
| --- | --- |
| + String getIcon() | Return coal ore’s icon. |
| + String getItem() | Return drop item when coal ore was destroyed. |
| Getter & Setter | Getter & Setter for each field. |

**Class** Diamond **extends** Ore

Field

|  |  |
| --- | --- |
| - double hp | Durability of diamond ore. |
| - double armor | Armor of diamond ore |

Constructor

|  |  |
| --- | --- |
| + Diamond(int row, int col) | Generate diamond ore to (row, col) location. |

Method

|  |  |
| --- | --- |
| + String getIcon() | Return diamond ore’s icon. |
| + String getItem() | Return drop item when diamond ore was destroyed. |
| Getter & Setter | Getter & Setter for each field. |

**Class** Iron **extends** Ore

Field

|  |  |
| --- | --- |
| - double hp | Durability of iron ore. |
| - double armor | Armor of iron ore |

Constructor

|  |  |
| --- | --- |
| + Iron(int row, int col) | Generate iron ore to (row, col) location. |

Method

|  |  |
| --- | --- |
| + String getIcon() | Return iron ore’s icon. |
| + String getItem() | Return drop item when iron ore was destroyed. |
| Getter & Setter | Getter & Setter for each field. |

**Class** Ore **extends** Entity **implements** HasHP, HasArmor, CanTakePhysicalDamage, CanTakeBombDamage, Pickable

Constructor

|  |  |
| --- | --- |
| + Ore(int row,int col) | Generate ore to (row, col) location. |

Method

|  |  |
| --- | --- |
| + boolean isAlive() | Check ore’s durability more than zero or not. |
| + double takePhysicalDamage(double damage) | Ore take effect form physical damage. |
| + double takeBombDamage(double damage) | Ore take effect form bomb damage. |
| + abstract String getItem() | Return drop item when each ore was destroyed. |
| + void pick(Entity target) | Pick up drop item to destroyer. |

**Interface** Pickable

Method

|  |  |
| --- | --- |
| + void pick(Entity by) | Entity <by> pick this entity |

**Package** gui

**Class** Block **extends** StackPane

Field

|  |  |
| --- | --- |
| + int WIDTH | Block width |
| + int HEIGHT | Block height |
| - Entity entity | Block’s entity |
| + Label testLabel | Label used for testing |
| - int row | Block row |
| - int col | Block column |
| - boolean hasentity | This block has entity linked to or not |

Constructor

|  |  |
| --- | --- |
| + Block(int row,int col) | Initialize new block at position row and column |

Method

|  |  |
| --- | --- |
| + Entity getEntity() | Get entity of this block |
| + void setEntity(Entity entity) | Set entity of this block |
| + void removeEntity() | Remove entity of this block |
| + boolean hasEntity() | Check whether this block has entity or not |
| + int getRow() | Get row of this block |
| + int getCol() | Get column of this block |
| + Block getBlock(int row,int col) | Get block placed at position row and column |
| + void addEffect(Effect e) | Add effect e to this block |
| + void removeEffect(Effect e) | Remove effect e from this block |

**Class** BlockView **extends** StackPane

Field

|  |  |
| --- | --- |
| - Block block | Block attached to this block view |
| - int realRow | Real row of this block view (row of block) |
| - int realCol | Real column of this block view (column of block) |

Constructor

|  |  |
| --- | --- |
| + BlockView() | Initialize new block view |
| + BlockView(int realrow,int realcol) | Initialize new block view with realRow = realrow and realCol = realcol |

Method

|  |  |
| --- | --- |
| - void render() | Render this block view |
| + Block getBlock() | Get block attached to this block view |
| + void setBlock(Block block) | Set block attached to this block view and render again |
| + void setBlock(Block block, int realrow,int realcol) | Set block attached to this block view and render again and set realRow = realrow and realCol = realcol |
| + BlockView getBlockView(int row,int col) | Get block view at position row and column relative to viewport |
| Getter & Setter |  |

**Class** ControlPanel **extends** VBox

Field

|  |  |
| --- | --- |
| + int BOX\_SIZE | Size of box used in control panel children. |
| - CrafterBox crafterBox | CrafterBox component in this control panel |
| - InventoryBox inventoryBox | InventoryBox component in this control panel |
| - CrafterPerformer craftPerformer | CrafterPerformer component in this control panel |
| - EquipmentViewer equipmentViewer | EquipmentViewer component in this control panel |
| - LevelPanel levelPanel | LevelPanel component in this control panel |

Constructor

|  |  |
| --- | --- |
| + ControlPanel() | Initialize new control panel component and then initialize child components and perform update to all child components |

Method

|  |  |
| --- | --- |
| + synchronized void wrongSound() | Play wrong sound |
| + void update() | Update all child components |

**Class** CrafterBox **extends** HBox

Field

|  |  |
| --- | --- |
| - Crafter crafter | Crafter linked to this crafter box |
| - Button coalPic | Coal button |
| - Label coalAmount | Coal amount label |
| - Button ironPic | Iron button |
| - Label ironAmount | Iron amount label |
| - Button diamondPic | Diamond button |
| - Label diamondAmount | Diamond amount label |

Constructor

|  |  |
| --- | --- |
| + CrafterBox(Crafter crafter) | Initialize new crafter box with crafter and initialize boxes and then perform update |

Method

|  |  |
| --- | --- |
| - VBox genBox(Button pic, Label amount) | Build one box containing item icon and amount |
| + void update() | Update inventory box |
| + Crafter getCrafter() | Get crafter linked to this crafter box |

**Class** CrafterPerformer **extends** Button

Constructor

|  |  |
| --- | --- |
| + CrafterPerformer() | Initialize new crafter performer button and perform update |

Method

|  |  |
| --- | --- |
| + String getIcon() | Get icon of item to craft |
| + void update() | Update item to craft |

**Class** EquipmentViewer **extends** GridPane

Field

|  |  |
| --- | --- |
| - StackPane armor | Component containing armor icon |
| - StackPane helmet | Component containing helmet icon |
| - StackPane sword | Component containing sword icon |
| - StackPane pant | Component containing pant icon |
| - StackPane boot | Component containing boot icon |
| - String borderCSS | CSS script string for adding border |

Constructor

|  |  |
| --- | --- |
| + EquipmentViewer() | Initialize new equipment viewer component and perform update |

Method

|  |  |
| --- | --- |
| - String getArmorIcon() | Get armor icon |
| - String getHelmetIcon() | Get helmet icon |
| - String getSwordIcon() | Get sword icon |
| - String getPantIcon() | Get pant icon |
| - String getBootIcon() | Get boot icon |
| + void update() | Update equipment viewer |

**Class** GameArea **extends** ScrollPane

Field

|  |  |
| --- | --- |
| - GameAreaInner inner | Game area inner component |
| + double SCROLLBAR\_WIDTH | Scrollbar width |
| + double SCROLLBAR\_HEIGHT | Scrollbar height |

Constructor

|  |  |
| --- | --- |
| + GameArea() | Initialize game area component and add game area inner to this game area component |

Method

|  |  |
| --- | --- |
| + GameAreaInner getInner() | Get game area inner component |
| + double getWidthReal() | Get width without scrollbar |
| + double getHeightReal() | Get height without scrollbar |

**Class** GameAreaInner **extends** GridPane

Field

|  |  |
| --- | --- |
| + int NUM\_COL | Number of column in game |
| + int NUM\_ROW | Number of row in game |
| + int VIEW\_COL | Number of column in viewport |
| + int VIEW\_ROW | Number of row in viewport |
| - HashMap<Integer, HashMap<Integer, Block>> blocks | Blocks data |
| - HashMap<Integer, HashMap<Integer, BlockView>> block\_views | Block views data |
| - boolean[][] isDiamondOre | isDiamondOre[i][j] = is row i column j has diamond |
| - boolean[][] isIronOre | isIronOre [i][j] = is row i column j has iron |
| - boolean[][] isCoalOre | isCoalOre [i][j] = is row i column j has coal |
| - int dirI[] | Constant = { -1, -1, -1, 0, 0, 1, 1, 1 } used for reducing repetitive code |
| - int dirJ[] | Constant = { -1, 0, 1, -1, 1, -1, 0, 1 } used for reducing repetitive code |

Constructor

|  |  |
| --- | --- |
| + GameAreaInner() | Initialize game area inner component and generate blocks and blocks view and place ore |

Method

|  |  |
| --- | --- |
| + HashMap<Integer, HashMap<Integer, Block>> getBlocks() | Get blocks data |
| + HashMap<Integer, HashMap<Integer, BlockView>> getBlockViews() | Get block views data |

**Class** ImageStore

Field

|  |  |
| --- | --- |
| - ImageStore store | ImageStore instance |
| + String blockBG | Loading background image. |
| + String coalBlock | Loading coal ore image. |
| + String ironBlock | Loading iron ore image. |
| + String diamondBlock | Loading diamond ore image. |
| + String boomerU | Loading boomer facing on up direction image. |
| + String boomerR | Loading boomer facing on right direction image. |
| + String boomerD | Loading boomer facing on down direction image. |
| + String boomerL | Loading boomer facing on left direction image. |
| + String zombieU | Loading zombie facing on up direction image. |
| + String zombieR | Loading zombie facing on right direction image. |
| + String zombieD | Loading zombie facing on down direction image. |
| + String zombieL | Loading zombie facing on left direction image. |
| + String bomb | Loading bomb image. |
| + String fire | Loading fire image. |
| + String attack | Loading attacking image. |
| + String iron | Loading iron image. |
| + String coal | Loading coal image. |
| + String diamond | Loading diamond image. |
| + String woodenSword | Loading wooden sword (starter item). |
| + String ironSword | Loading iron sword. |
| + String diamondSword | Loading diamond sword. |
| + String ironPant | Loading iron pant. |
| + String diamondPant | Loading diamond pant. |
| + String ironBoot | Loading iron boots. |
| + String diamondBoot | Loading diamond boots. |
| + String ironHelmet | Loading iron helmet. |
| + String diamondHelmet | Loading diamond helmet. |
| + String ironArmor | Loading iron armor. |
| + String diamondArmor | Loading diamond armor. |

Constructor

|  |  |
| --- | --- |
| + ImageStore() | Initialize image store |

Method

|  |  |
| --- | --- |
| + ImageStore getInstance() | Get image store instance |

**Class** InventoryBox **extends** HBox **implements** HasInventory

Field

|  |  |
| --- | --- |
| - Inventory inventory | Inventory linked to this component |
| - Button coalPic | Coal button |
| - Label coalAmount | Coal amount |
| - Button ironPic | Iron button |
| - Label ironAmount | Iron amount |
| - Button diamondPic | Diamond button |
| - Label diamondAmount | Diamond amount |

Constructor

|  |  |
| --- | --- |
| + InventoryBox(Inventory inventory) | Construct new inventory box component with inventory and initialize child boxes and perform update |

Method

|  |  |
| --- | --- |
| - VBox genBox(Button pic, Label amount) | Build one box containing item icon and amount |
| + void update() | Update inventory box |
| + Inventory getInventory() | Get inventory linked to this component |

**Class** LevelPanel **extends** VBox

Field

|  |  |
| --- | --- |
| - Label levelLabel | Level label |
| - Label expLabel | EXP label |
| - ProgressBar expBar | EXP progress bar |
| - Label hpLabel | HP Label |
| - ProgressBar hpBar | HP progress bar |

Constructor

|  |  |
| --- | --- |
| + LevelPanel() | Initialize level panel |

Method

|  |  |
| --- | --- |
| + void update() | Update level panel |

**Package** item

**Class** Crafter **implements** HasInventory

Field

|  |  |
| --- | --- |
| - Inventory inventory | Inventory that linked to this crafter |
| - HashMap<String,Integer> items | Items in this crafter data |

Constructor

|  |  |
| --- | --- |
| + Crafter(Inventory inv) | Initialize crafter with inventory inv |

Method

|  |  |
| --- | --- |
| + Inventory getInventory() | Get inventory that linked to this crafter |
| + void add(String name,Integer amount) | Add item <name> with amount <amount> to crafter |
| + void add(String name) | Add 1 item <name> to crafter |
| - void use(String name,Integer amount) | Use item <name> with amount <amount> in crafter |
| - void use(String name) | Use 1 item <name> in crafter |
| + void giveBack(String name,Integer amount) | Give <amount> item <name> back to inventory |
| + void giveBack(String name) | Give 1 item <name> back to inventory |
| + Integer get(String name) | Get amount of item <name> in crafter |
| + boolean has(String name,Integer amount) | Does item <name> in crafter has exactly equal to <amount> |
| + String getCraftTarget() | Get what we can craft with given items in crafter |
| + void performCraft() | Perform crafting |

**Class** Inventory

Field

|  |  |
| --- | --- |
| - HashMap<String,Integer> items | Items data |
| - int swordLevel | Sword level |
| - int armorLevel | Armor level |
| - int helmetLevel | Helmet level |
| - int bootLevel | Boot level |
| - int pantLevel | Pant level |

Method

|  |  |
| --- | --- |
| + void add(String name,Integer amount) | Add item <name> with amount <amount> |
| + void add(String name) | Add 1 item <name> |
| + void use(String name,Integer amount) | Use item <name> with amount <amount> |
| + void use(String name) | Use 1 item <name> |
| + boolean has(String name,Integer amount) | Does item <name> has more than <amount> |
| + Integer get(String name) | Get amount of item <name> |
| Getter & Setter |  |

**Class** NotEnoughItemException **extends** Exception

Field

|  |  |
| --- | --- |
| - String itemname | Item name |

Constructor

|  |  |
| --- | --- |
| + NotEnoughItemException() | Initialize exception |
| + NotEnoughItemException(String itemname) | Initialize exception with item name |

Method

|  |  |
| --- | --- |
| + String getItemname() | Get item name |

**Package** util

**Class** ExceptionWithAction **extends** Exception

Field

|  |  |
| --- | --- |
| # String message | Exception’s message |
| # Runnable action | Exception’s action |

Constructor

|  |  |
| --- | --- |
| + ExceptionWithAction() | Initialize exception |
| + ExceptionWithAction(String msg) | Initialize exception with message |
| + ExceptionWithAction(String msg, Runnable action) | Initialize exception with message, action |
| + ExceptionWithAction(Runnable action) | Initialize exception with action |

Method

|  |  |
| --- | --- |
| + boolean canPerformAction() | Check whether can perform action or not |
| + void performAction() | Perform action |
| Getter & Setter |  |