VirtualWorld

```
-TIMER ACTION PERIOD: int
                             <<static>>
-VIEW WIDTH: int
                            <<static>>
-VIEW_HEIGHT: int
                            <<static>>
-TILE WIDTH: int
                           <<static>>
-TILE HEIGHT: int
                           <<static>>
-WORLD WIDTH SCALE: int
                           <<static>>
-WORLD HEIGHT SCALE: int
                             <<static>>
-VIEW COLS: int
                            <<static>>
-VIEW ROWS: int
                            <<static>>
-WORLD_COLS: int
                            <<static>>
-WORLD_ROWS: int
                            <<static>>
-IMAGE_LIST_FILE_NAME: String <<static>>
-DEFAULT_IMAGE_NAME: String <<static>>
-LOAD_FILE_NAME: String
                            <<static>>
-FAST FLAG: String
                           <<static>>
-FASTER FLAG: String
                           <<static>>
-FASTEST FLAG: String
                           <<static>>
-FAST SCALE: double
                           <<static>>
                           <<static>>
-FASTER SCALE: double
-FASTEST_SCALE: double
                           <<static>>
-timeScale: double
-imageStore: ImageStore
-world: WorldModel
```

- +settings() +setup()
- +draw()

+main()

+mousePressed()

-view: WorldView

-scheduler: EventScheduler

- -mouseToPoint()
- +keyPressed() +createDefaultBackground() <<static>> +createImageColored() <<static>> +loadWorld() <<static>> +loadWorld() <<static>> +scheduleActions() <<static>> +parseCommandLine() <<static>>

<<static>>

WorldModel

-numRows: int -numCols: int

-background: Background[][] -occupancy: Entity[][] -entities: Set<Entity>

+tryAddEntity()

+withinBounds(): boolean +isOccupied(): boolean

+nearestEntity(): Optional<Entity> +findNearest(): Optional<Entity>

+addEntity() +moveEntity() +removeEntity() +removeEntityAt()

+getBackgroundImage(): Optional<PImage>

+setBackground()

+getOccupant(): Optional<Entity> +getOccupancyCell(): Entity

+setOccupancyCell()

+getBackgroundCell(): Background

+setBackgroundCell() +getNumRows(): int +getNumCols(): int

+getEntities(): Set<Entities>

WorldView

-screen: PApplet -world: WorldModel -tileWidth: int -tileHeight: int -viewport: Viewport

+shiftView()

+drawBackground() +drawEntities() +drawViewport() +getViewport()

EventScheduler

-eventQueue: PriorityQueue<Event> -pendingEvents: Map<Entity, List<Event>> -timeScale: double

+scheduleEvent()

ImageStore

-images: Map<String, List<PImage>> -defaultImages: List<PImage>

+getImageList(): List<PImage>

+getImages(): Map<String, List<PImage>>

Background

- -id: String
- -images: List<PImage>
- -imageIndex: int
- +getCurrentImage(): PImage

Viewport

- -row: int -col: int
- -numRows: int -numCols: int
- +shift()
- +contains(): boolean
- +viewportToWorld(): Point
- +worldToViewport(): Point
- +getRow(): int
- +getCol(): int
- +getNumRows(): int
- +getNumCol(): int

EventComparator

eventQueue: PriorityQueue<Event> pendingEvents: Map<Entity, List<Event>>

timeScale: double

Entity

-kind: EntityKind -id: String -position: Point -images: List<PImage> -imageIndex: int -resourceLimit: int -resourceCount: int -actionPeriod: int

-animationPeriod: int +STUMP_KEY: String +TREE_ANIMATION_MAX: int

+TREE ANIMATION MIN: int +TREE ACTION MAX: int +TREE_ACTION_MIN: int

+TREE HEALTH MAX: int +TREE_HEALTH_MIN: int

<<static>> <<static>> <<static>> <<static>> <<static>>

<<static>>

<<static>>

- +nextImage()
- +getAnimationPeriod(): int
- +getCurrentImage(): PImage
- +executeSaplingActivity()
- +executeTreeActivity()
- +executeFairyActivity()
- +executeDudeNotFullActivity()
- +executeDudeFullActivity()
- +scheduleActions()
- +transformNotFull(): boolean
- +transformFull(): boolean
- +transformPlant(): boolean
- +transformTree(): boolean
- +transformSapling(): boolean
- +moveToFairy(): boolean
- +moveToNotFull(): boolean
- +moveToFull(): boolean
- +nextPositionFairy(): Point
- +nextPositionDude(): Point
- +getId(): String
- +getPosition(): Point
- +setPosition()
- +getKind(): EntityKind
- +getHealth(): int

<<enumeration>> **EntityKind**

HOUSE DUDE_FULL DUDE NOT FULL OBSTACLE **FAIRY STUMP SAPLING TREE**

Point

-x: int -y: int

+toString(): String +equals(): boolean +hashCode(): int

+adjacent(): boolean <<static>>

+getX(): int +getY(): int

Event

-action: Action -time: long -entity: Entity

- +getAction(): Action
- +getTime(): long raetEntity(). Entity

Action

-kind: ActionKind -entity: Entity -world: WorldModel -imageStore: ImageStore -repeatCount: int



ACTIVITY ANIMATION

Functions -COLOR MASK: int <<static>> -KEYED IMAGE MIN: int <<static>> -KEYED RED IDX: int <<static>> -KEYED GREEN IDX: int <<static>> -KEYED_BLUE_IDX: int <<static>> -PROPERTY KEY: int <<static>> +SAPLING KEY: String <<static>> -SAPLING HEALTH LIMIT: int <<static - SAPLING ACTION ANIMATION PERIOD: int <<stati -SAPLING_NUM_PROPERTIES: int <<static: -SAPLING ID: String <<static>> <<static>> -SAPLING_COL: int -SAPLING ROW: int <<static>> -SAPLING HEALTH: int <<static>> -BGND_KEY: String <<static>> -BGND_NUM PROPERTIES: int <<static>> -BGND ID: int <<static>> -BGND_COL: int <<static>> -BGND ROW: int <<static>> <<static>> -OBSTACLE_KEY: String -OBSTACLE_NUM_PROPERTIES: int <<static>> -OBSTACLE ID: int <<static>> -OBSTACLE COL: int <<static>> -OBSTACLE_ROW: int <<static>> -OBSTACLE_ANIMATION_PERIOD: int <<static>> -DUDE KEY: String <<static>> -DUDE NUM PROPERTIES: int <<static>> -DUDE_ID: String <<static>> -DUDE_COL: int <<static>> -DUDE_ROW: int <<static>> -DUDE_LIMIT: int <<static>> -DUDE_ACTION_PERIOD: int <<static>> -DUDE ANIMATION PERIOD: int <<static>> -HOUSE KEY: String <<static>> -HOUSE NUM PROPERTIES: int <<static>> -HOUSE ID: String <<static>> -HOUSE COL: int <<static>> -HOUSE ROW: int <<static>> -FAIRY KEY: String <<static>> -FAIRY_NUM_PROPERTIES: int <<static>> - FAIRY_ID: String -FAIRY_COL: int <<static>>

-FAIRY ROW: int <<static>> -FAIRY_ANIMATION PERIOD: int <<static>> -FAIRY_ACTION_PERIOD: int <<static>> +TREE KEY: String <<static>> -TREE NUM PROPERTIES: int <<static>> -TREE_ID: String <<static>> -TREE_COL: int <<static>> -TREE_ROW: int <<static>> -TREE_ANIMATION_PERIOD: int <<static>>

<<static>>

<<static>>

<<static>>

+getNumFromRange: int <<static>> +loadImages() <<static>> +processImageLine() <<static>> +getImages(): List<PImage> <<static>> +setAlpha() <<static>> +load() <<static>>

-TREE ACTION PERIOD: int

l ino(): booloon

-TREE_HEALTH: int

+executeAction()
+executeAnimationAction()
+executeActivityAction()

+processLine(). boolean	~~Static//
+parseBackground(): boolean	< <static>></static>
+parseSapling(): boolean	< <static>></static>
+parseDude(): boolean	< <static>></static>
+parseFairy(): boolean	< <static>></static>
+parseTree(): boolean	< <static>></static>
+parseObstacle(): boolean	< <static>></static>
+parseHouse(): boolean	< <static>></static>
+distanceSquared(): int	< <static>></static>
+clamp()	< <static>></static>
+createAnimationAction(): Act	ion < <static>></static>
+createActivityAction(): Action	
· Greater tell vity relief (): 7 teller	1 Station
+createHouse(): Entity	< <static>></static>
+createObstacle(): Entity	< <static>></static>
+createTree(): Entity	< <static>></static>
+createStump(): Entity	< <static>></static>
+createSapling(): Entity	< <static>></static>
+createFairy(): Entity	< <static>></static>
+createDudeNotFull(): Entity	< <static>></static>
+createDudeFull(): Entity	< <static>></static>