Project 3 Report

1.

Actor: The only class that is truly an abstract base class. Only doSomething() is pure virtual

Acessors:

-getWorld() const: returns the studentWorld object that the actor is contained in

-isDead() const: returns the dead status of the actor

-isLife() const: returns if the liftime of the actor(if it requires one) is 0 or not

getActorAtPoint(int x, int y): retrieve the actor from the x and y location using:

{ set iterator to list of Actors beginning

while iterator does not point to end,

if actor at iterator’x and y = parameter x and y

return pointer to iterator

}

-setLifetime(int time): set the lifetime to time

-decLifetime(): decrease lifetime by 1

-setDead(): change dead status to true

-moveKey(int x, int y): the main method of moving to location x and y using:

{ get actor at x,y

If its a brick, do nothing

Otherwise, move to x and y, return true

}

-randInt(int min, int max): get a random number between min and max

Player:

Accessors:

-maxSpray() const: returns number of max sprays

-usedSpray() const: returns number of sprays currently on map

-useSpray(): increments number of sprays on map

-dieSpray(): decrements number of sprays on map

-setSprayDuration(int duration): set the duration of spray upgrade to duration

-setWalkDuration(int duration): set the duration of walk upgrade to duration

-boostSpray(int max): set max sprays to max

-activateSimul(): set simulOn bool to true, goodie is active

-activateWalk(): set walkOn bool to true, goodie is active

-moveKey(int x, int y): a slightly different variation of Actor::moveKey:

{ if player does not have walk through goodie:

Actor::moveKey

else

get actor at x, y

if its a permanent brick, do nothing

Otherwise, move to x and y, return true

}

doSomething(): checks for player status, and allows keypress for movement using moveKey and drop sprays, as well as check for goodie buffs

Brick/PermaBrick/BreakBrick: nothing of interest, doSomething() is pure virtual, but it does nothing

Zumi

changeDir(): changes the direction of the Zumi

kill(): set kill status to true

move(): moves the Zumi:

{ if current tick is less than movement tick

Do nothing

Otherwise check value of m\_currentDirection

If 0, Actor::moveKey(x-1,y) until it hits a brick, then change directions

Repeat for 1, 2, and 3, for moving up, right, and down respectively

Set current tick back to 0

}

dropGoodie(): determines drop for goodie:

{ get random integer from 0 to 99 and compare to chance of goodie

If less, get random integer 0 to 100

Depending on which goodie’s probabilies,

If rand int is less than smallest probability, drop that goodie

If rand int is greater than smallest prob, but greater than smallest prob + middle prob, drop

middle goodie

if rand int is greater than middle prob, drop greatest probability goodie

}

doSomething(): check status of Zumi, allow movement with move(), and if kill() is activated, give 100 points to player and determine if goodie drops

Complex Zumi

move(): similar to Zumi, except chases player

detectPlayer(): searches for player in m\_smellDistance by subtracting its x,y coords with itselfs

checkPath(): uses a queue to check for a path to player

doSomething(): similar to Zumi, except awards 500 points.

Exit

doSomething(): recieves notice from studentworld if number of Zumis is 0. If is, set the visibility to true. While it is visible and if the players x,y is the same as its, send player to next level

BuySprayer

sprayRange(int x, int y): checks if plus of radius 2 is appropriate to place down a bug spray ie does not contain any permanent bricks and will not allow spray past bricks.

doSomething():checks status of sprayer, decriment lifetime if not 0, if 0 set to dead. Place bugspray in its location once lifetime is 0 as well as sprayRange the area.

Bug Spray

examineSpot(int x, int y): checks if spot contains an actor and apply correct interactions. If play or zumi, set to dead, if breakbrick destroy.

doSomething(): check for status of spray, decrease lifetime is not 0, if is 0 set it to dead. Activate examineSpot at its location

Goodie

Gives player 1000 points

Extra Life Goodie

doSomething():Give an extra life

Simul Sprayer Goodie

doSomething(): Lets you place sprayers up to as many as level allows for duration as level allows

Walk Walls Goodie

doSomething(): Lets you walk through break bricks for duration as level allows

2. At the time of writing this report, the Complex Zumi’s movement is not fully flushed. It has detection and can see if a path can be collected, but it currently cannot follow the shortest path. That may change with what I have submitted. Another bug that occurs is that the exit does not always appear. After repeatedly testing why not, I failed to isolate the cause of the bug.

3. I unfortunately chose to start this project using a vector of actor pointers rather than a list. When using a vector, I did not realize that the check for an actor at a X,Y location would take an extremely long time because of its nature as an array. I had to change the entire way it worked for it not lag the game completely. Otherwise, I followed most of the specifications to the letter.