

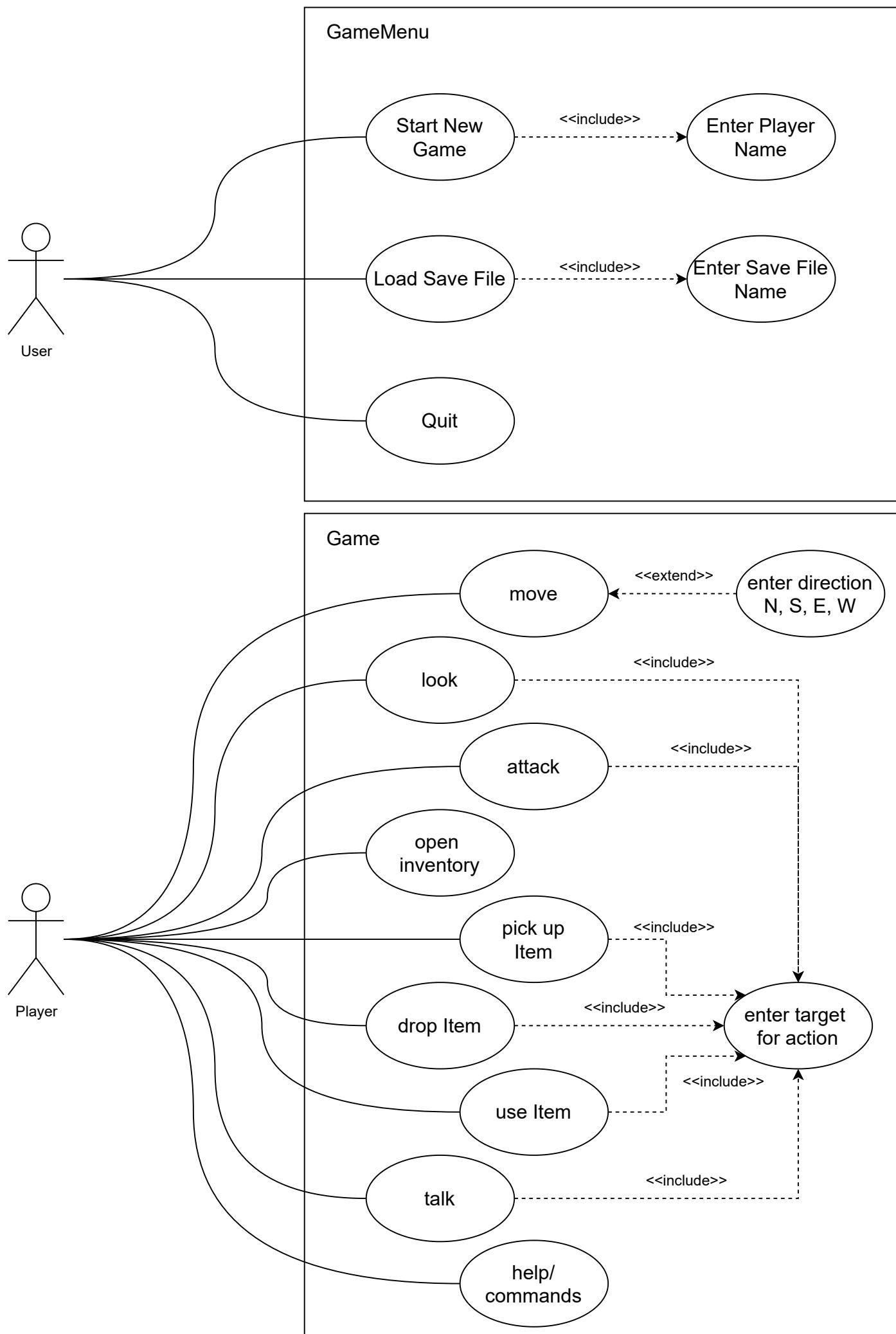
Softwaredesign

**Abschlussarbeit
Text Adventure**

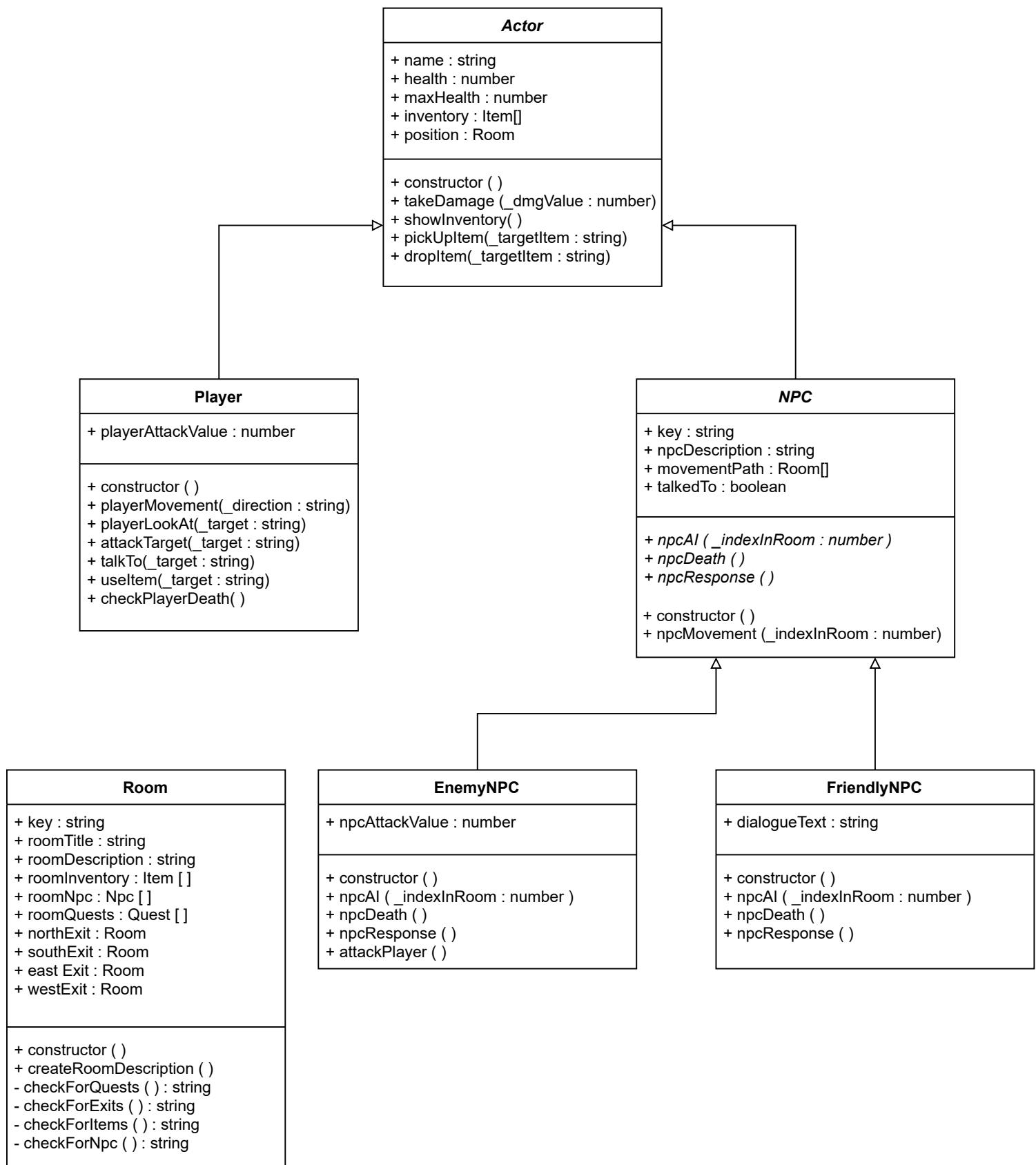
**Fabian Geyer
MIB4 SS20
260603**



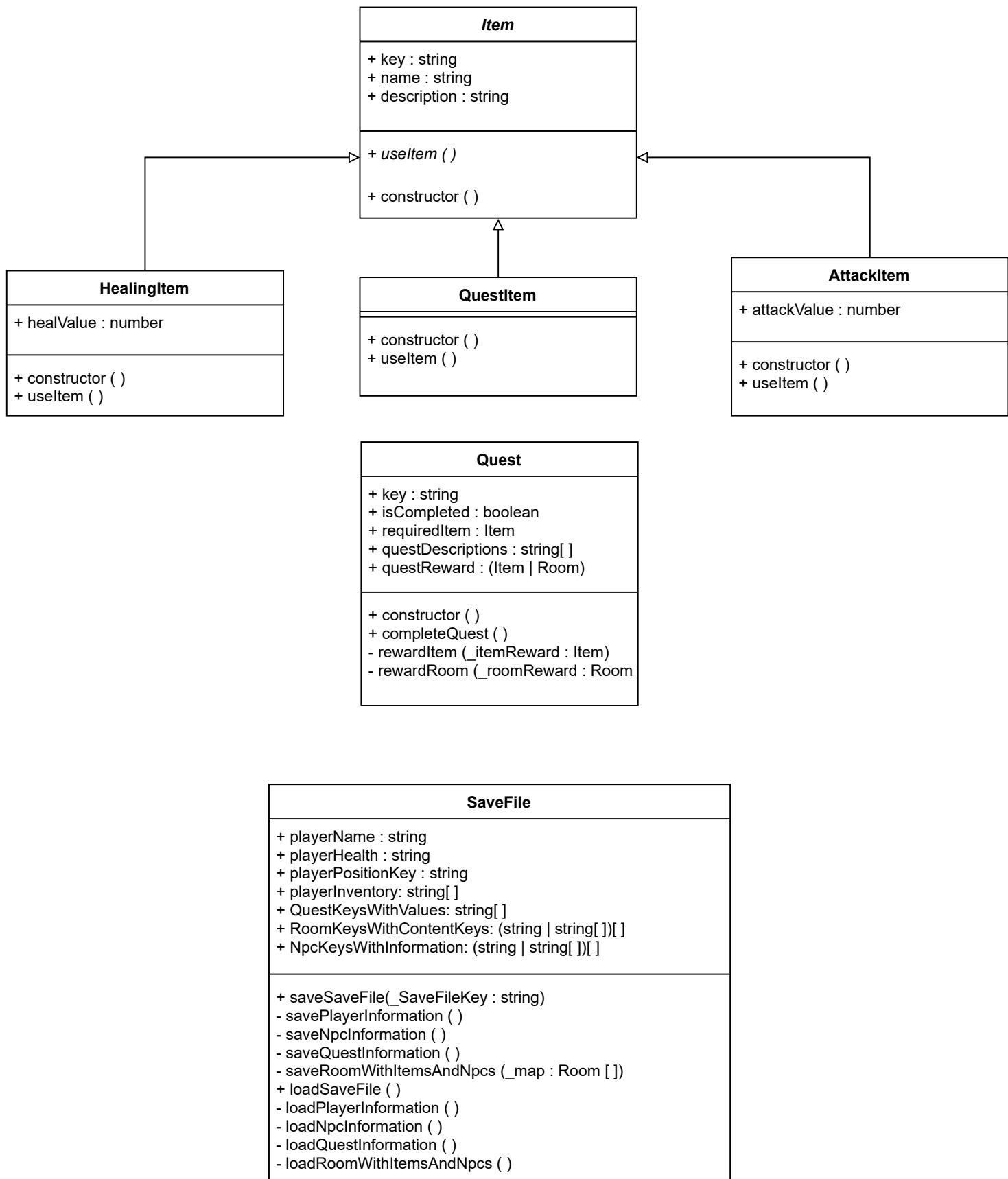
Use Case Diagrams



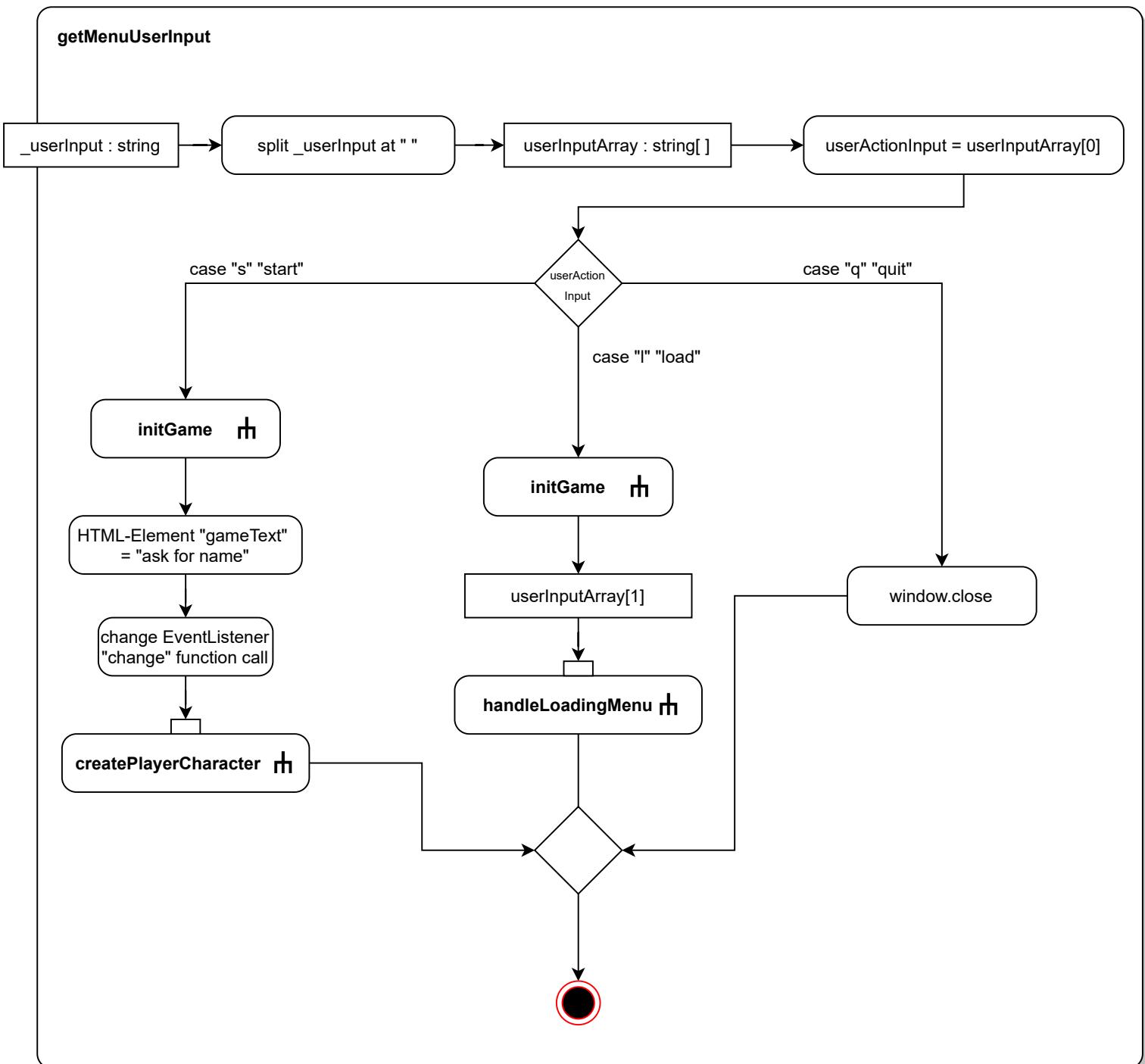
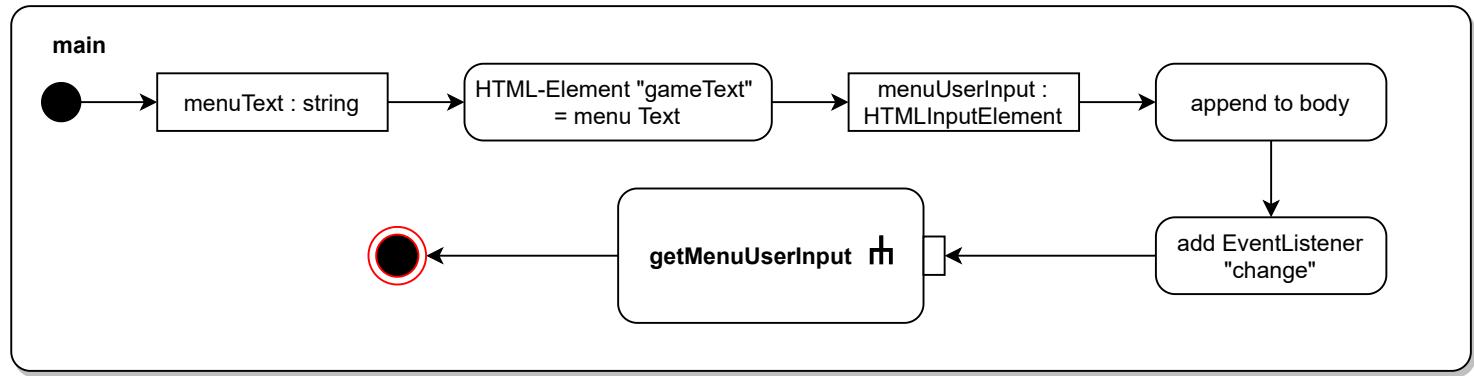
Class Diagrams



Class Diagrams

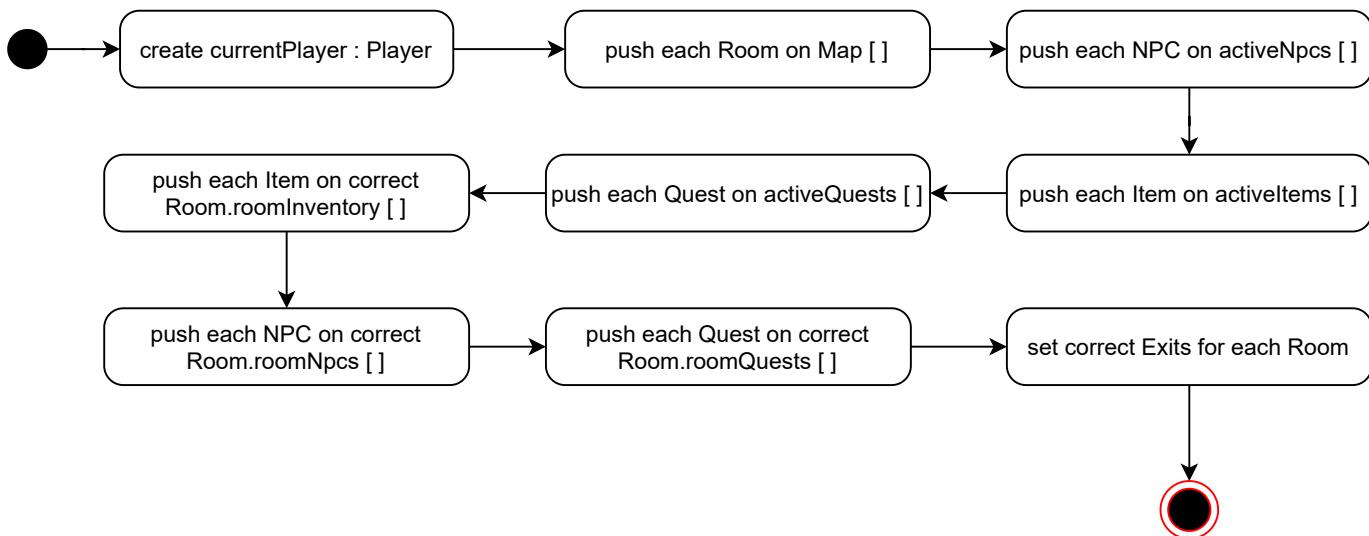


Activity Diagrams

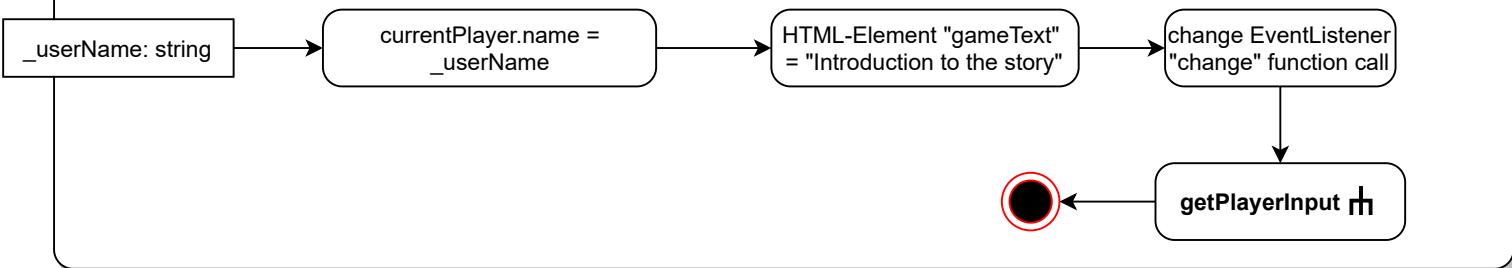


Activity Diagrams

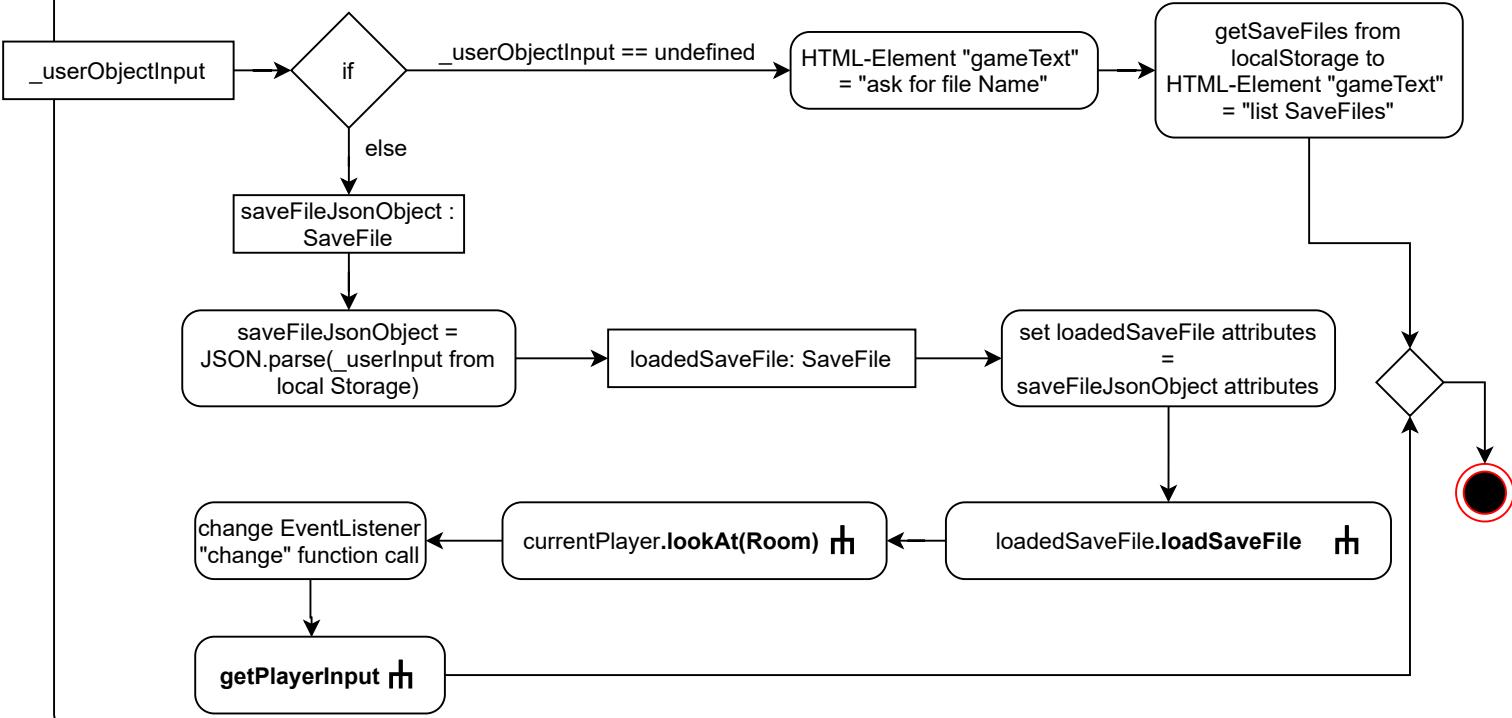
initGame



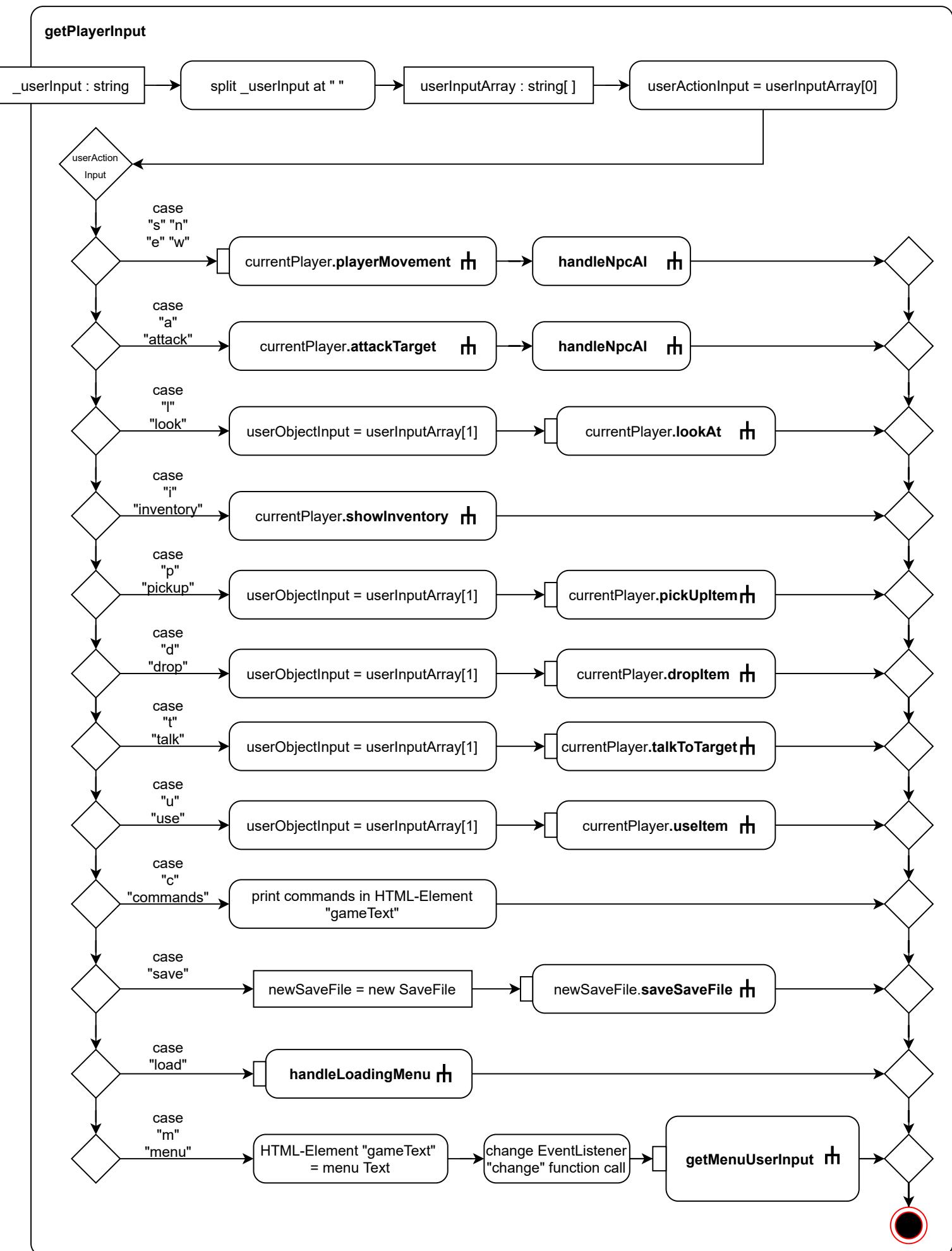
createPlayerCharacter



handleLoadingMenu

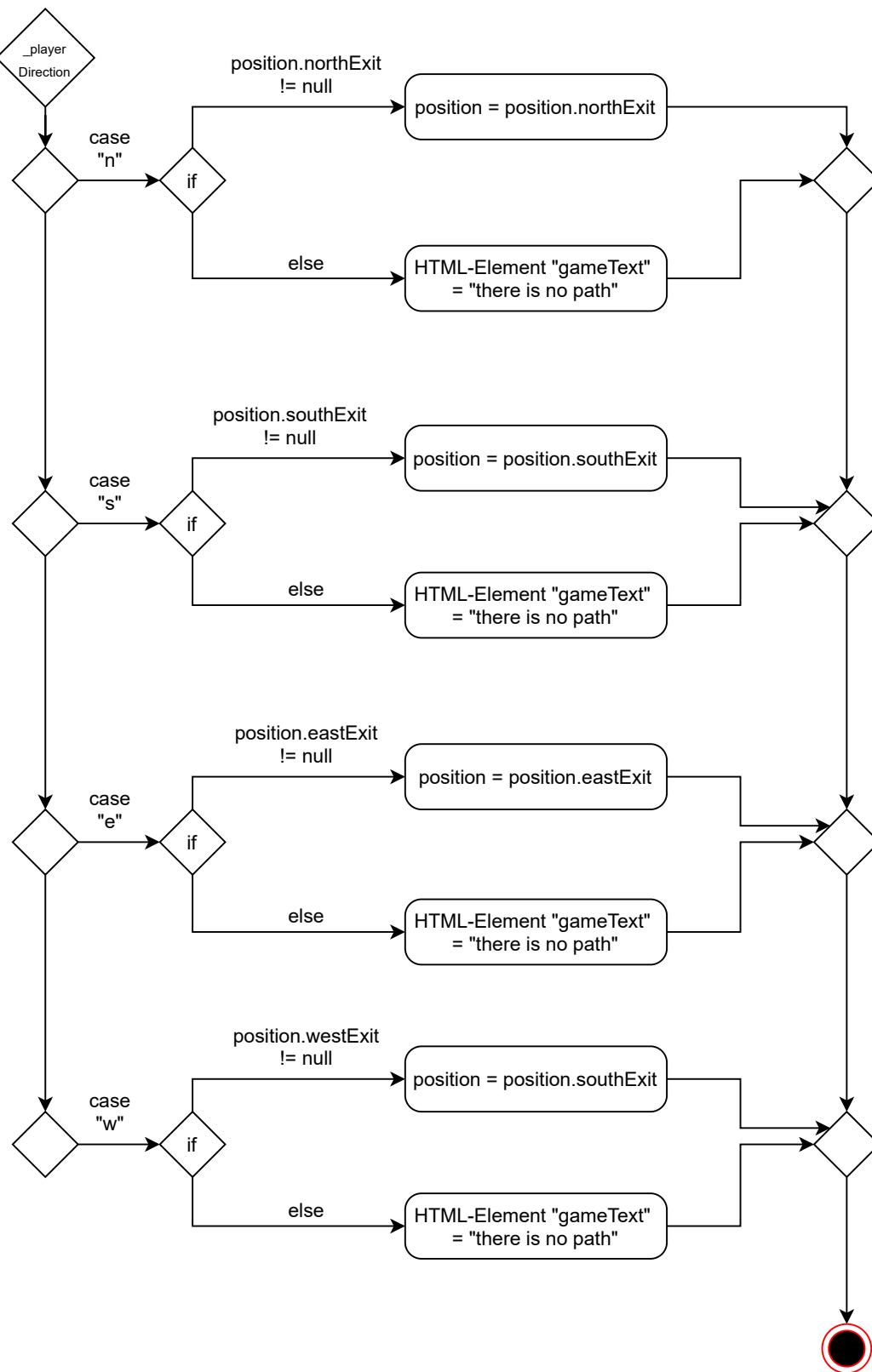


Activity Diagrams

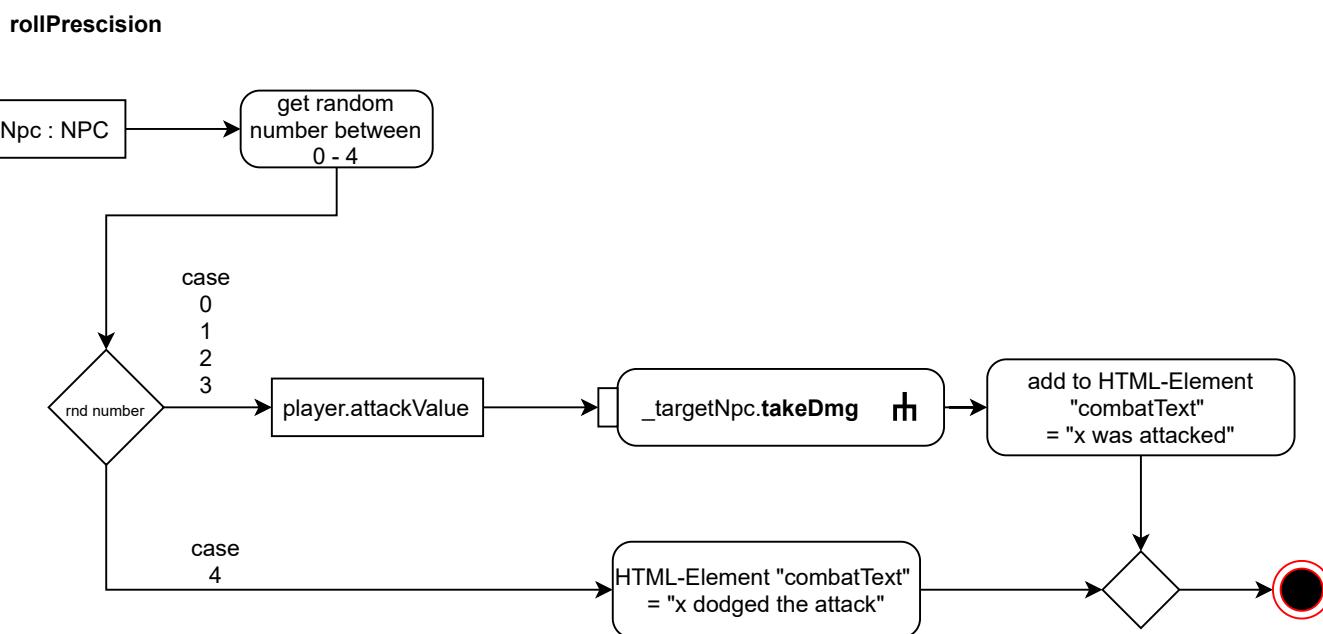
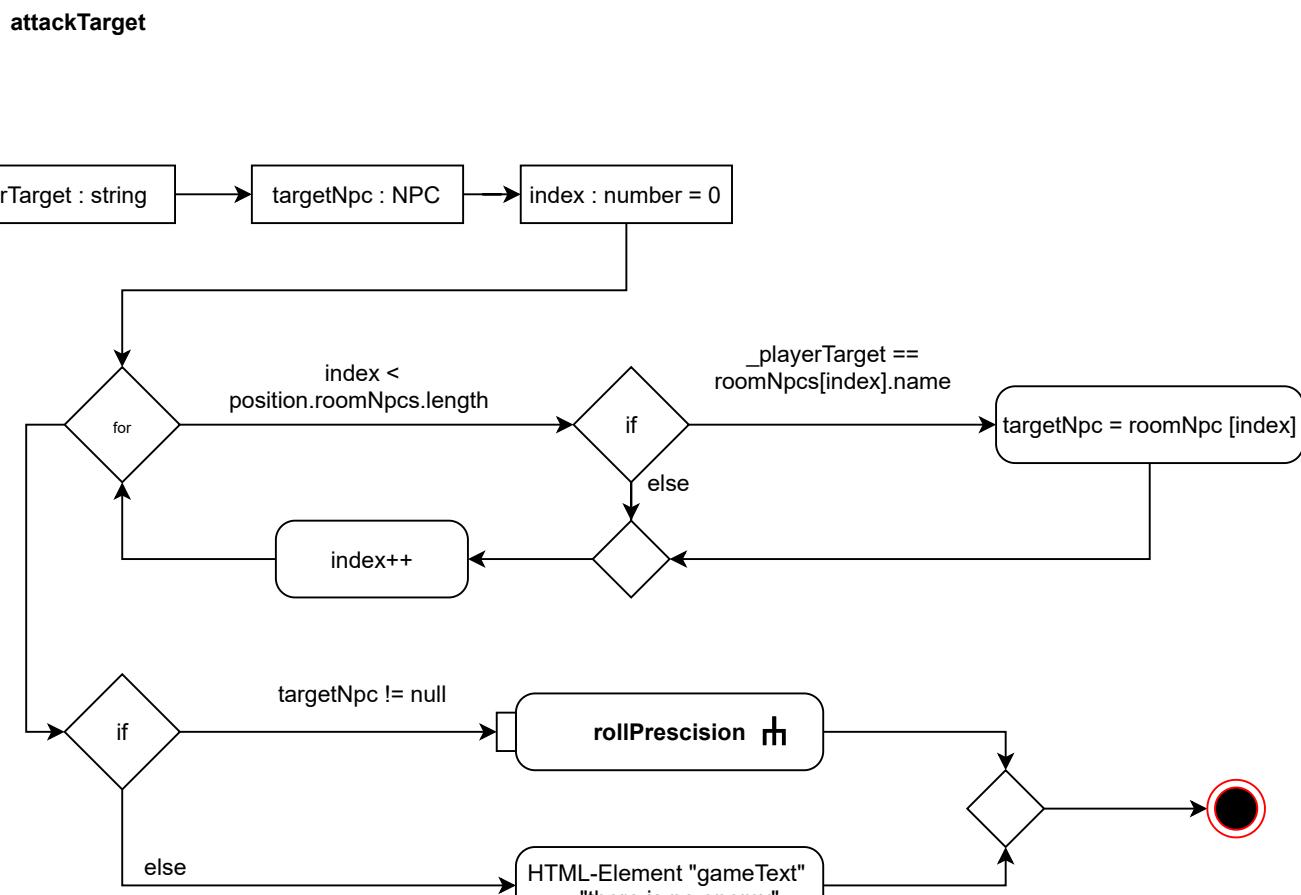


Activity Diagrams

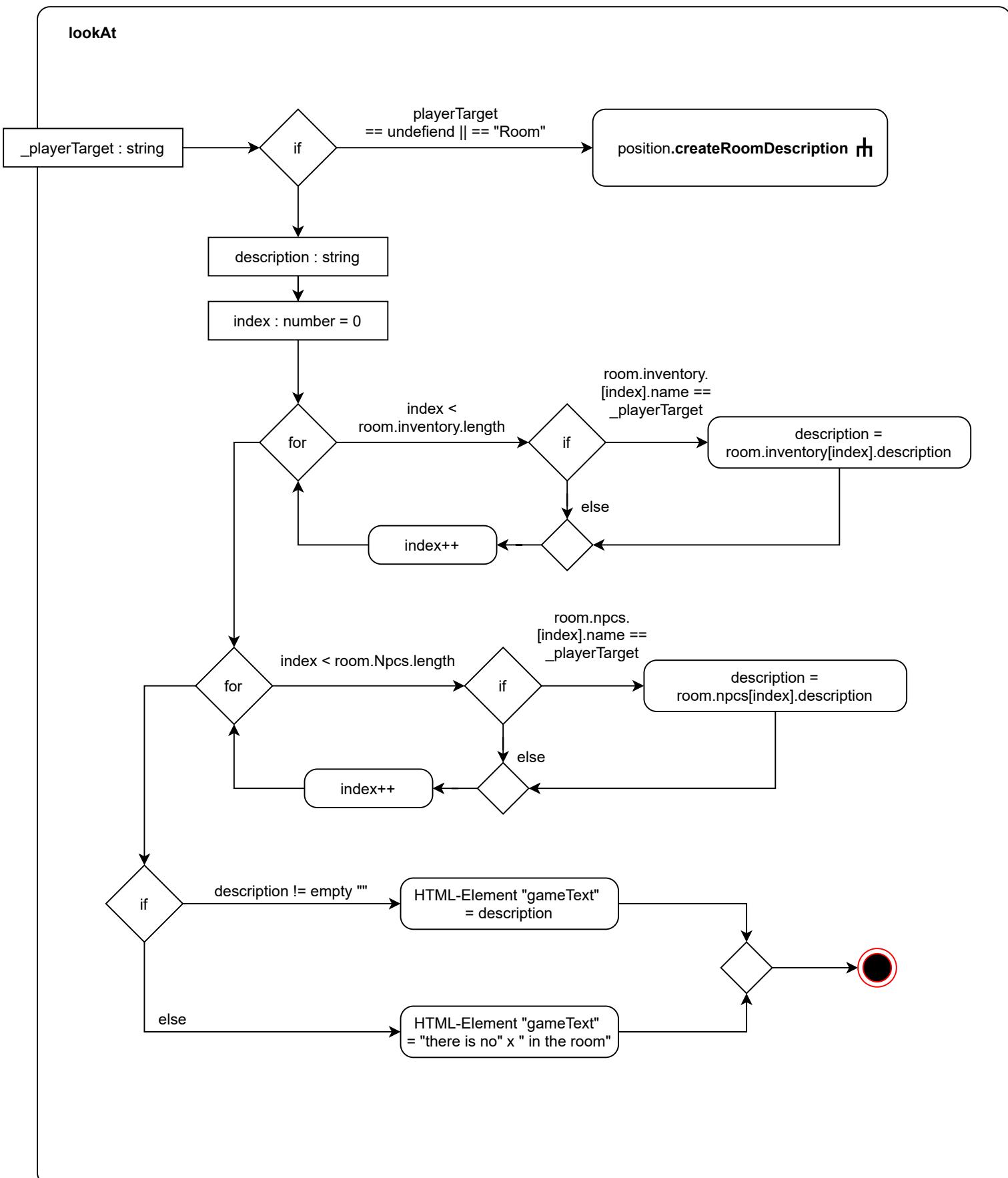
playerMovement



Activity Diagrams

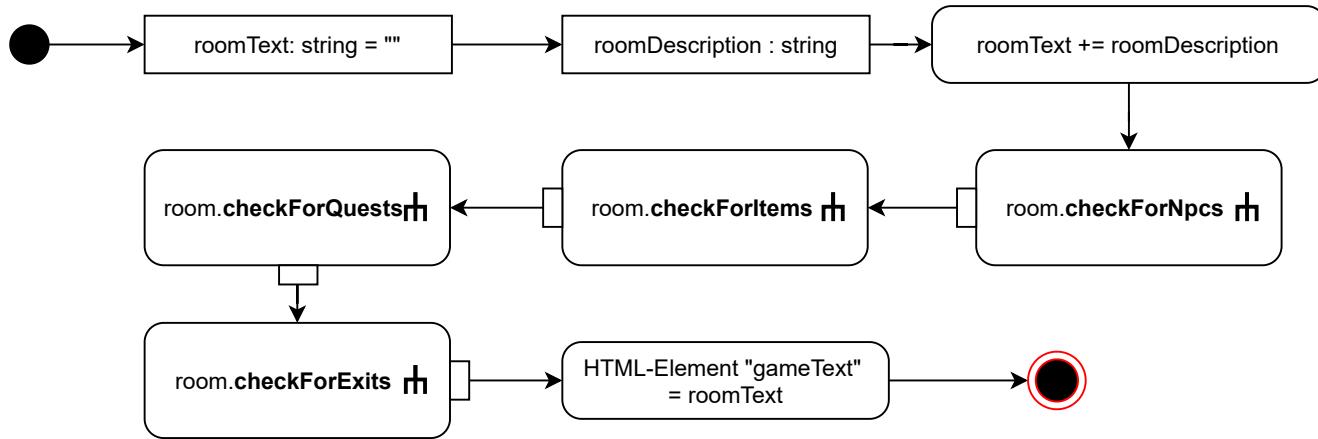


Activity Diagrams

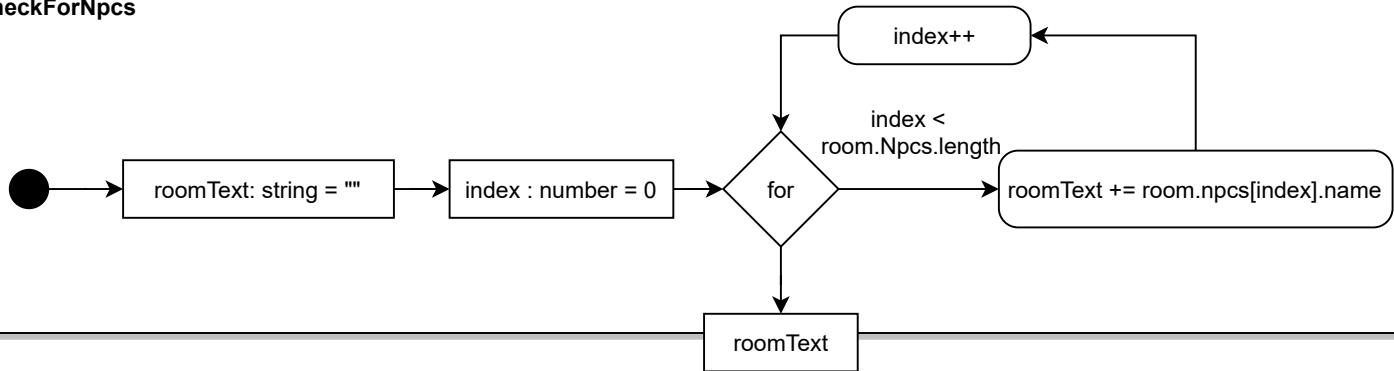


Activity Diagrams

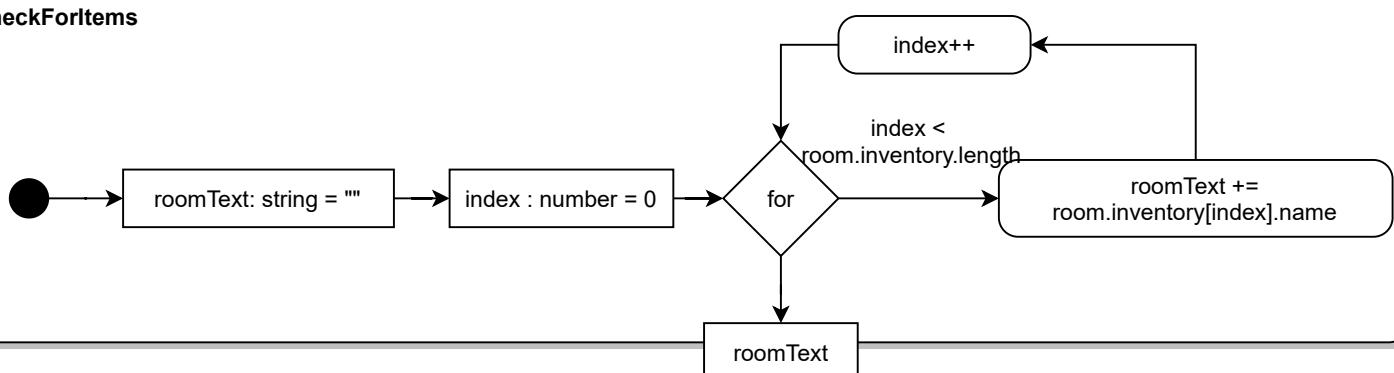
createRoomDescription



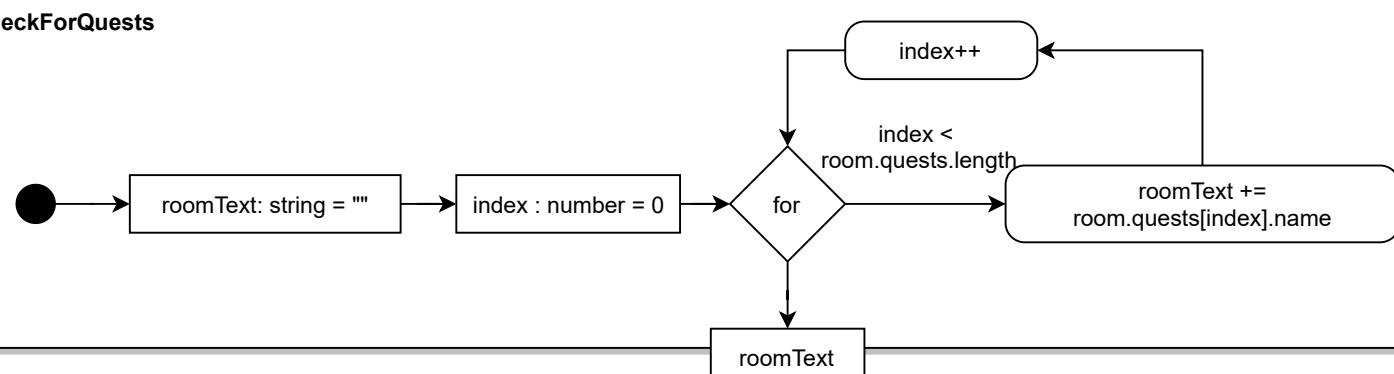
checkForNpcs



checkForItems

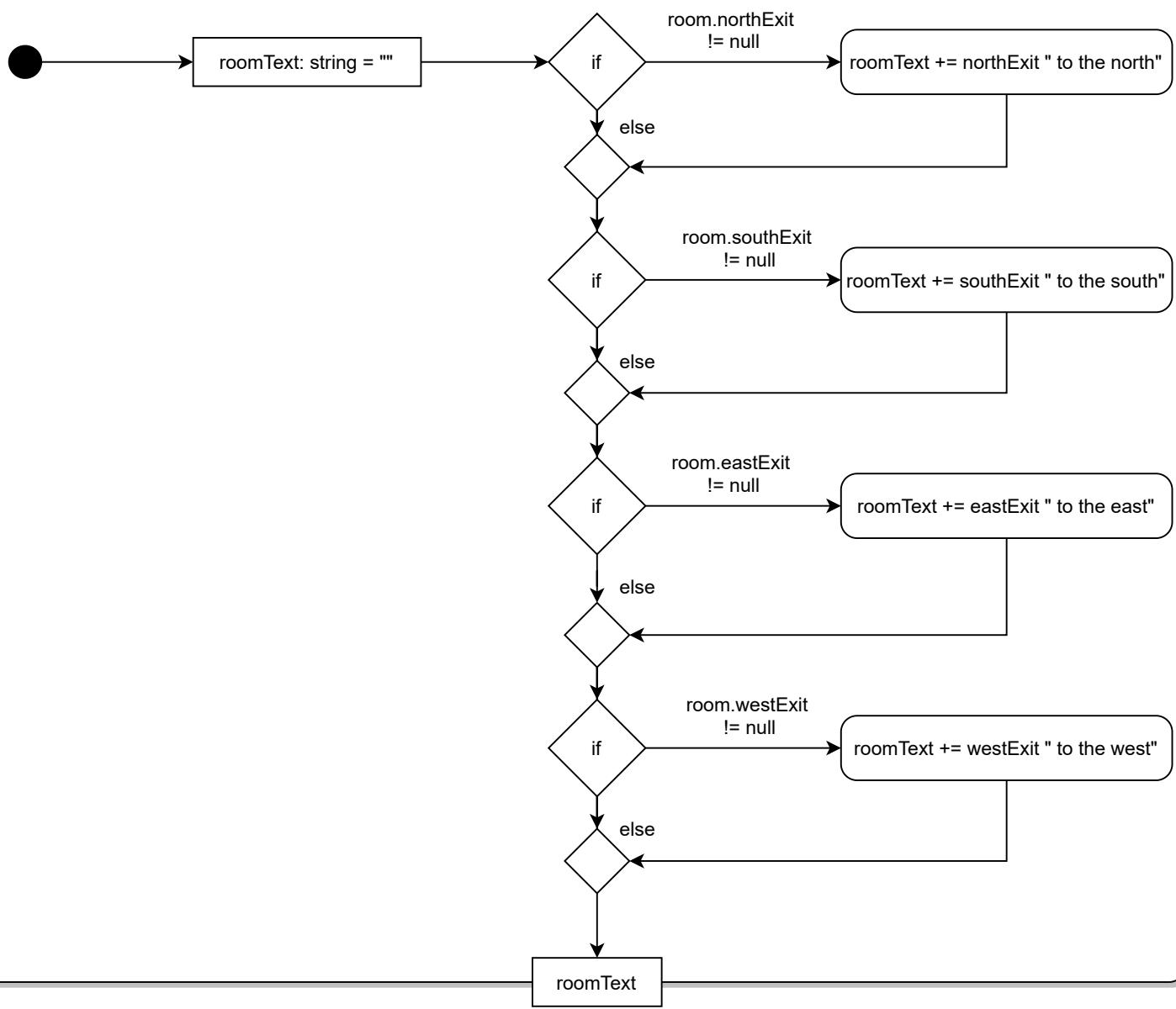


checkForQuests

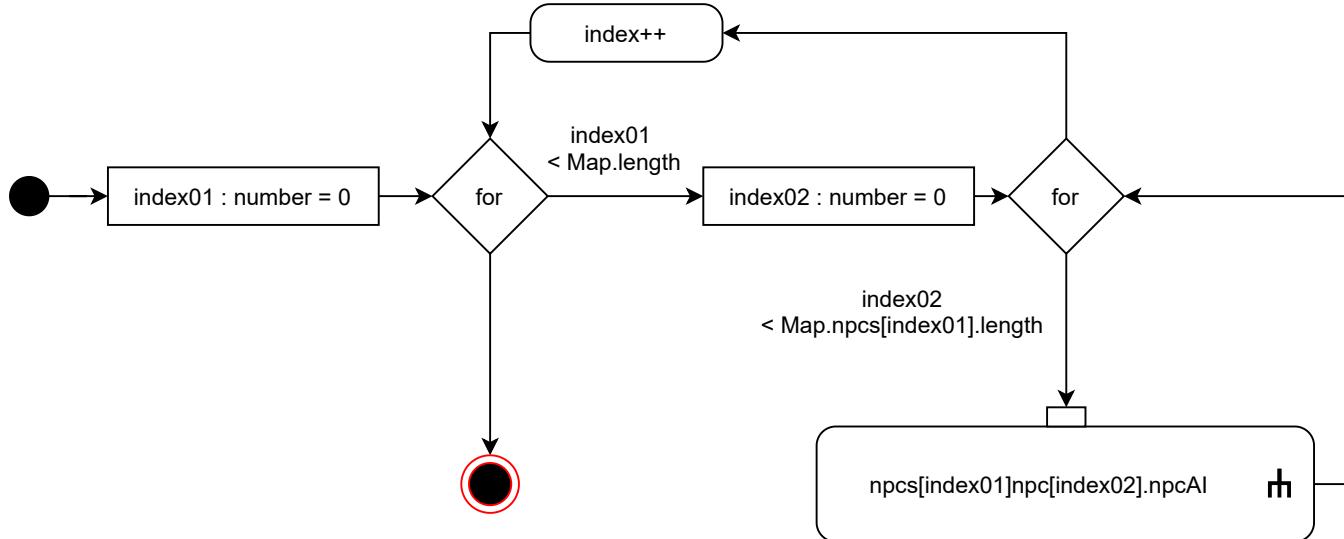


Activity Diagrams

checkForExits

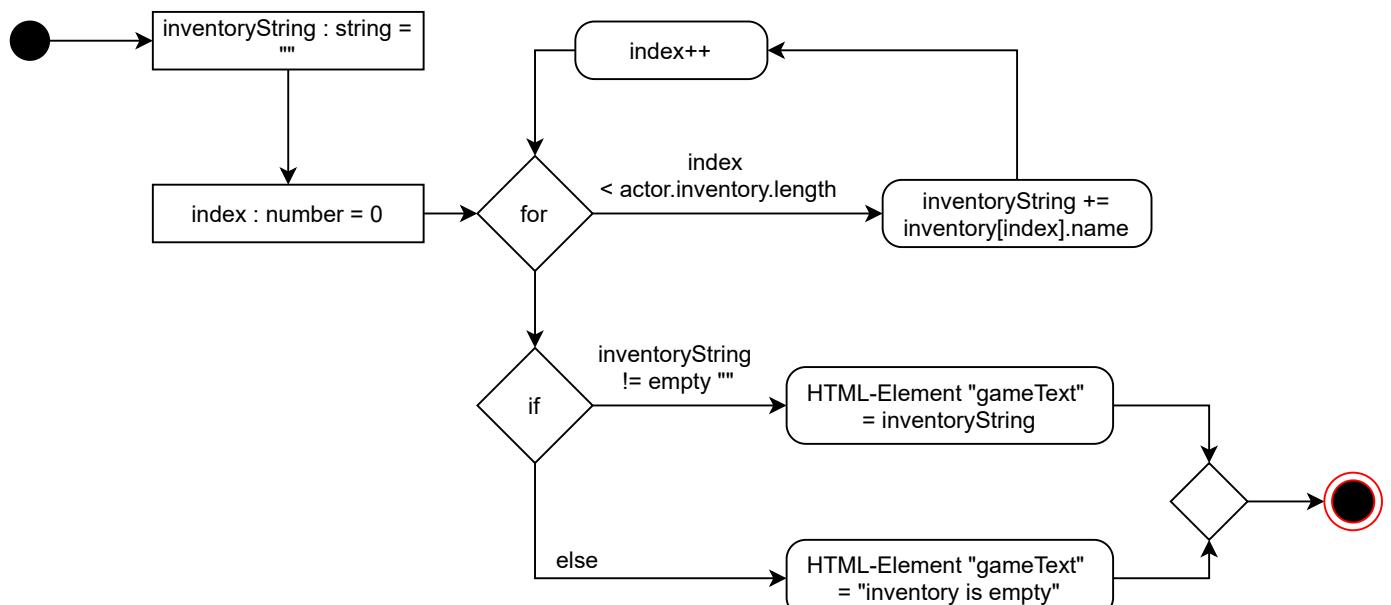


handleNpcAI

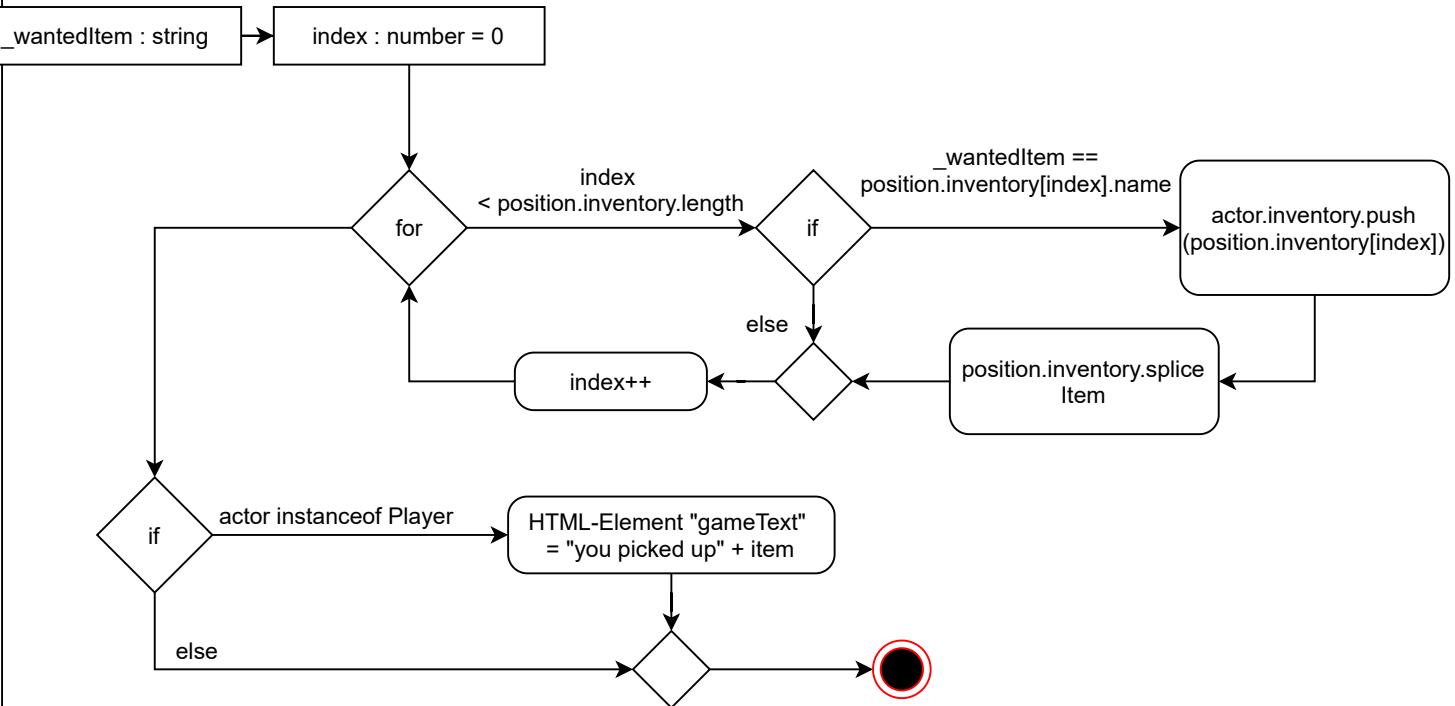


Activity Diagrams

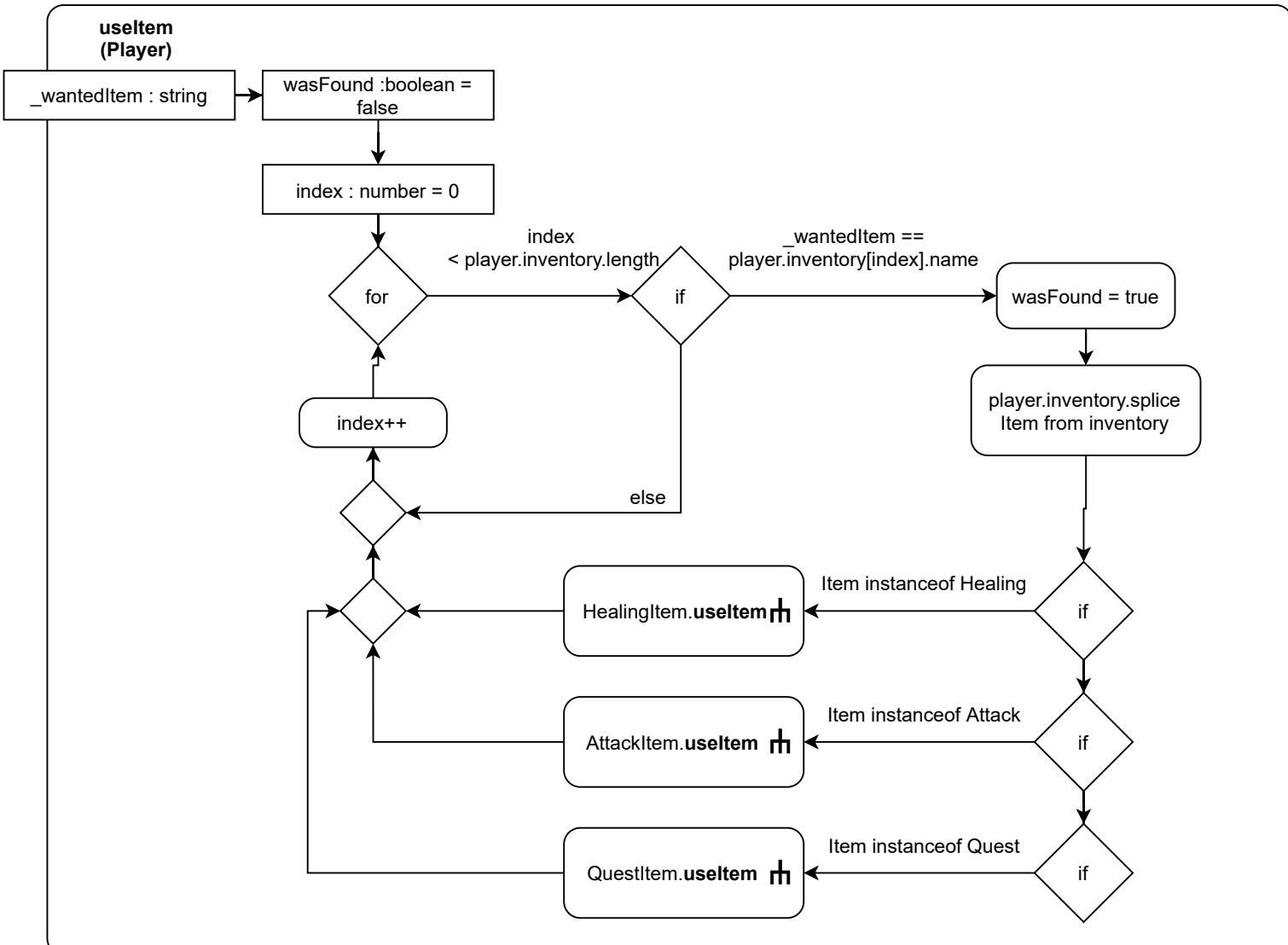
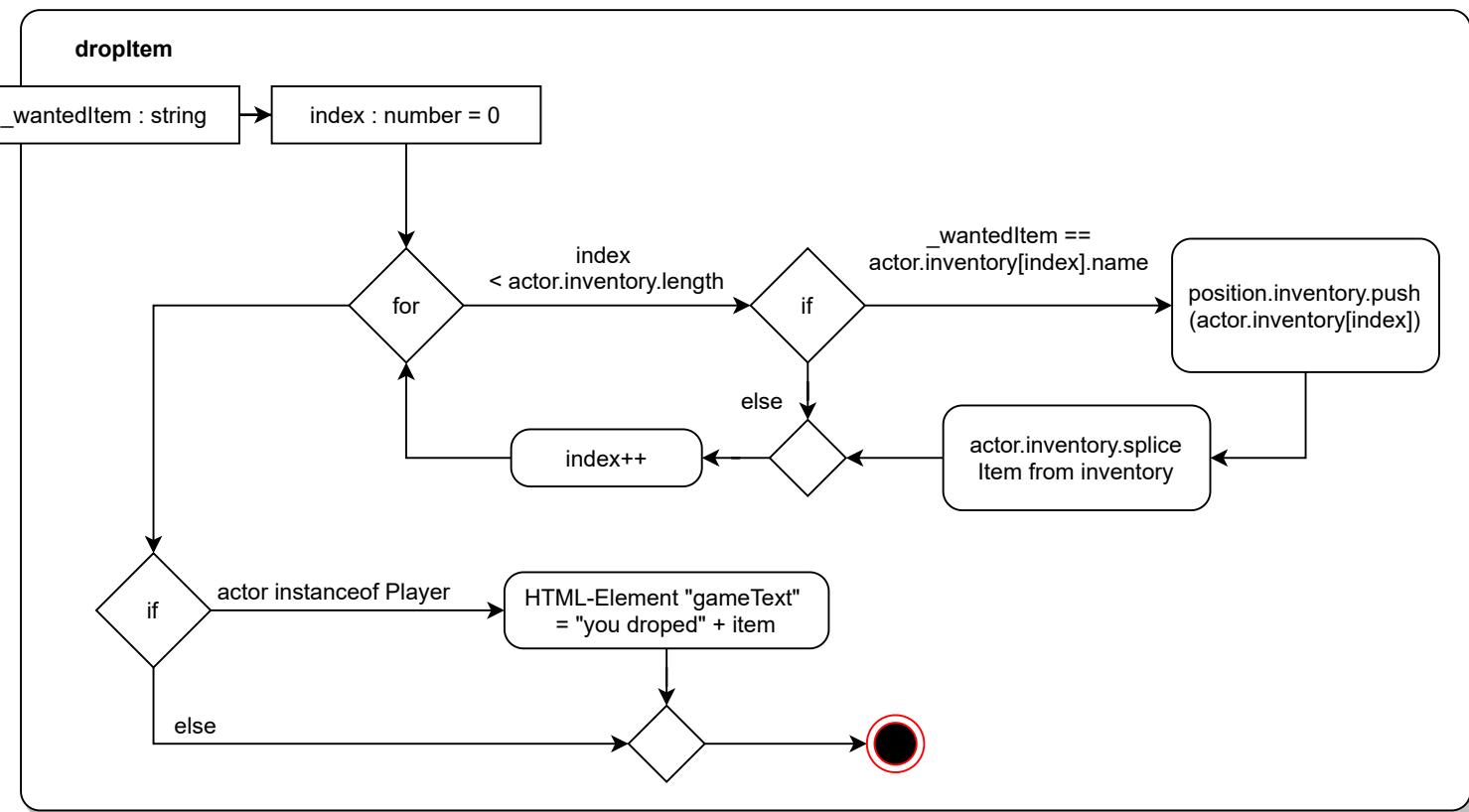
showInventory



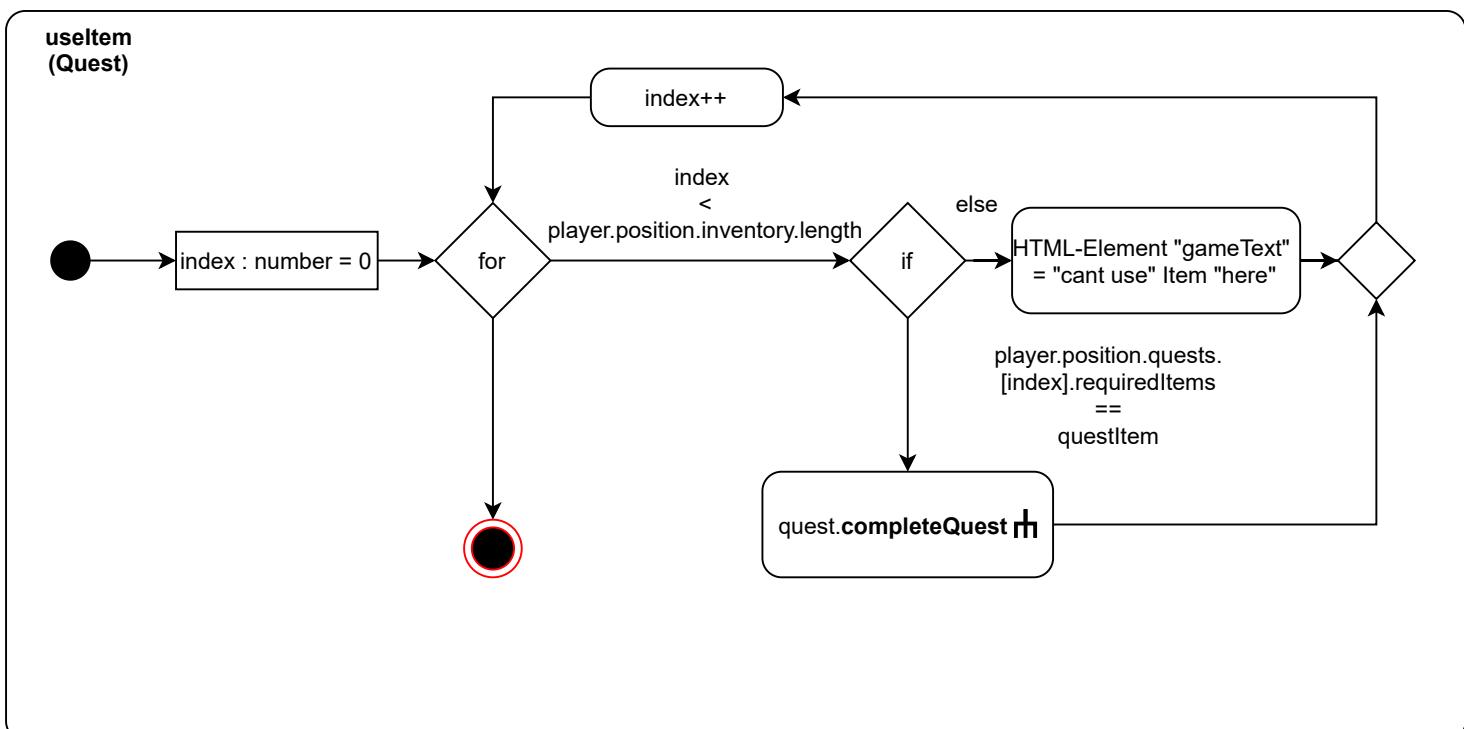
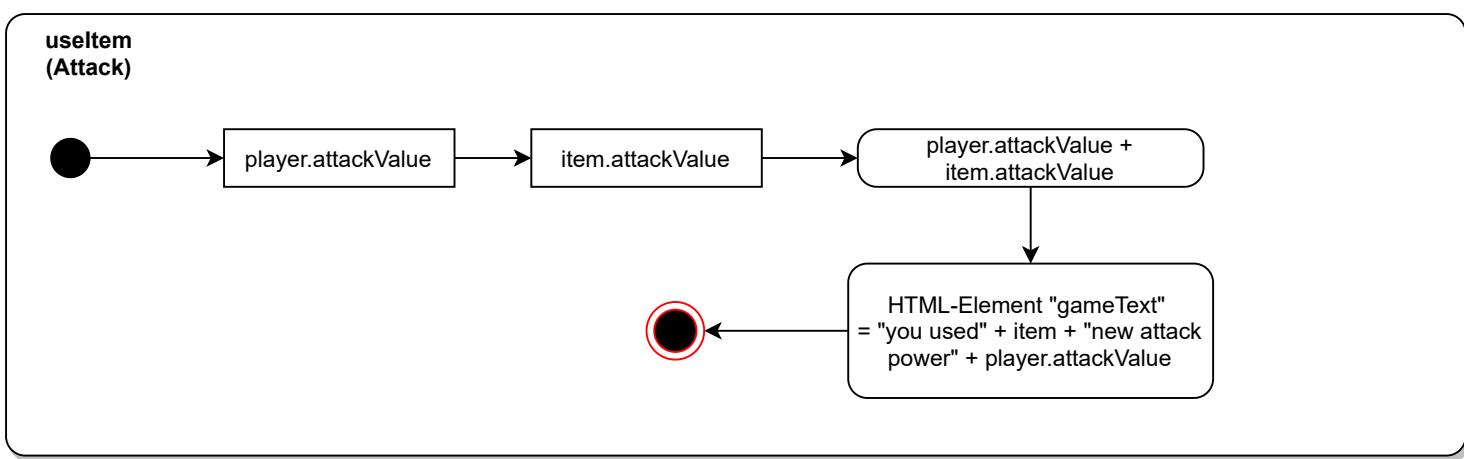
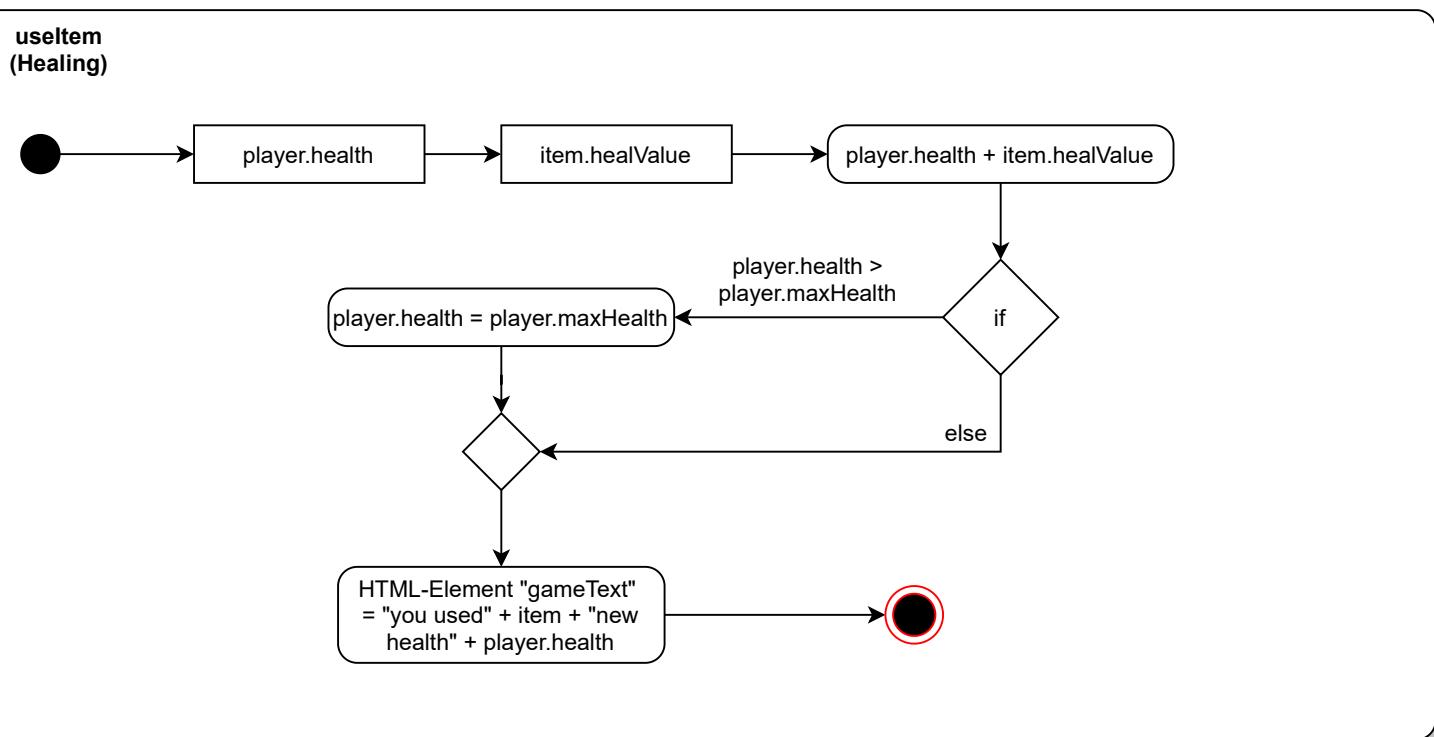
pickUpItem



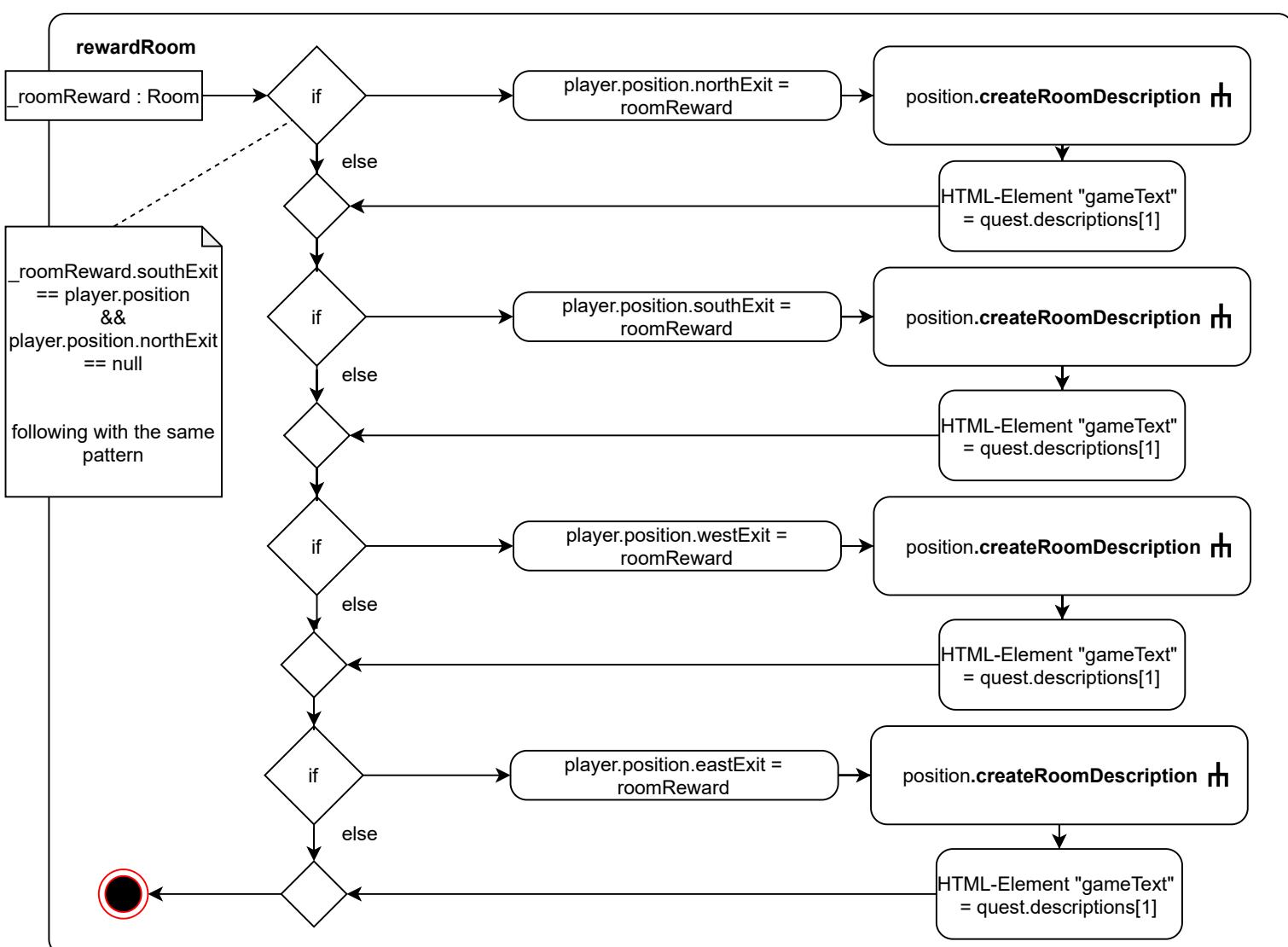
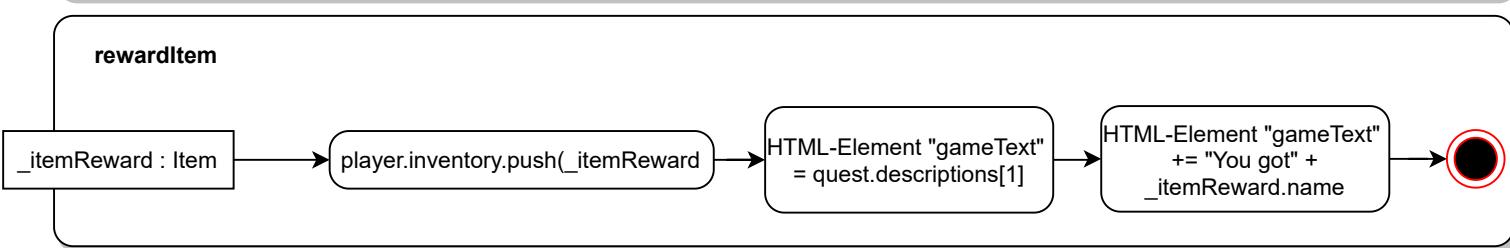
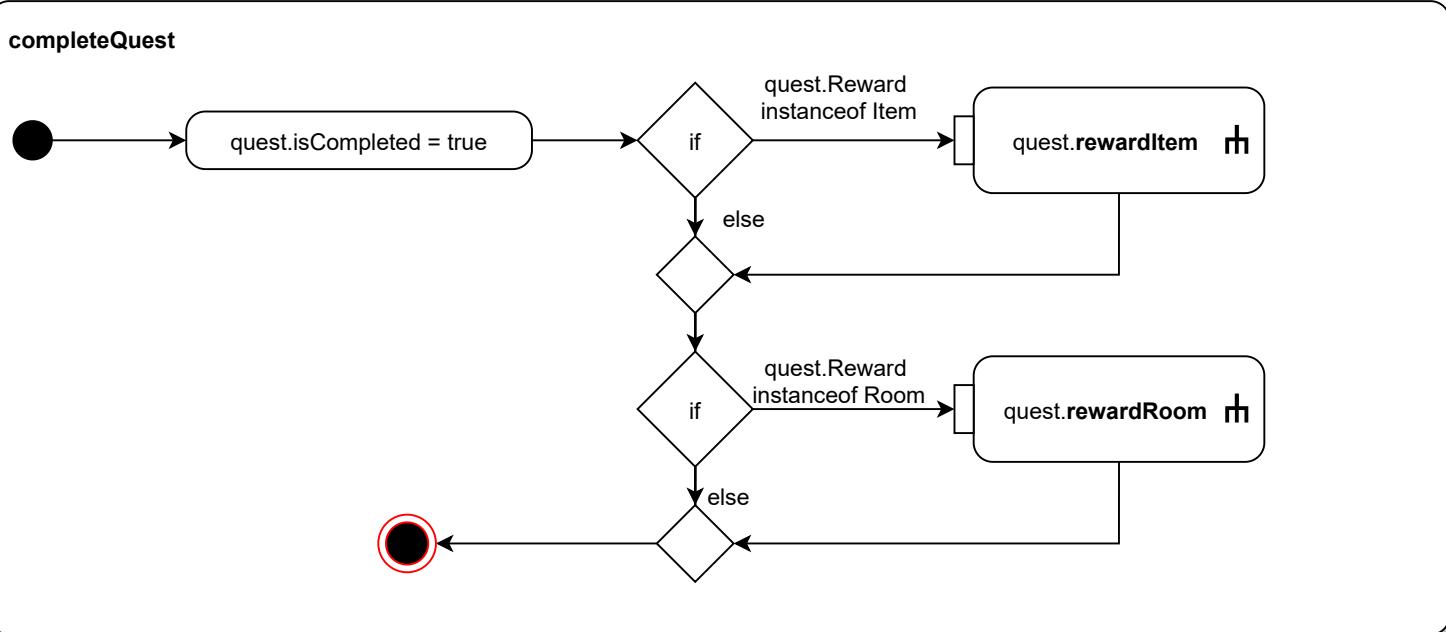
Activity Diagrams



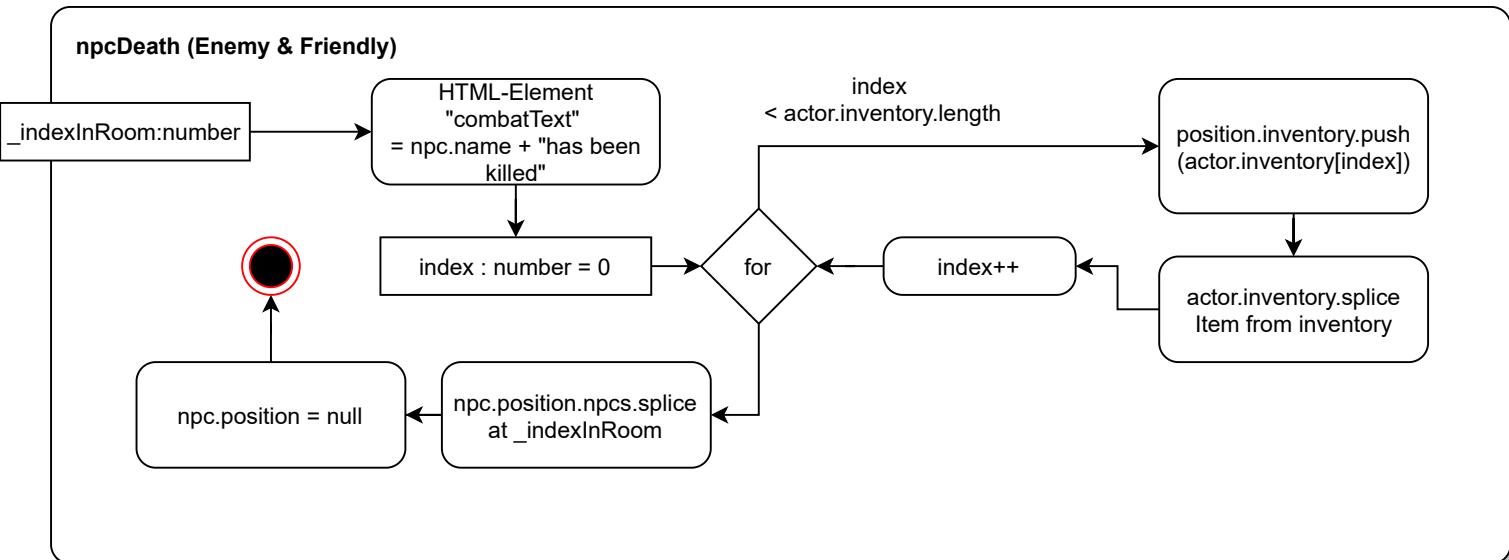
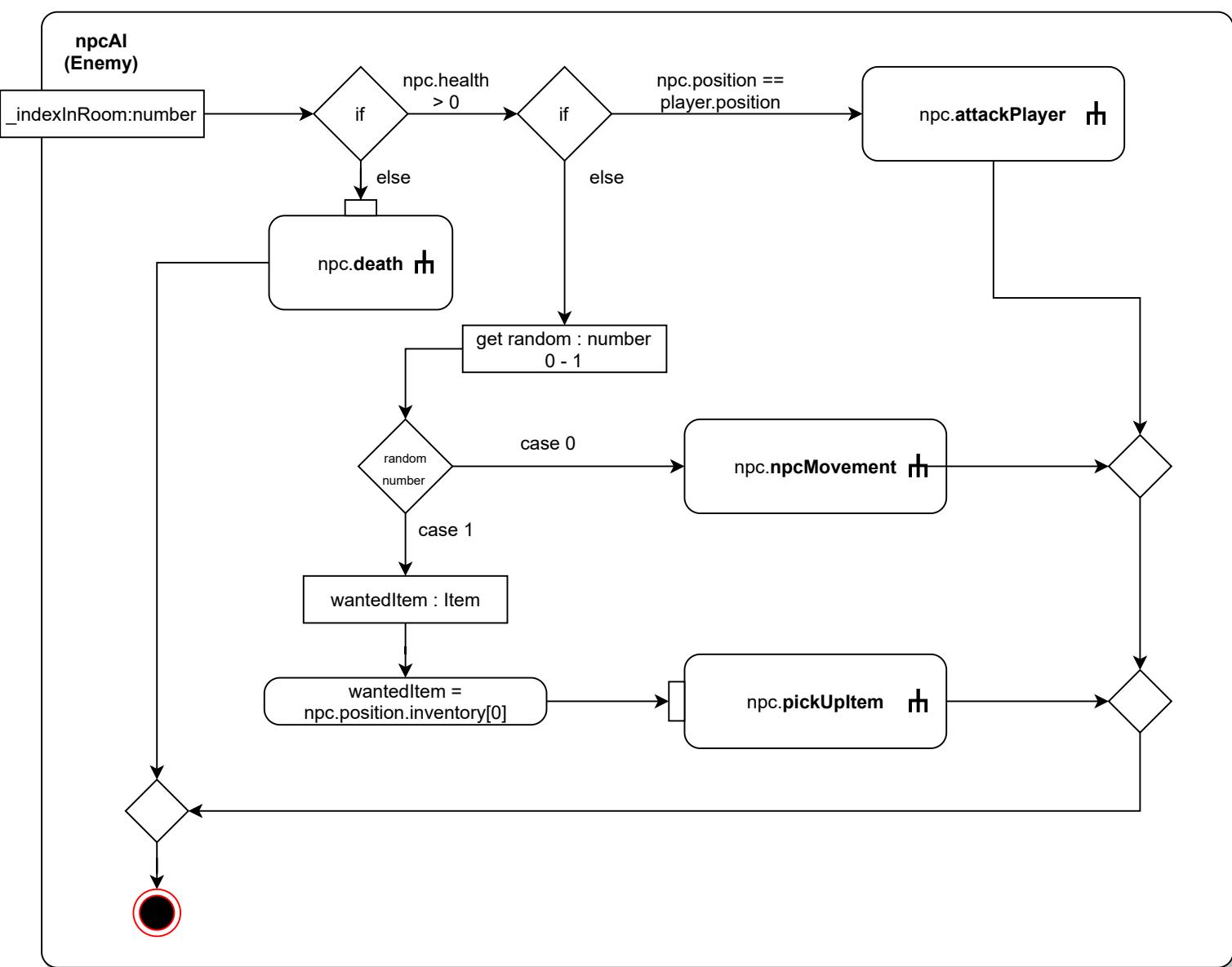
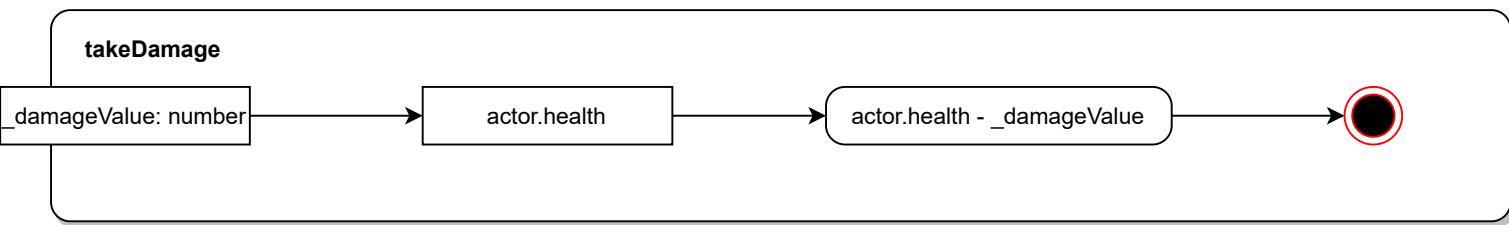
Activity Diagrams



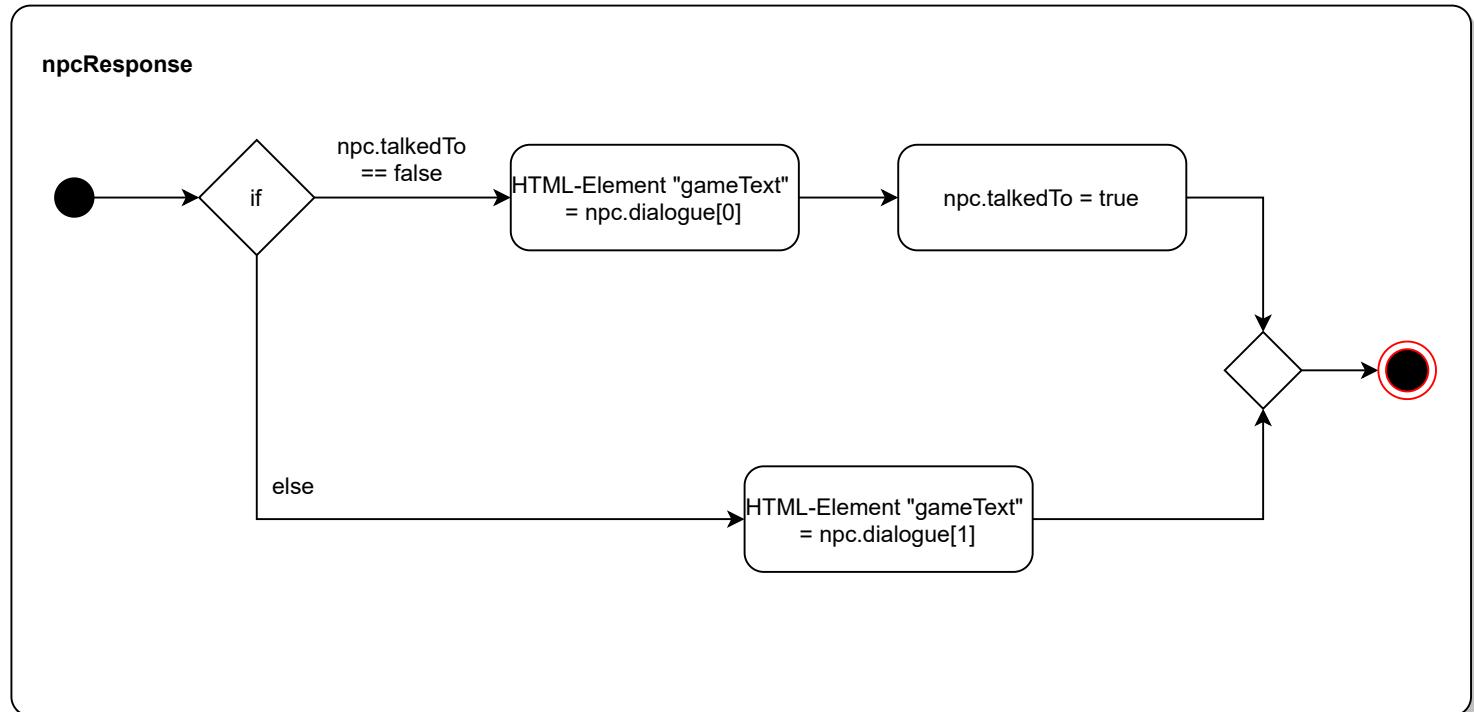
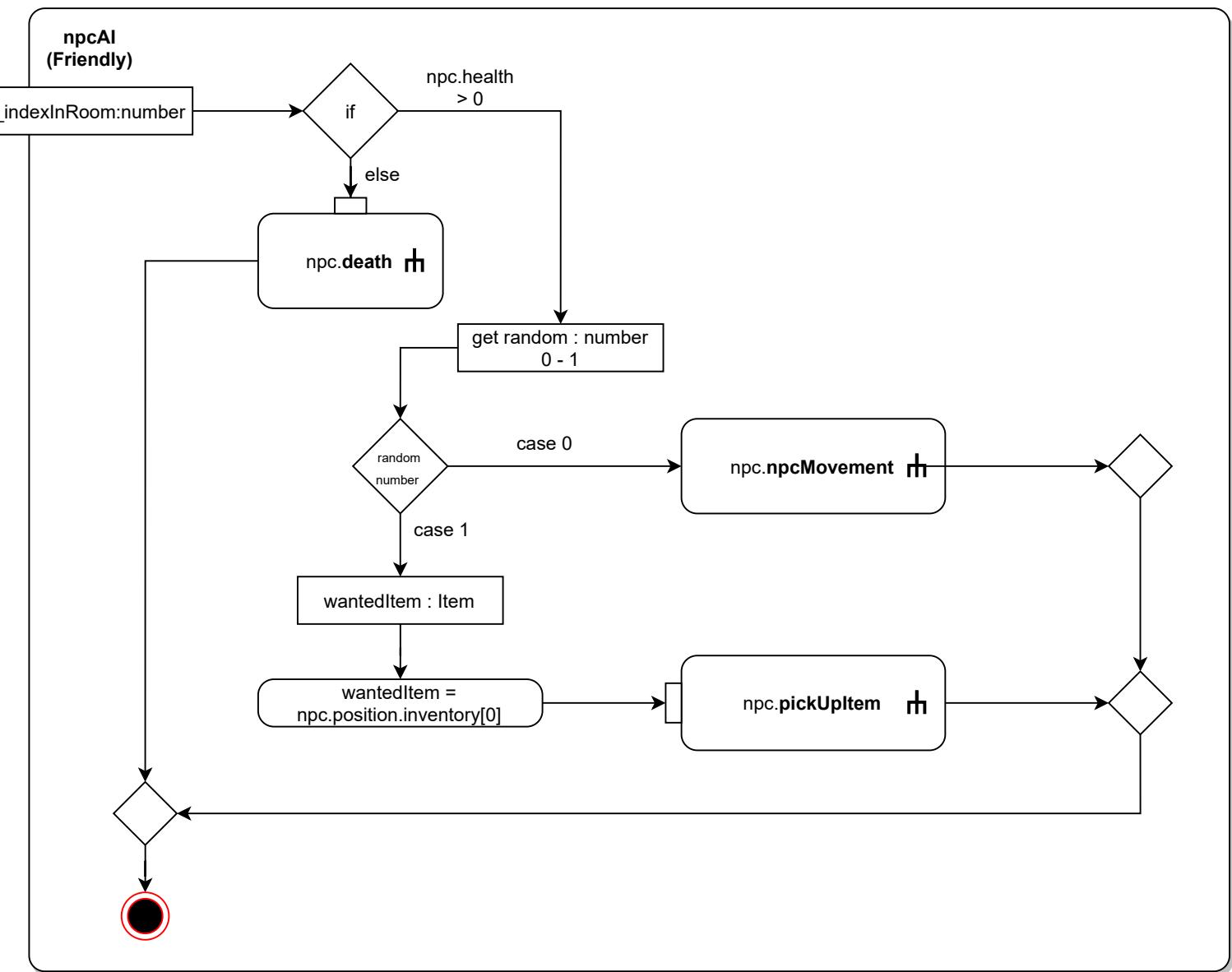
Activity Diagrams



Activity Diagrams

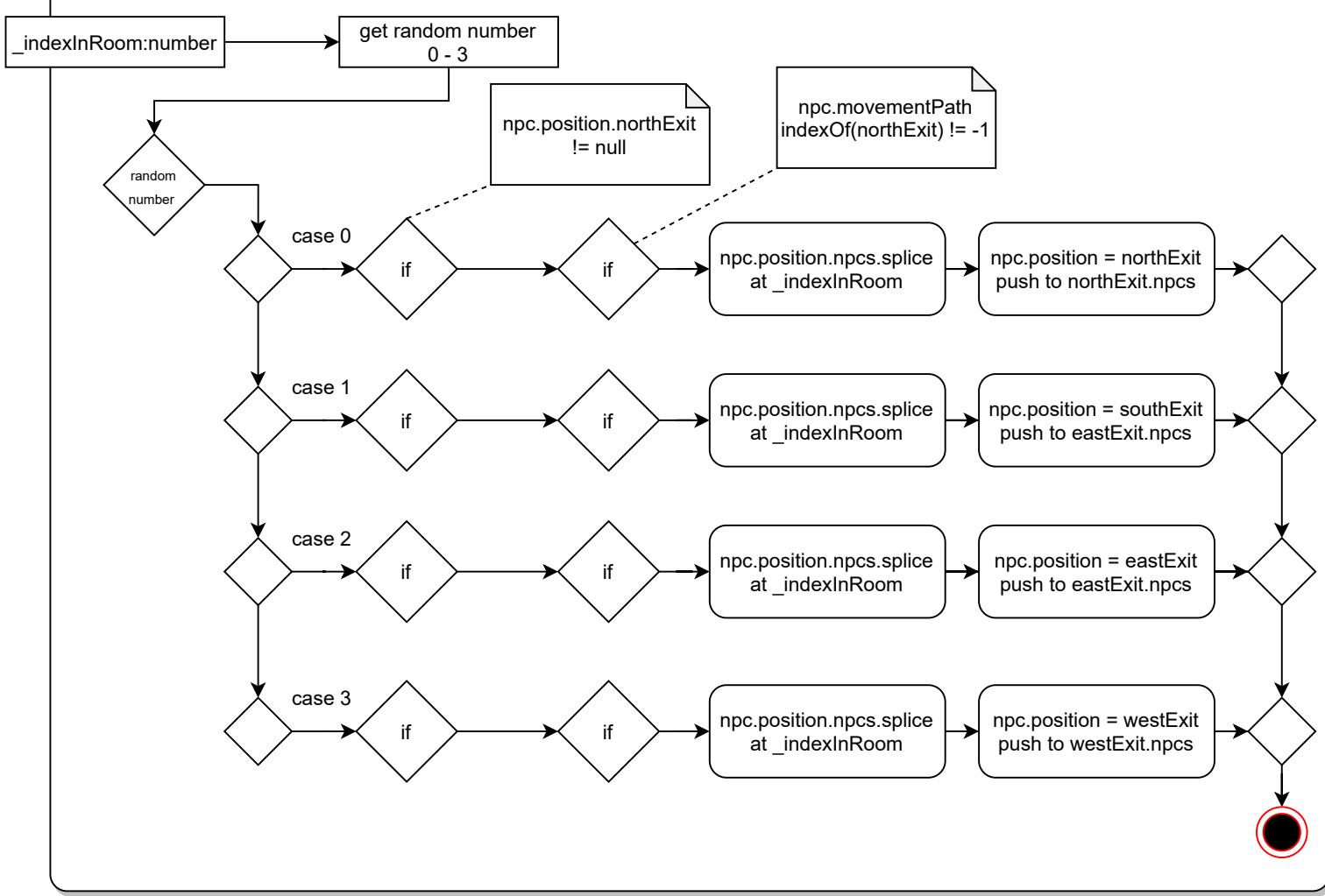


Activity Diagrams

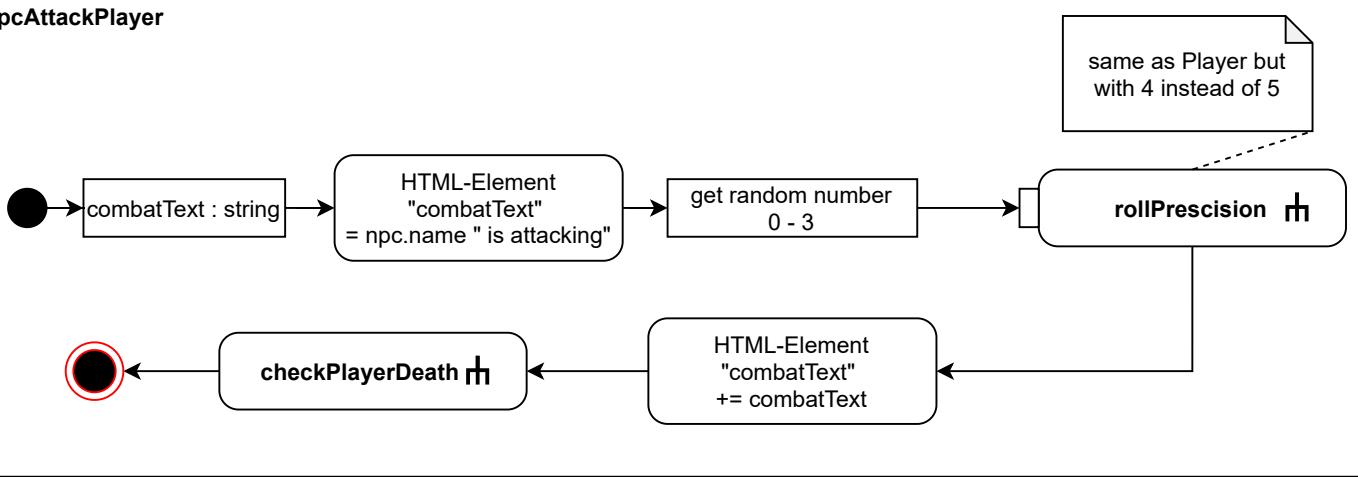


Activity Diagrams

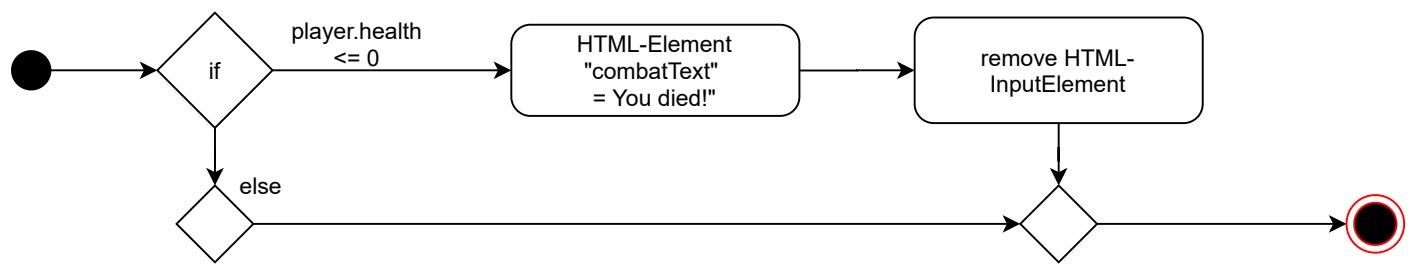
npcMovement



npcAttackPlayer

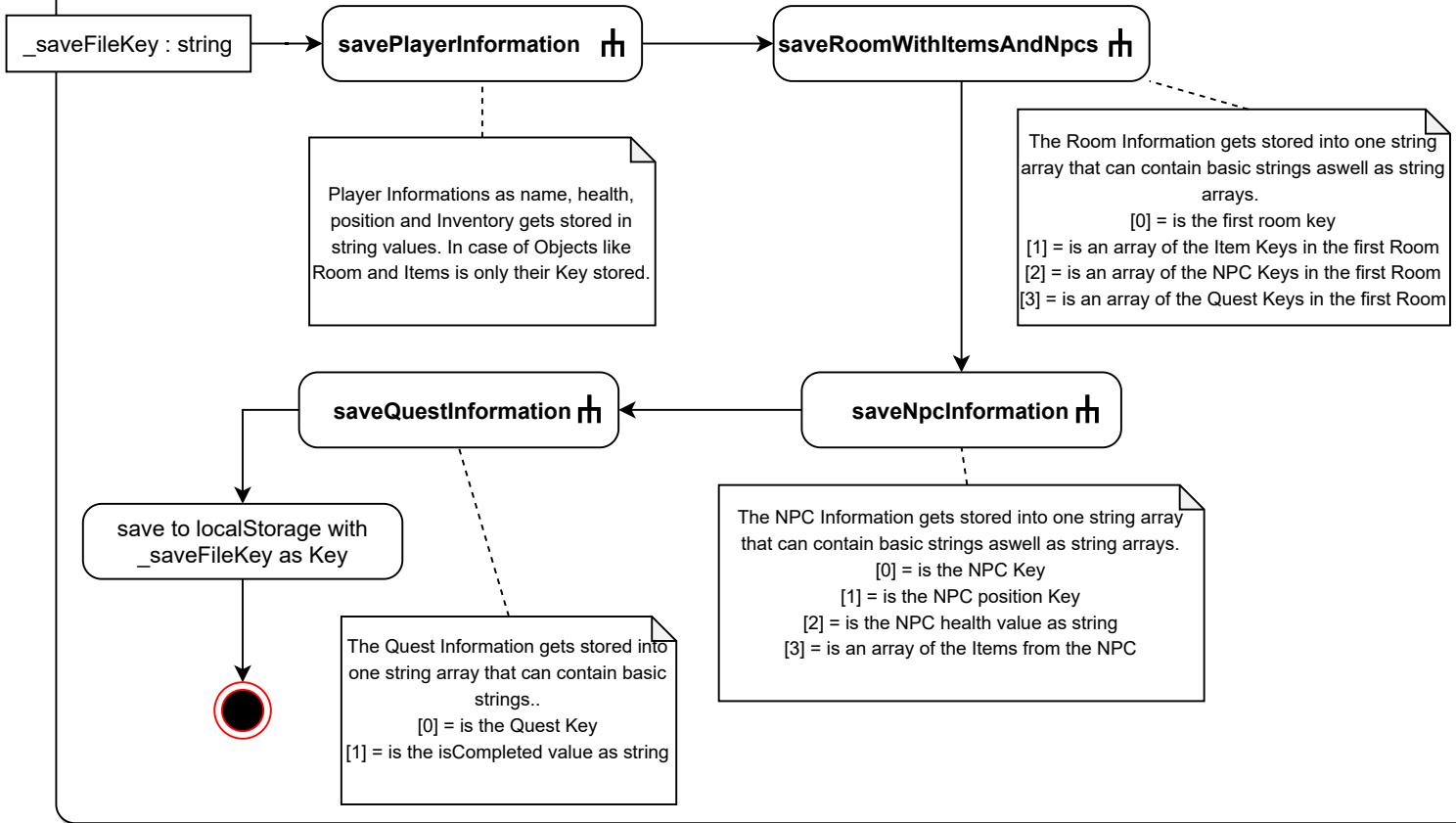


checkPlayerDeath

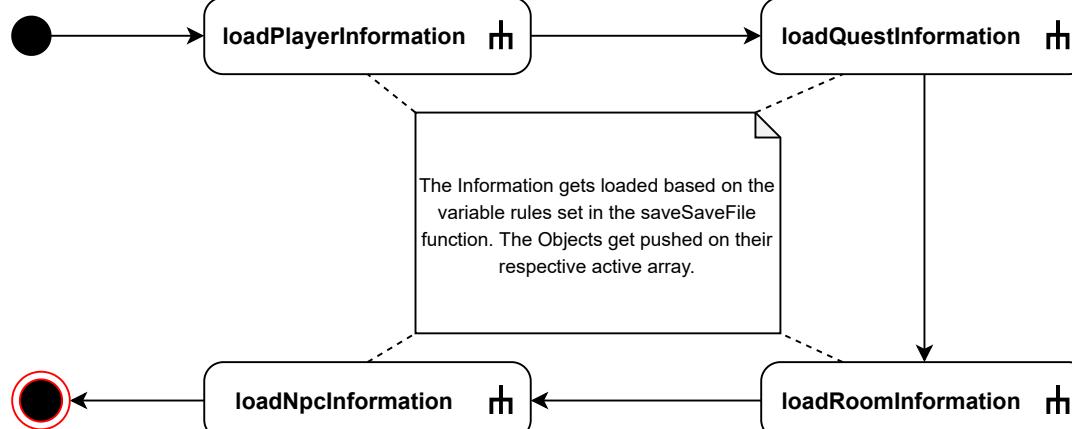


Activity Diagrams

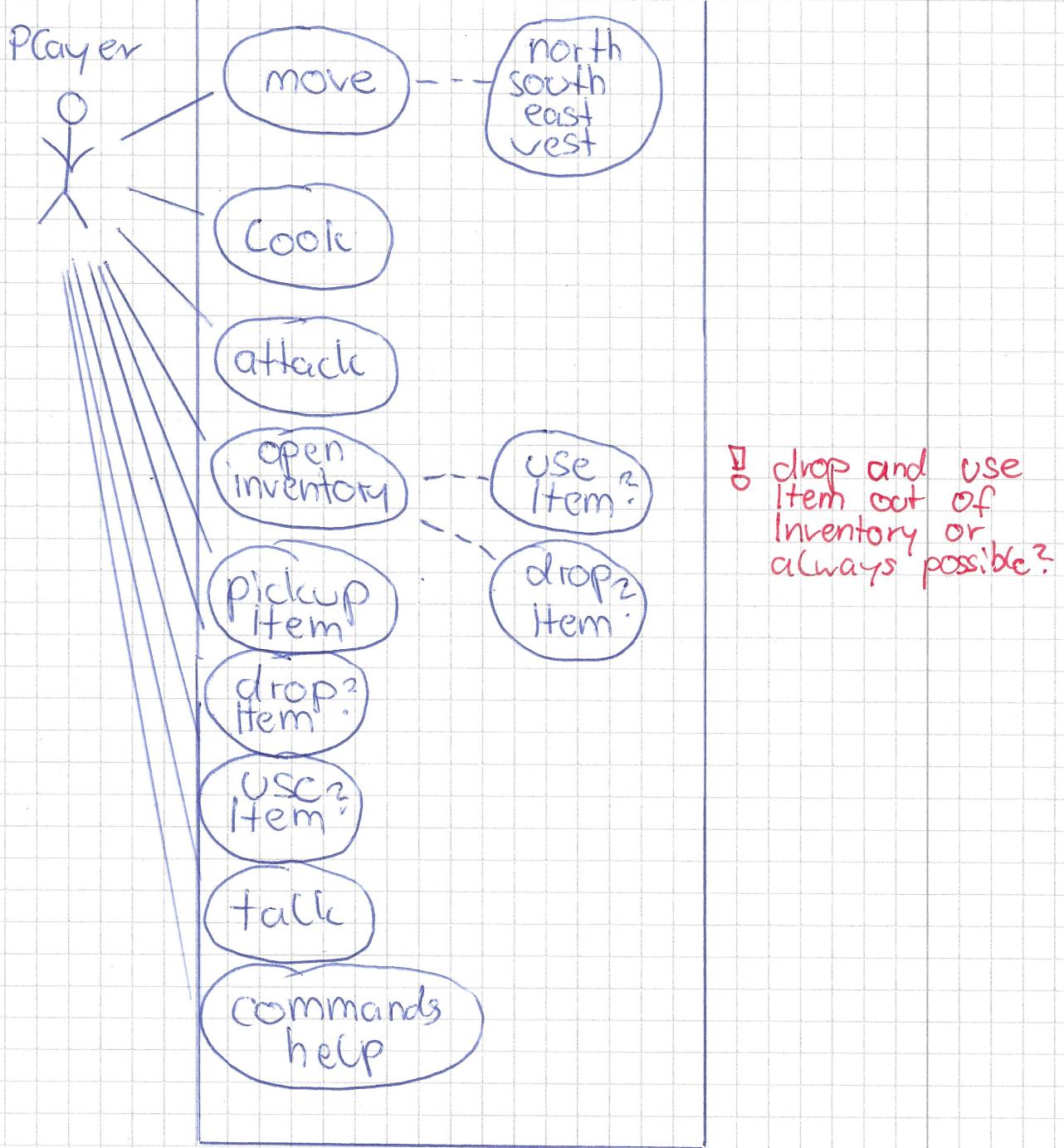
saveSaveFile



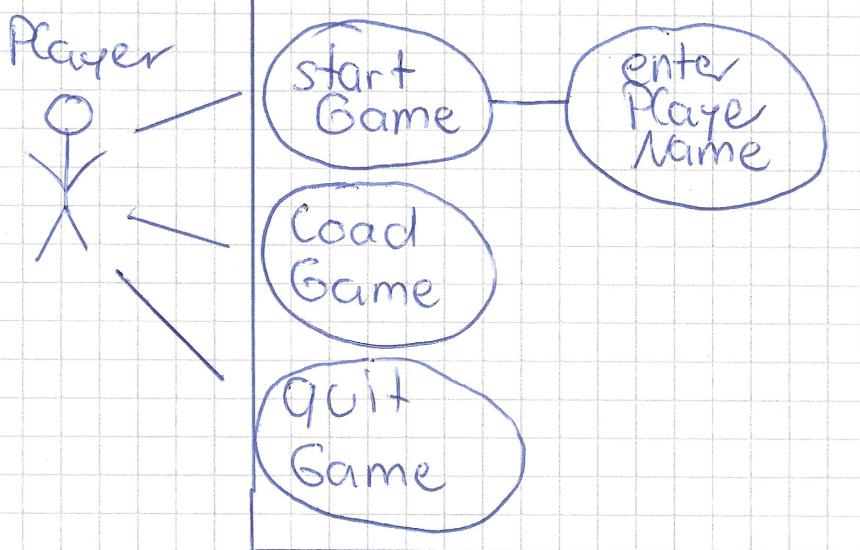
loadSaveFile



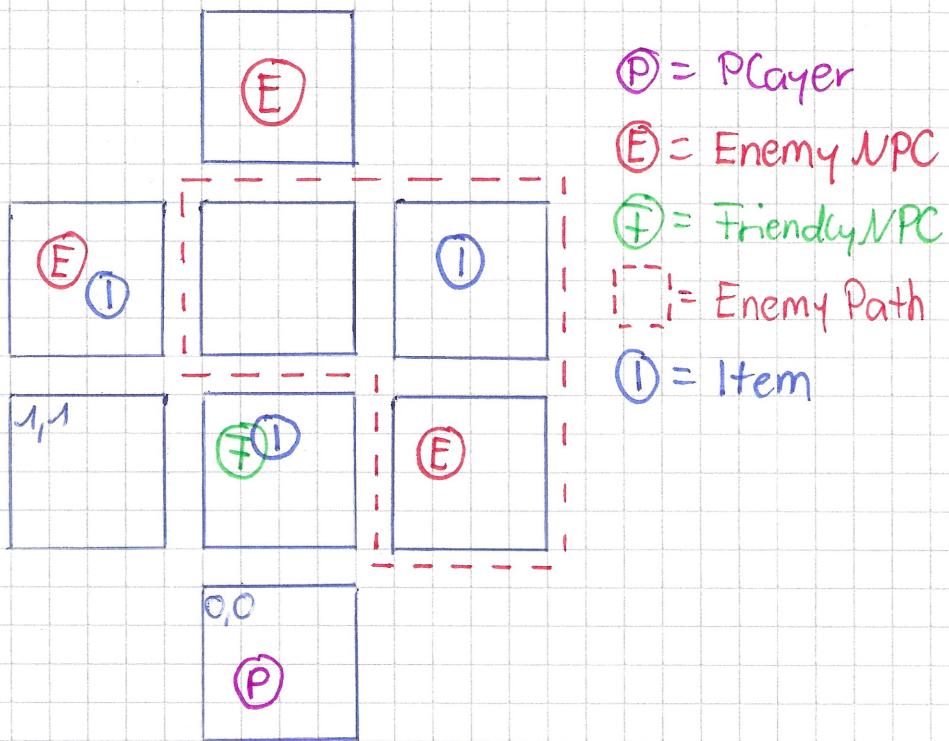
Softwaredesign Text Adventure Game



Game Menu



Softwaredesign Text Adventure



☐ Enemies should get a Path to limit their Movement if possible.

~~Player needs a path~~

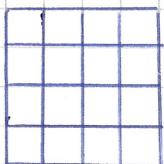
- player needs a possibility to get Items from NPC's \rightarrow maybe through combat?
 - player needs to be able to interact with friendly NPC's
 - combat system \rightarrow turn-based !
 - ☐ player should be able to heal \leftarrow change health based on values.
finish combat / death
 - Room information has to be provided
 - current Room
 - NPC's
 - Items
 - Exits? \rightarrow
- ☐ How does the Navigation work?
Grid?

Software design Text Adventure

Navigation / Map generation

Grid-system

- coordinate based
↳ 2dim Array



- + easy to get exits information based on x & y
- Limited creativity
→ Can't make bigger rooms with more than 4 entries

adjacent Rooms

- every Room gets 4 exits variables

North Exit : Room
South Exit : Room
East Exit : Room
West Exit : Room

- + allows more possibilities to design the world
- + more control
- takes up more code space

⚠ Try the adjacent Room system to keep open more possibilities for world creation.
If its too messy go for Grid System. //

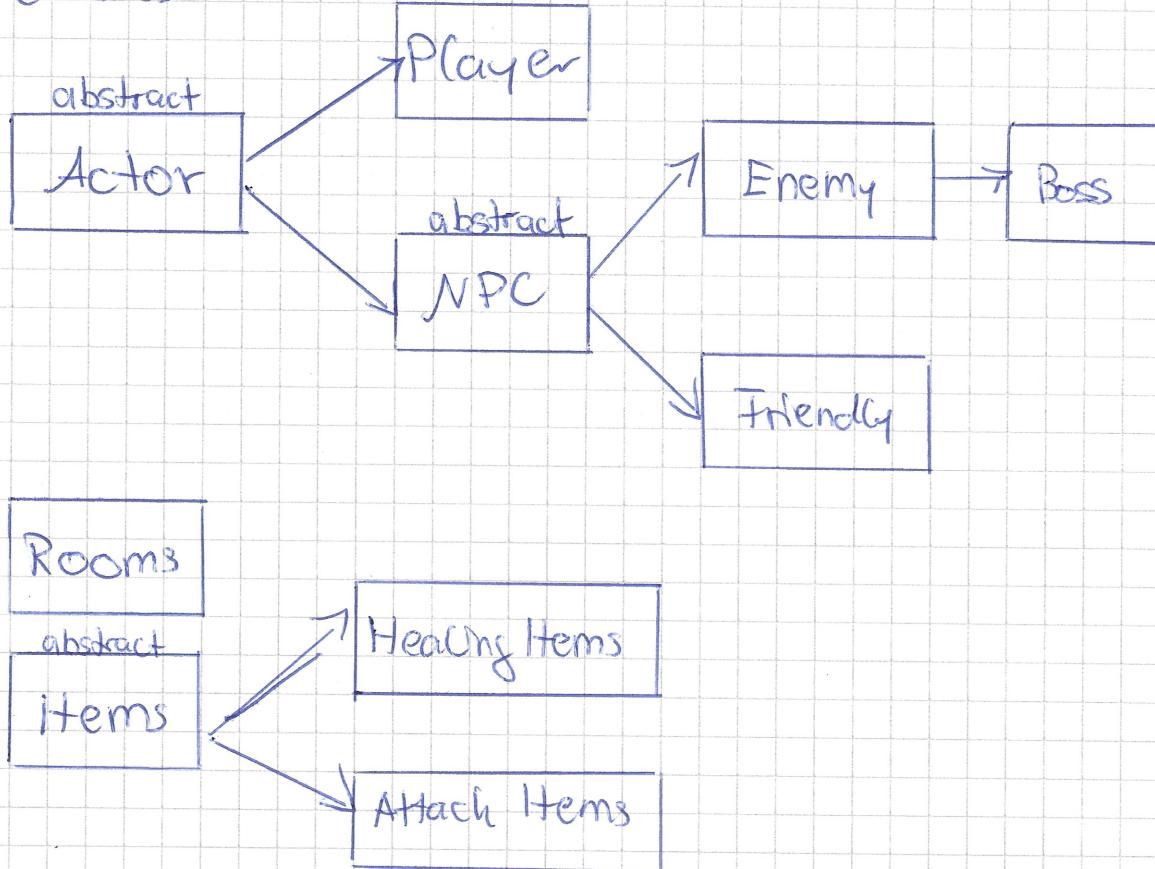
Player Movement

if (playerInput == "north")

set player.position to player.position, northExit

Software design Text Adventure

Classes



Actor

- name
- position
- inventory
- health
- max. health

Items

- name
- description

Healing

- healValue

Weapons

- attackValue

Rooms

- Exits
- description
- name
- inventory
- characters

Player

- attackValue
- playerName

NPC

- description
- name
- talkedToValue
- ~~- dialog~~?
- Movement Path?

Enemy

- attackValue
-

Friendly

- dialogText

Software design Text Adventure

classes

Actor (abstract)

pub. name: string
 pub. health: number
 pub. maxHealth: number
 pub. inventory: Item[]
 pub. position: room

takeDmg ()
 showInventory ()
 pickupItem ()
 dropItem ()

Player

pub. attackValue: number
 pub. name = string

playMovement ()
 (idleAI ()
 attackTarget ()
 talkTo ()
 useItem ()
 Death ()

NPC (abstract)

pub desc: string
 pub name: string
 pub fallbackTo: boolean
 pub MovementPath: Room[]

npcAI ()
 npcMovement
 Death ()

Friendly

pub dialog

npcResponse

Enemy

pub attackValue

attackTarget

Room

pub name: string
 pub desc: string
 pub Exits: Room[]
 pub inventory: Item[]
 pub characters: NPC[]

createRoomText ()

NPC needs basic AI for making decisions

Softwaredesign Text Adventure

Items (abstract)

pub name : string
pub desc : string

^{abstract}
use Item()

Healing

pub healValue : number
use Item()

Weapon

pub attackValue : number
use Item()

Software design Text Adventure

Game Menu

print Menu

→ set Player Input

switch

case "start" → set Player Name

→ create Player

case "load" → get save file

→ get save file

create Player

Play Game

case "quit" → close window

Play Game

print Room Desc

→ set Player Input

Save Input
to action
and target

switch
(action)

case "n" "s" "e" "w" → player. Movement()

case "look" → player. lookAt()

case "attack" → player. attack Target()

case "i" → player. show Inventory()

case "p" → player. pickUp Item()

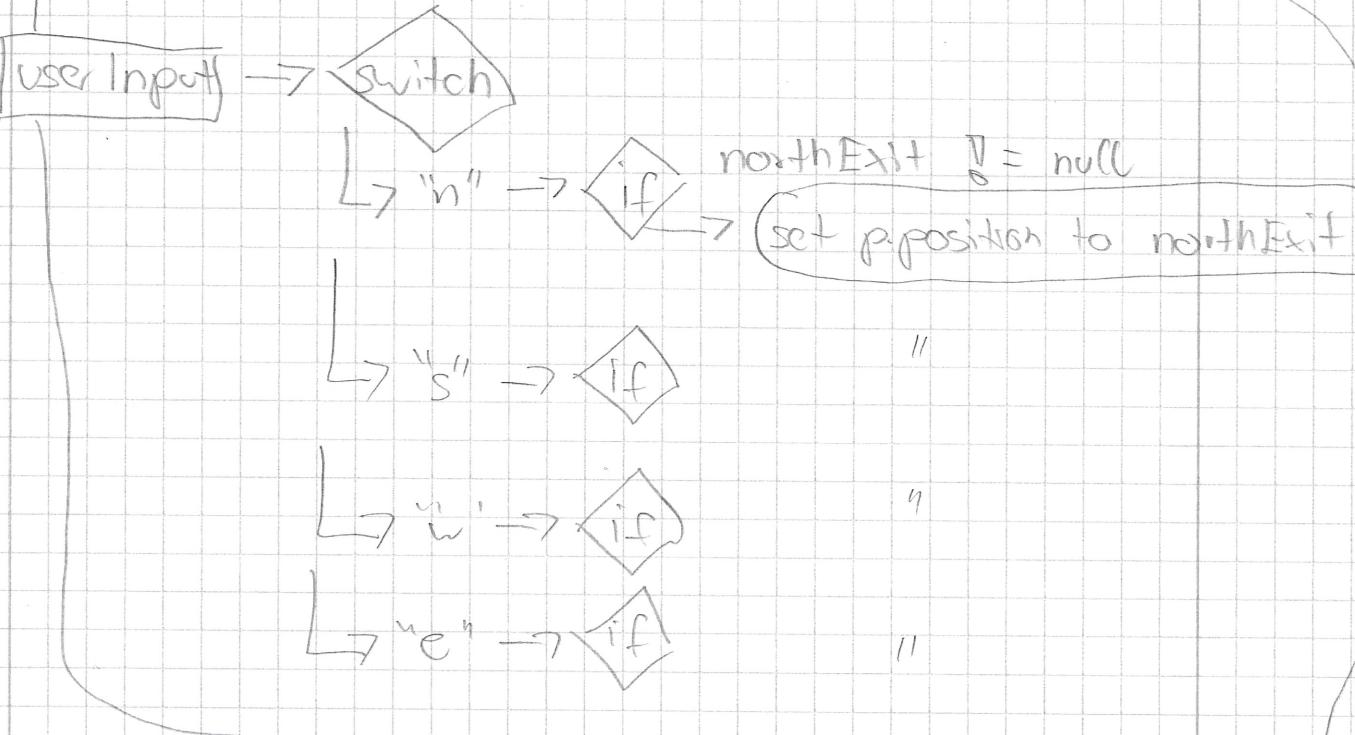
case "d" → player. drop Item()

case "u" → player. useItem()

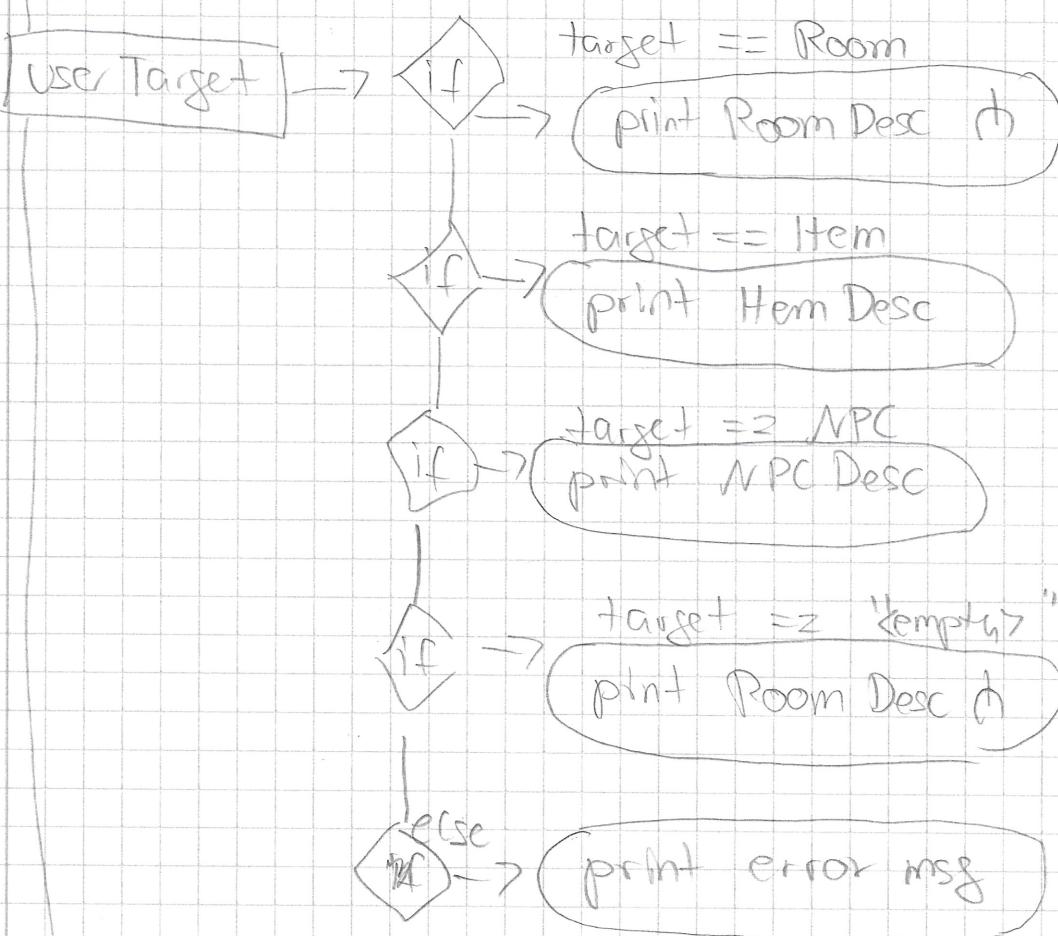
case "+" → player. talkTo()

case "c" → print commands

playerMovement



playerLookAt



player. attack Target

target

select target
out of Room

player

Attack Val.

print combat
text

target. take DMG

NPC. take DMG

DMGValue

target. health - dmGValue

spice from
Room

drop Inventory

health < 0

if

Show Inventory

i++

inventory

for

inventory[i].name ^{add} to text

Print Inventory
text

Pickup Item

i++

add to
this. inventory

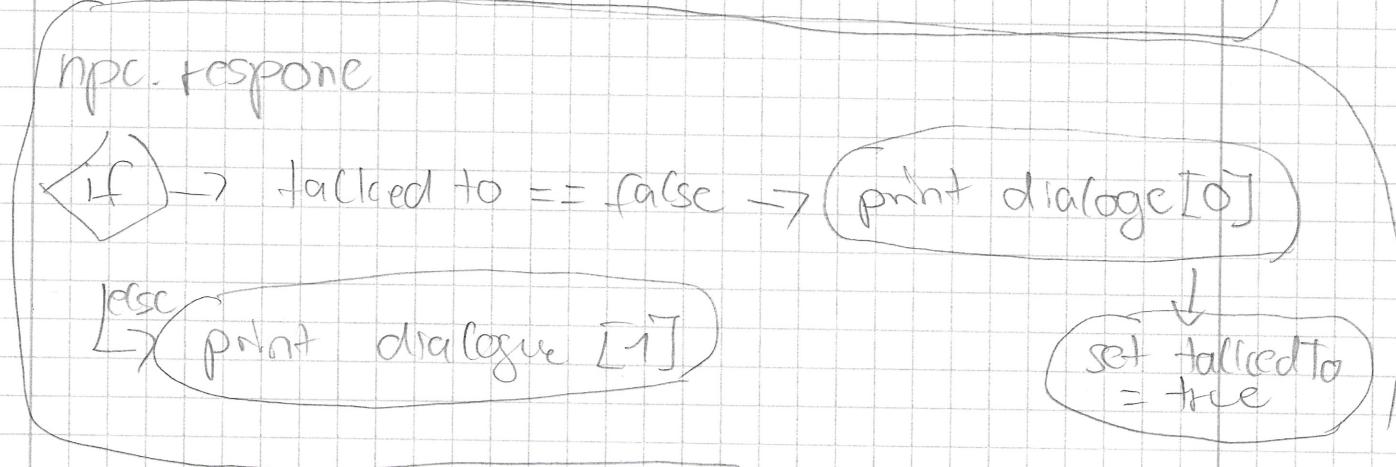
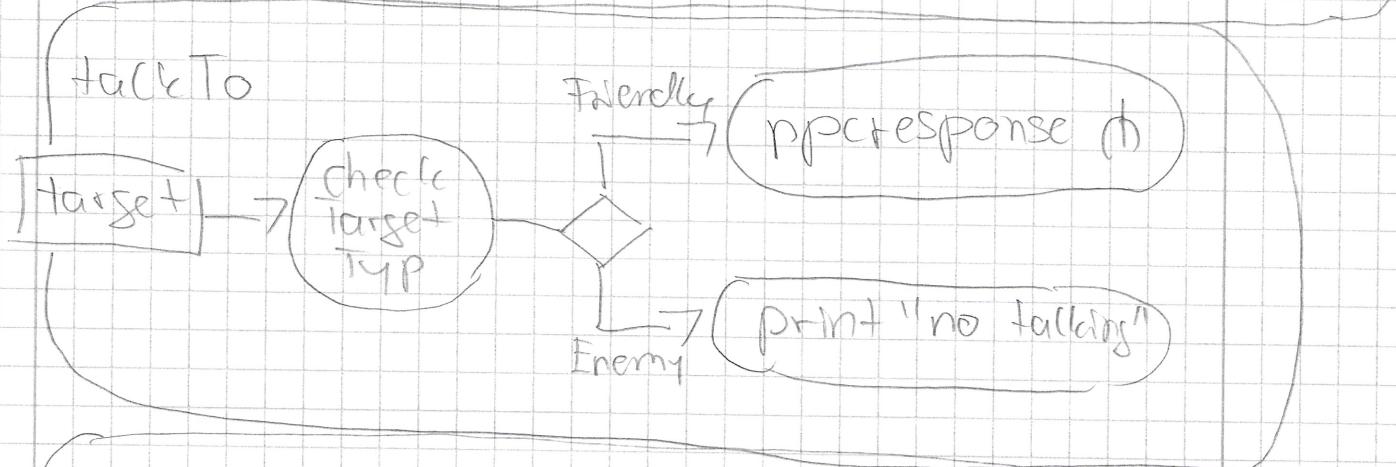
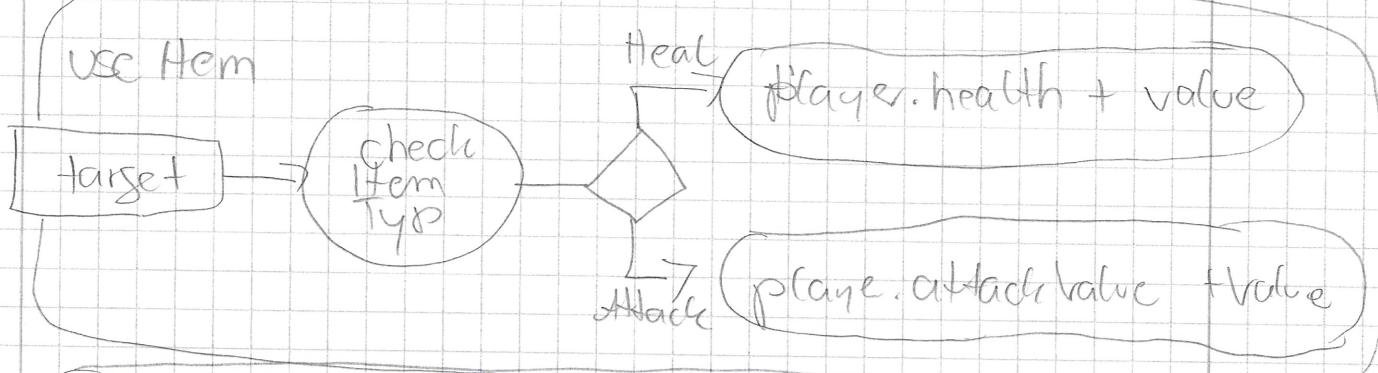
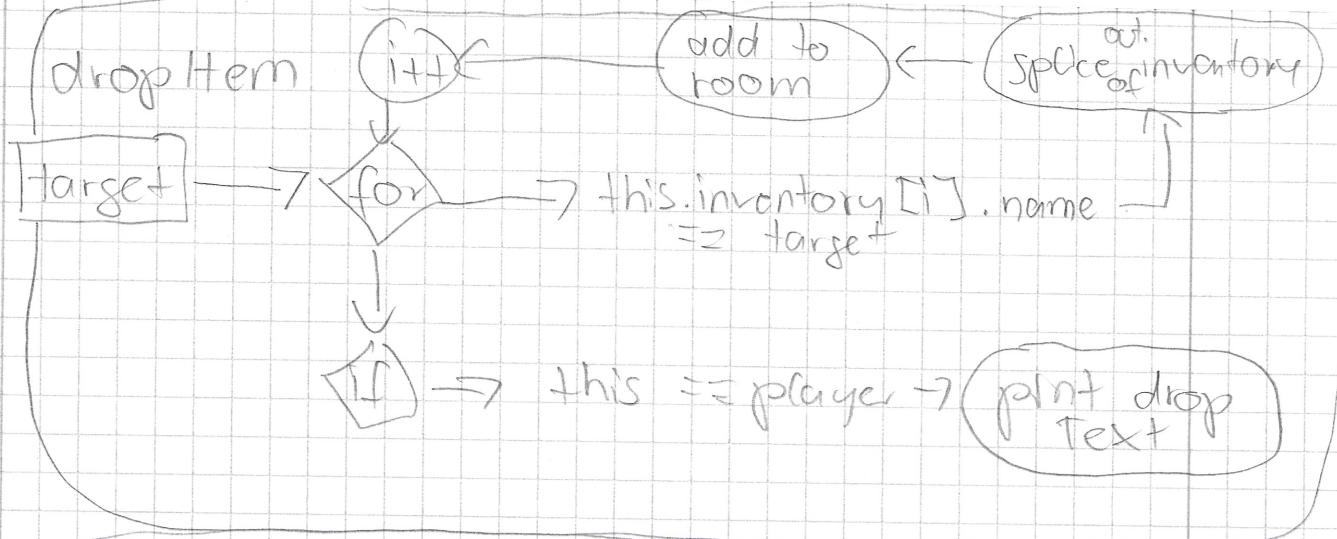
target

for

this.room.inventory[i].name == target

if

this == player \rightarrow print pickup
text



handle NPC AI

! Do after Player move & attack

(go through all
active NPC)

start NPC AI h

Enemy AI

if → this.position == player.position → (attack Player)

↳ random number

switch

case "0" → (this.npcMovement h)

↳ case "1" → this.pickUpItem (first in Room)

NPC Movement

random number

between
0-3

switch

↳ case 0 → change npc position to north

↳ case 1 → " south

↳ case 2 → " east

↳ case 3 → " west

Software design Text Adventure

UI Scribble

You are in a dark
Room. With a small
Actor in the centre.

You can see
a Skeleton
a Mummy

There is
a Torch
a Potion

The Skeleton is att-
acking you for 20.
You have 80 health
left.

a Skeleton

descText

combatText

} userInputElement

Two HTML Text Elements: all descriptions
are inside the descText as well as
all player action. Gets renewed after
an action.

All combat information is inside combatText
and gets cleared after each turn.

→ Roomdesc stays during combat

Softwaredesign Text Adventure

Saving ?

~~XML~~

LocalStorage ?

↳ LocalStorage

+ Files are saved in Browser

+ easy to access

✓

based on JSON

- requires "key" and desired object to save

→ create Object SaveFile and save
with player.name as key

needs to be converted to a string ↗
with JSON.stringify(obj)

⚠ can't stringify because of object
referencing ! ⚡

possible solution :

save keys for objects and get
back to the desired object with them

⚠⚠⚠ need to be unique ⚡⚠⚠

Things to save :

- player : name / health / position / inventory
- Room with Contents
- NPC , health / position / inventory