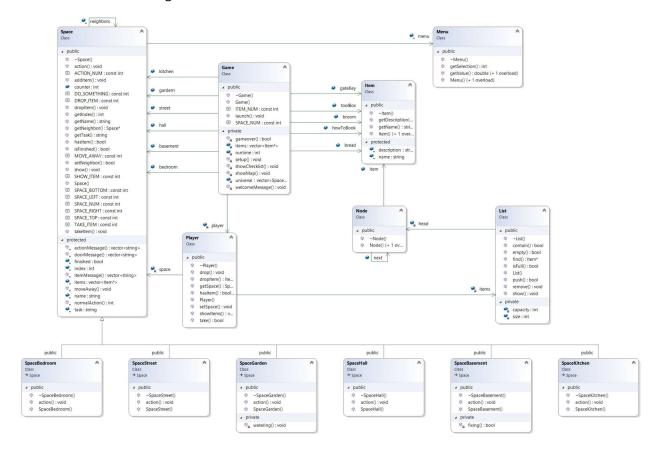
Final Project Reflection

1. Design description

a. Class diagram



b. Description

- i. Abstraction and derived classes
 - 1. Abstraction class:
 - a. Class Space
 - b. Pure virtual function: virtual void action(Player * player) = 0;
 - 2. Derived classes
 - a. SpaceStreet
 - b. SpaceHall
 - c. SpaceKitchen
 - d. SpaceBedroom
 - e. SpaceGarden
 - f. SpaceBasement
- ii. Other classes
 - 1. Menu: provide menu function
 - 2. Item: items in the game

- 3. List: the container of all items, the container has a capacity limit
- 4. Player: the player
- 5. Node: the container of an item in the list

iii. Gameplay

- 1. The user can choose the number of steps to be taken before the time expires.
- 2. The user has to select options from a menu. There is no free form input.
- 3. Input validation is applied

c. Scenario

- i. The player starts in the street outside of the house.
- ii. He has to pass through all rooms in the house, fulfill all tasks and then get back to the street.
- iii. The key to open the main gate is in the street, it's under the red brick.
- iv. After getting into the house, the player is in the hall. He has to sweep the hall.
- v. From the hall, he can go upstairs to the bedroom, downstairs to the basement, left to the street, or right to the kitchen.
- vi. He has to bring the textbook to help him water the garden then put it in the bedroom.
- vii. He has to deliver the bread to her mother in the kitchen.
- viii. He has to carry the toolbox to the basement to fix the washing machine. He has to do a calculation there to fix it.

2. Test plan

| Test case | Input | Driver | Expected Outcome | Observed Outcome |
|------------|-------|----------|------------------------------------|------------------------------------|
| | value | function | | |
| Small | 1151 | main() | Enter the number of steps to run | Enter the number of steps to run |
| step limit | | | this game | this game |
| | | | Enter a value from 1 to 600: 1 | Enter a value from 1 to 600: 1 |
| | | | Welcome to The Errand Game | Welcome to The Errand Game |
| | | | You are DJ, a random boy who is | You are DJ, a random boy who is |
| | | | running errands. You are | running errands. You |
| | | | coming home from the | are coming home from |
| | | | bakery. | the bakery. |
| | | | You are going to deliver the | You are going to deliver the |
| | | | bread to your mom who | bread to your mom who |
| | | | is in the kitchen. | is in the kitchen. |
| | | | Next, you will clean the hall with | Next, you will clean the hall with |
| | | | your grandpa's broom, | your grandpa's broom, |
| | | | bring toolbox to the basement to | bring toolbox to the basement |
| | | | fix the washing machine | to fix the washing |
| | | | and water plants in the garden. | machine |
| | | | | and water plants in the garden. |

| bedroom You will go out to the street when you finish the game We have 1 step left What do you want to do 1. Look around 2, Show the map 3, Look at the checklist Enter a value from 1 to 3: 1 You are in the street Item in the street Item in the street Item in the street Item in the street Rey: Gate Key Ways out of the street right direction to the hall What are you going to do 1. Take item 2. Drop item 3. Show items in the bag 4. Move away 5. Pick the key from the hole which is hidden under the red brick Enter a value from 1 to 5: 5 Do you want to take the 'Gate Key' 1, Yes 2. No Enter a value from 1 to 2: 1 Good, You have picked the key You lose Show the player's progress We have 1 step left What do you want to do 1. Look around 2, Show the map 3, Look at the checklist Enter the value from 1 to 3: 1 You are in the street Item in the s | | | | I_, , , , , , , , , , , , , , , , , , , | I |
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| bakery the bakery | | | | 9 | _ |
| You are going to deliver the You are going to deliver the | | | | - | 1 |
| | | | | | bread to your mom who |
| is in the kitchen. is in the kitchen. | | | | 1 | |
| Next, you will clean the hall with Next, you will not | | | | Next, you will clean the hall with | Next, you will clean the hall with |
| | | | | 1 | your grandpa's broom, |
| Next, you will clean the hall with Next, you will clean the hall with | | | | Next, you will clean the hall with | Next, you will clean the hall with |

| | | | bring toolbox to the basement to fix the washing machine and water plants in the garden. Then bringing the textbook to the bedroom You will go out to the street when you finish the game We have 1 step left What do you want to do 1. Look around 2, Show the map 3, Look at the checklist Enter a value from 1 to 3: 3 Checklist Take the toolbox to the basement to fix the washing machine: UNCHECKED Bring the book to the bedroom and put it on the shelf: UNCHECKED Watering all plants: UNCHECKED Sweep the hall: UNCHECKED Give the bread to Mom: UNCHECKED Pick the key from the hole which is hidden under the red brick: UNCHECKED | bring toolbox to the basement to fix the washing machine and water plants in the garden. Then bringing the textbook to the bedroom You will go out to the street when you finish the game We have 1 step left What do you want to do 1. Look around 2, Show the map 3, Look at the checklist Enter a value from 1 to 3: 3 Checklist Take the toolbox to the basement to fix the washing machine: UNCHECKED Bring the book to the bedroom and put it on the shelf: UNCHECKED Watering all plants: UNCHECKED Sweep the hall: UNCHECKED Give the bread to Mom: UNCHECKED Pick the key from the hole which is hidden under the red brick: UNCHECKED |
|--------------|----|---------------|---|---|
| | | | UNCHECKED | under the red brick: |
| | | | You lose | You lose |
| Show the map | 12 | Game.launch() | Enter the number of steps to run this game Enter a value from 1 to 600: 1 Welcome to The Errand Game You are DJ, a random boy who is running errands. You are coming home from the bakery You are going to deliver the bread to your mom who is in the kitchen. | Enter the number of steps to run this game Enter a value from 1 to 600: 1 Welcome to The Errand Game You are DJ, a random boy who is running errands. You are coming home from the bakery You are going to deliver the bread to your mom who is in the kitchen. |

| | | | Next, you will clean the hall with | Next, you will clean the hall with |
|------|--------|---------------|---------------------------------------|---------------------------------------|
| | | | your grandpa's broom, | your grandpa's broom, |
| | | | bring toolbox to the basement to | bring toolbox to the basement |
| | | | fix the washing machine | to fix the washing |
| | | | and water plants in the garden. | machine |
| | | | Then bringing the textbook to the | and water plants in the garden. |
| | | | bedroom | Then bringing the textbook to |
| | | | You will go out to the street | the bedroom |
| | | | when you finish the | You will go out to the street |
| | | | game | when you finish the |
| | | | game | game |
| | | | We have 1 step left | game |
| | | | What do you want to do | We have 1 step left |
| | | | 1. Look around | - |
| | | | | What do you want to do |
| | | | 2, Show the map | 1. Look around |
| | | | 3, Look at the checklist | 2, Show the map |
| | | | Enter a value from 1 to 3: 2 | 3, Look at the checklist |
| | | | Map | Enter a value from 1 to 3: 2 |
| | | | bedroom | Map |
| | | | street hall kitchen | bedroom |
| | | | garden | street hall kitchen |
| | | | basement | garden |
| | | | You are at street | basement |
| | | | | You are at street |
| | | | You lose | |
| | | | | You lose |
| Game | 30 1 5 | Game.launch() | You are in the hall | You are in the hall |
| play | 1143 | | Item in the hall: | Item in the hall: |
| | 2120 | | box: Tool Box | box: Tool Box |
| | 1101 | | book: How To Fix | book: How To Fix |
| | 5110 | | Everything For Dummy | Everything For Dummy |
| | 1201 | | key: Gate Key | key: Gate Key |
| | 1131 | | broom: Corn Broom with | broom: Corn Broom |
| | 4 3 1 | | Solid Wood Handle | with Solid Wood Handle |
| | 5114 | | Ways out of the hall | Ways out of the hall |
| | 3115 | | top direction to the | top direction to the |
| | 1314 | | bedroom | bedroom |
| | 1141 | | left direction to the | left direction to the |
| | 1401 | | street | street |
| | 5142 | | bottom direction to the | bottom direction to the |
| | 1101 | | basement | basement |
| | 1014 | | right direction to the | right direction to the |
| | 2151 | | kitchen | kitchen |
| | 48 1 4 | | | |
| | | | What are you going to do | What are you going to do |
| | 0141 | | 1. Take item | 1. Take item |
| | ı | İ | 2. Drop item | 2. Drop item |
| | | | | I |
| | | | 3. Show items in the bag 4. Move away | 3. Show items in the bag 4. Move away |

5. Sweep the hall

Enter a value from 1 to 5: 1 What do you want to take

0. box: Tool Box

1. book: How To Fix Everything For Dummy

2. key: Gate Key

3. broom: Corn Broom with Solid Wood Handle

Enter a value from 0 to 3: 1
You have taken 'How To Fix
Everything For Dummy'

We have 21 steps left What do you want to do

1. Look around

2, Show the map

3, Look at the checklist

Enter a value from 1 to 3: 3 Checklist

Take the toolbox to the basement to fix the washing machine:
UNCHECKED

Bring the book to the bedroom and put it on the shelf: UNCHECKED Watering all plants:

UNCHECKED

Sweep the hall: CHECKED Give the bread to Mom:

UNCHECKED

Pick the key from the hole which is hidden under the red brick:

CHECKED

We have 20 steps left What do you want to do

1. Look around

2, Show the map

3, Look at the checklist

Enter a value from 1 to 3: 1

You are in the hall

Item in the hall:

box: Tool Box key: Gate Key 5. Sweep the hall

Enter a value from 1 to 5: 1 What do you want to take

0. box: Tool Box

1. book: How To Fix Everything For Dummy

2. key: Gate Key

3. broom: Corn Broom with Solid Wood Handle

Enter a value from 0 to 3: 1
You have taken 'How To Fix
Everything For Dummy'

We have 21 steps left What do you want to do

1. Look around

2, Show the map

3, Look at the checklist

Enter a value from 1 to 3: 3

Checklist

Take the toolbox to the basement to fix the washing machine:

UNCHECKED

Bring the book to the bedroom and put it on the shelf: UNCHECKED

Watering all plants:

UNCHECKED

Sweep the hall:

CHECKED

Give the bread to Mom:

UNCHECKED

Pick the key from the hole which is hidden under the red brick:

CHECKED

We have 20 steps left What do you want to do

1. Look around

2, Show the map

3, Look at the checklist Enter a value from 1 to 3: 1

You are in the hall Item in the hall:

box: Tool Box key: Gate Key

broom: Corn Broom with broom: Corn Broom Solid Wood Handle with Solid Wood Handle Ways out of the hall Ways out of the hall top direction to the top direction to the bedroom bedroom left direction to the left direction to the street street bottom direction to the bottom direction to the basement basement right direction to the right direction to the kitchen kitchen What are you going to do What are you going to do 1. Take item 1. Take item 2. Drop item 2. Drop item 3. Show items in the bag 3. Show items in the bag 4. Move away 4. Move away 5. Sweep the hall 5. Sweep the hall Enter a value from 1 to 5: 4 Enter value from 1 to 5: 4 What direction you go to What direction you go to 0. Go to the top direction to the 0. Go to top direction to the bedroom bedroom 1. Go to left direction to the 1. Go to left direction to the street street 2. Go to bottom direction to the 2. Go to bottom direction to the basement basement 3. Go to the right direction to the 3. Go to right direction to the kitchen kitchen Enter a value from 0 to 4: 3 Enter value from 0 to 4: 3 We have 19 steps left We have 19 step left What do you want to do What do you want to do 1. Look around 1. Look around 2, Show the map 2, Show the map 3, Look at the checklist 3, Look at checklist Enter a value from 1 to 3: 1 Enter value from 1 to 3: 1 You are in the kitchen You are in the kitchen Ways out of the kitchen Ways out of the kitchen left direction to the hall left direction to the hall right direction to the right direction to the garden garden What are you going to do What are you going to do 1. Take item 1. Take item 2. Drop item 2. Drop item 3. Show items in the bag 3. Show items in bag 4. Move away 4. Move away 5. Give the bread to Mom 5. Give the bread to Mom Enter a value from 1 to 5: 5 Enter value from 1 to 5: 5

Do you want to give the bread to Do you want to give the bread to Mom Mom 1, Yes 1, Yes 2. No 2. No Enter a value from 1 to 2: 1 Enter value from 1 to 2:1 Good, You have finished today Good, You have finished today errand errand We have 18 steps left We have 18 step left What do you want to do What do you want to do 1. Look around 1. Look around 2, Show the map 2, Show the map 3, Look at the checklist 3, Look at checklist Enter a value from 1 to 3: 1 Enter value from 1 to 3: 1 You are in the kitchen You are in the kitchen Item in the kitchen: Item in the kitchen: bread: Texas Toast bread: Texas Toast Ways out of the kitchen Ways out of the kitchen left direction to the hall left direction to the hall right direction to the right direction to the garden garden What are you going to do What are you going to do 1. Take item 1. Take item 2. Drop item 2. Drop item 3. Show items in the bag 3. Show items in bag 4. Move away 4. Move away 5. Give the bread to Mom 5. Give the bread to Mom Enter a value from 1 to 5: 4 Enter value from 1 to 5: 4 What direction you go to What direction you go to 0. Go to top direction back to the 0. Go to top direction back to kitchen the kitchen 1. Go to left direction to the hall 1. Go to left direction to the hall 2. Go to bottom direction back to 2. Go to bottom direction back the kitchen to the kitchen 3. Go to the right direction to the 3. Go to right direction to the garden garden Enter a value from 0 to 4: 3 Enter value from 0 to 4: 3 We have 17 steps left We have 17 step left What do you want to do What do you want to do 1. Look around 1. Look around 2, Show the map 2, Show the map 3, Look at the checklist 3, Look at checklist Enter a value from 1 to 3: 1 Enter value from 1 to 3: 1 You are in the garden You are in the garden Ways out of the garden Ways out of the garden left direction to the left direction to the kitchen kitchen

What are you going to do

- 1. Take item
- 2. Drop item
- 3. Show items in the bag
- 4. Move away
- 5. Watering all plants
 Enter a value from 1 to 5: 5
 Do you want to water all the plants in the garden
- 1, Yes
- 2. No

Enter a value from 1 to 2: 1 OK, let's read the textbook Page 254

How to Water Plants Effectively So it now came to gardening!

Want the most from your plants? To thrive, any plant needs the right amount and kind of sun, water, heat, and soil.
Watering your plants is key to keeping them healthy.

- 1. Check the soil carefully. There are two types of soil:

 Dry soil It can be identified if the soil is sandy and has cracks in it.

 Clay soil If the soil is sticky and muddy then it is clay soil.
- Look at the type of plant. Is the plant younger, or a newly grown, or an older one.
 Younger plants can be at most 4-5 years of age.
 Then they are categorized as older plants.
- 3. Research how much water your plants need. This varies from species to species, so look online or in gardening books. 4.

 See if the soil is wet. If the plants are grown in

What are you going to do

- 1. Take item
- 2. Drop item
- 3. Show items in bag
- 4. Move away
- 5. Watering all plants Enter value from 1 to 5: 5

Do you want to water all plants in the garden

- 1, Yes
- 2. No

Enter value from 1 to 2: 1 OK, let's read the textbook Page 254

How to Water Plants Effectively So it now came to gardening!

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 See if the soil is wet. If the plants are grown

dry soil, it would need more amount of water and clay soil obviously needs less amount of water as it has more moisture.

5. Give appropriate water. Remember that different kinds and ages of plants have different requirements. Younger ones typically need less water than older ones, while newly planted ones need only small amount of water. 6. Get the timing right. The best time of day to water is always in the morning. This gives the plant time to absorb the water and get ready to handle the heat, cold, or just the energy it takes to produce chlorophyll, grow, and move nutrients around. If you water in the late afternoon or evening, the problem is that the plant is now wet and the air temperature is cool. Those are the best conditions for mildews, molds, and all kinds of disease problems. Keep life simple, water in the

morning. 7. Concentrate

watering on the roots.

Roots require more

leaves will lead to

diseases. 8. Water slowly. Watering fast is

like giving just 20% of

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- waste.[1] Water slower.
 Doing this water will
 remain around roots, as
 a result, it will get more
 water. Watering fast may
 generate a great flow,
 causing erosion and
 leading to most of the
 water flowing away
 anyway.
- 9. Use a rain gauge. It measures how many centimetres the rain falls in that area so you would be able to give plants the desired quantity of water.
- 10. Use a sprinkler in your garden. Sprinklers are very effective. They give water to plants at the proper time, and you don't have to worry about doing it with a hose or watering can. It is similar to the drop-bydrop method (irrigation method used in farming).
- 11. Micro-drip irrigation systems can be installed to deliver water directly to where the plants can use it. Applied slowly, water gradually soaks to the roots, rather than running off or evaporating. It will save you time and reduce the amount of water that's wasted.
- There are a lot of instructions. It's time to pick up the sprinkler and make it work

We have 16 steps left What do you want to do

- waste.[1] Water slower. Doing this water will remain around roots as a result it will get more water. Watering fast may generate a great flow, causing erosion and leading to most of the water flowing away anyway.
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 It's time to pick up the sprinkler and make it work

We have 16 steps left

- 1. Look around
- 2, Show the map
- 3, Look at the checklist

Enter a value from 1 to 3: 3 Checklist

Take the toolbox to the basement to fix the washing machine: UNCHECKED

Bring the book to the bedroom and put it on the shelf: UNCHECKED

Watering all plants:

CHECKED

Sweep the hall: CHECKED Give the bread to Mom:

CHECKED

Pick the key from the hole which is hidden under the red brick: CHECKED

We have 15 steps left What do you want to do

- 1. Look around
- 2, Show the map
- 3, Look at the checklist

Enter a value from 1 to 3: 1

You are in the garden

Ways out of the garden left direction to the

kitchen

What are you going to do

- 1. Take item
- 2. Drop item
- 3. Show items in the bag
- 4. Move away
- 5. Watering all plants

Enter a value from 1 to 5: 4

What direction you go to

O. Go to top direction back to the garden

- 1. Go to left direction to the kitchen
- 2. Go to bottom direction back to the garden
- 3. Go to right direction back to the garden

What do you want to do

- 1. Look around
- 2, Show the map

3, Look at the checklist

Enter a value from 1 to 3: 3

Checklist

Take the toolbox to the basement to fix the washing machine: UNCHECKED

Bring the book to the bedroom and put it on the shelf: UNCHECKED Watering all plants:

CHECKED

Sweep the hall:

CHECKED

Give the bread to Mom:

CHECKED

Pick the key from the hole which is hidden under the red brick:

CHECKED

We have 15 steps left
What do you want to do

- 1. Look around
- 2, Show the map
- 3, Look at the checklist

Enter a value from 1 to 3: 1

You are in the garden Ways out of the garden

left direction to the

kitchen What are you going to do

- 1. Take item
- 2. Drop item
- 3. Show items in the bag
- 4. Move away
- 5. Watering all plants

Enter a value from 1 to 5: 4

What direction you go to

- O. Go to top direction back to the garden
- 1. Go to left direction to the kitchen
- 2. Go to bottom direction back to the garden

Enter a value from 0 to 4: 1 3. Go to right direction back to the garden We have 14 steps left Enter a value from 0 to 4: 1 What do you want to do 1. Look around We have 14 steps left What do you want to do 2, Show the map 3, Look at the checklist 1. Look around Enter a value from 1 to 3: 1 2, Show the map You are in the kitchen 3, Look at the checklist Item in the kitchen: Enter a value from 1 to 3: 1 bread: Texas Toast You are in the kitchen Ways out of the kitchen Item in the kitchen: left direction to the hall bread: Texas Toast Ways out of the kitchen right direction to the garden left direction to the hall What are you going to do right direction to the 1. Take item garden 2. Drop item What are you going to do 3. Show items in the bag 1. Take item 4. Move away 2. Drop item 5. Give the bread to Mom 3. Show items in the bag Enter a value from 1 to 5: 4 4. Move away What direction you go to 5. Give the bread to Mom 0. Go to top direction back to the Enter a value from 1 to 5: 4 kitchen What direction you go to 1. Go to left direction to the hall 0. Go to top direction back to 2. Go to bottom direction back to the kitchen the kitchen 1. Go to left direction to the hall 3. Go to the right direction to the 2. Go to bottom direction back to the kitchen garden Enter a value from 0 to 4: 1 3. Go to the right direction to the garden We have 13 steps left Enter a value from 0 to 4: 1 What do you want to do 1. Look around We have 13 steps left 2, Show the map What do you want to do 3. Look at the checklist 1. Look around Enter a value from 1 to 3: 1 2, Show the map You are in the hall 3, Look at the checklist Item in the hall: Enter a value from 1 to 3: 1 box: Tool Box You are in the hall Item in the hall: key: Gate Key broom: Corn Broom with box: Tool Box Solid Wood Handle kev: Gate Kev Ways out of the hall broom: Corn Broom top direction to the with Solid Wood Handle bedroom Ways out of the hall

left direction to the top direction to the bedroom street bottom direction to the left direction to the basement street right direction to the bottom direction to the kitchen basement What are you going to do right direction to the kitchen 1. Take item 2. Drop item What are you going to do 3. Show items in the bag 1. Take item 4. Move away 2. Drop item 5. Sweep the hall 3. Show items in the bag Enter a value from 1 to 5: 4 4. Move away What direction you go to 5. Sweep the hall 0. Go to the top direction to the Enter a value from 1 to 5: 4 bedroom What direction you go to 1. Go to left direction to the 0. Go to the top direction to the bedroom street 2. Go to bottom direction to the 1. Go to left direction to the basement street 2. Go to bottom direction to the 3. Go to the right direction to the kitchen basement Enter a value from 0 to 4: 0 3. Go to the right direction to the kitchen We have 12 steps left Enter a value from 0 to 4: 0 What do you want to do 1. Look around We have 12 steps left 2, Show the map What do you want to do 3, Look at the checklist 1. Look around Enter a value from 1 to 3: 1 2, Show the map You are in the bedroom 3. Look at the checklist Enter a value from 1 to 3: 1 Ways out of the bedroom bottom direction to the You are in the bedroom hall Ways out of the bedroom What are you going to do bottom direction to the 1. Take item hall What are you going to do 2. Drop item 3. Show items in the bag 1. Take item 4. Move away 2. Drop item 5. Bring the book to the bedroom 3. Show items in the bag and put it on the shelf 4. Move away Enter a value from 1 to 5: 5 5. Bring the book to the Do you want to drop the book bedroom and put it on 1, Yes the shelf 2. No Enter a value from 1 to 5: 5 Enter a value from 1 to 2: 1 Do you want to drop the book Good, The book has been on the 1, Yes shelf 2. No

Enter a value from 1 to 2:1 We have 11 steps left Good, The book has been on the What do you want to do shelf 1. Look around 2, Show the map We have 11 steps left 3, Look at the checklist What do you want to do Enter a value from 1 to 3: 1 1. Look around You are in the bedroom 2, Show the map Item in the bedroom: 3, Look at the checklist Enter a value from 1 to 3: 1 book: How To Fix **Everything For Dummy** You are in the bedroom Ways out of the bedroom Item in the bedroom: bottom direction to the book: How To Fix hall Everything For Dummy What are you going to do Ways out of the bedroom 1. Take item bottom direction to the 2. Drop item hall 3. Show items in the bag What are you going to do 4. Move away 1. Take item 5. Bring the book to the bedroom 2. Drop item and put it on the shelf 3. Show items in the bag Enter a value from 1 to 5: 4 4. Move away What direction you go to 5. Bring the book to the 0. Go to top direction back to the bedroom and put it on bedroom the shelf 1. Go to left direction back to the Enter a value from 1 to 5: 4 bedroom What direction you go to 2. Go to bottom direction to the 0. Go to top direction back to hall the bedroom 3. Go to right direction back to 1. Go to left direction back to the bedroom the bedroom Enter a value from 0 to 4: 2 2. Go to bottom direction to the hall 3. Go to right direction back to We have 10 steps left What do you want to do the bedroom 1. Look around Enter a value from 0 to 4: 2 2, Show the map We have 10 steps left 3, Look at the checklist Enter a value from 1 to 3: 1 What do you want to do You are in the hall 1. Look around Item in the hall: 2, Show the map box: Tool Box 3. Look at the checklist Enter a value from 1 to 3: 1 key: Gate Key broom: Corn Broom with You are in the hall Solid Wood Handle Item in the hall: Ways out of the hall box: Tool Box top direction to the key: Gate Key bedroom

left direction to the broom: Corn Broom street with Solid Wood Handle bottom direction to the Ways out of the hall basement top direction to the right direction to the bedroom kitchen left direction to the What are you going to do street bottom direction to the 1. Take item 2. Drop item basement 3. Show items in the bag right direction to the 4. Move away kitchen 5. Sweep the hall What are you going to do Enter a value from 1 to 5: 1 1. Take item What do you want to take 2. Drop item 0. box: Tool Box 3. Show items in the bag 1. key: Gate Key 4. Move away 2. broom: Corn Broom with Solid 5. Sweep the hall Wood Handle Enter a value from 1 to 5: 1 Enter a value from 0 to 2: 0 What do you want to take You have taken 'Tool Box' 0. box: Tool Box 1. key: Gate Key We have 9 steps left 2. broom: Corn Broom with Solid What do you want to do Wood Handle 1. Look around Enter a value from 0 to 2: 0 You have taken 'Tool Box' 2, Show the map 3. Look at the checklist Enter a value from 1 to 3: 1 We have 9 steps left You are in the hall What do you want to do Item in the hall: 1. Look around 2, Show the map key: Gate Key broom: Corn Broom with 3. Look at the checklist Solid Wood Handle Enter a value from 1 to 3: 1 Ways out of the hall You are in the hall top direction to the Item in the hall: bedroom kev: Gate Kev left direction to the broom: Corn Broom with Solid Wood Handle street bottom direction to the Ways out of the hall basement top direction to the right direction to the bedroom kitchen left direction to the What are you going to do street 1. Take item bottom direction to the 2. Drop item basement 3. Show items in the bag right direction to the kitchen 4. Move away 5. Sweep the hall What are you going to do Enter a value from 1 to 5: 1 1. Take item

| What do you want to take | 2. Drop item |
|-------------------------------------|---|
| 0. key: Gate Key | 3. Show items in the bag |
| 1. broom: Corn Broom with Solid | 4. Move away |
| Wood Handle | 5. Sweep the hall |
| Enter a value from 0 to 1: 0 | Enter a value from 1 to 5: 1 |
| You have taken 'Gate Key' | What do you want to take |
| , | 0. key: Gate Key |
| We have 8 steps left | 1. broom: Corn Broom with Solid |
| What do you want to do | Wood Handle |
| 1. Look around | Enter a value from 0 to 1: 0 |
| 2, Show the map | You have taken 'Gate Key' |
| 3, Look at the checklist | Touriste taken date key |
| Enter a value from 1 to 3: 1 | We have 8 steps left |
| You are in the hall | What do you want to do |
| Item in the hall: | 1. Look around |
| broom: Corn Broom with | |
| Solid Wood Handle | 2, Show the map |
| | 3, Look at the checklist Enter a value from 1 to 3: 1 |
| Ways out of the hall | |
| top direction to the | You are in the hall |
| bedroom | Item in the hall: |
| left direction to the | broom: Corn Broom |
| street | with Solid Wood Handle |
| bottom direction to the | Ways out of the hall |
| basement | top direction to the |
| right direction to the | bedroom |
| kitchen | left direction to the |
| What are you going to do | street |
| 1. Take item | bottom direction to the |
| 2. Drop item | basement |
| 3. Show items in the bag | right direction to the |
| 4. Move away | kitchen |
| 5. Sweep the hall | What are you going to do |
| Enter a value from 1 to 5: 4 | 1. Take item |
| What direction you go to | 2. Drop item |
| 0. Go to the top direction to the | 3. Show items in the bag |
| bedroom | 4. Move away |
| 1. Go to left direction to the | 5. Sweep the hall |
| street | Enter a value from 1 to 5: 4 |
| 2. Go to bottom direction to the | What direction you go to |
| basement | 0. Go to the top direction to the |
| 3. Go to the right direction to the | bedroom |
| kitchen | 1. Go to left direction to the |
| Enter a value from 0 to 4: 2 | street |
| | 2. Go to bottom direction to the |
| We have 7 steps left | basement |
| What do you want to do | 3. Go to the right direction to |
| 1. Look around | the kitchen |
| 2, Show the map | Enter a value from 0 to 4: 2 |
| · | |
| | |

3, Look at the checklist Enter a value from 1 to 3: 1 We have 7 steps left You are in the basement What do you want to do Ways out of the basement 1. Look around top direction to the hall 2, Show the map 3, Look at the checklist What are you going to do Enter a value from 1 to 3: 1 1. Take item You are in the basement 2. Drop item 3. Show items in the bag Ways out of the basement 4. Move away top direction to the hall 5. Take the toolbox to the What are you going to do basement to fix the 1. Take item 2. Drop item washing machine Enter a value from 1 to 5: 5 3. Show items in the bag Are you ready to fix the washing 4. Move away machine 5. Take the toolbox to the 1, Yes basement to fix the 2. No washing machine Enter a value from 1 to 2: 1 Enter a value from 1 to 5: 5 The machine has got some Are you ready to fix the washing problem with its resistor. machine Let's do some physics calculation. 1, Yes A resistor has a voltage across it 2. No of 120 volts and Enter a value from 1 to 2: 1 a current through it of 2.5 The machine has got some problem with its amperes. Calculate the resistance of the resistor. resistor. Let's do some physics calculation. Enter a value from 0 to 20000: 48 A resistor has a voltage across it of 120 volts and Good, we have to increase the resistance of the resistor a current through it of 2.5 this time amperes. The washing machine has been Calculate the resistance of the fixed resistor. We have 6 steps left Enter a value from 0 to 20000: What do you want to do 1. Look around Good, we have to increase the 2, Show the map resistance of the 3, Look at the checklist resistor this time Enter a value from 1 to 3: 1 The washing machine has been You are in the basement fixed Ways out of the basement We have 6 steps left top direction to the hall What are you going to do What do you want to do 1. Take item 1. Look around

2, Show the map

2. Drop item

| 3. Show items in the bag | 3, Look at the checklist |
|-------------------------------------|-----------------------------------|
| 4. Move away | Enter a value from 1 to 3: 1 |
| 5. Take the toolbox to the | You are in the basement |
| basement to fix the | Ways out of the basement |
| washing machine | top direction to the hall |
| Enter a value from 1 to 5: 4 | What are you going to do |
| What direction you go to | 1. Take item |
| 0. Go to the top direction to the | 2. Drop item |
| hall | 3. Show items in the bag |
| 1. Go to left direction back to the | 4. Move away |
| basement | 5. Take the toolbox to the |
| 2. Go to bottom direction back to | basement to fix the |
| the basement | washing machine |
| 3. Go to right direction back to | Enter a value from 1 to 5: 4 |
| the basement | What direction you go to |
| Enter a value from 0 to 4: 0 | 0. Go to the top direction to the |
| Linter a value from 0 to 4. 0 | hall |
| We have 5 steps left | 1. Go to left direction back to |
| What do you want to do | the basement |
| 1. Look around | 2. Go to bottom direction back |
| 2, Show the map | to the basement |
| 3, Look at the checklist | 3. Go to right direction back to |
| Enter a value from 1 to 3: 1 | the basement |
| You are in the hall | Enter a value from 0 to 4: 0 |
| Item in the hall: | |
| broom: Corn Broom with | We have 5 steps left |
| Solid Wood Handle | What do you want to do |
| Ways out of the hall | 1. Look around |
| top direction to the | 2, Show the map |
| bedroom | 3, Look at the checklist |
| left direction to the | Enter a value from 1 to 3: 1 |
| street | You are in the hall |
| bottom direction to the | Item in the hall: |
| basement | broom: Corn Broom |
| right direction to the | with Solid Wood Handle |
| kitchen | Ways out of the hall |
| What are you going to do | top direction to the |
| 1. Take item | bedroom |
| 2. Drop item | left direction to the |
| 3. Show items in the bag | street |
| 4. Move away | bottom direction to the |
| 5. Sweep the hall | basement |
| Enter a value from 1 to 5: 4 | right direction to the |
| What direction you go to | kitchen |
| 0. Go to the top direction to the | What are you going to do |
| bedroom | 1. Take item |
| 1. Go to left direction to the | 2. Drop item |
| street | 3. Show items in the bag |
| | <u> </u> |
| | |

| | | - |
|--|-------------------------------------|-----------------------------------|
| | 2. Go to bottom direction to the | 4. Move away |
| | basement | 5. Sweep the hall |
| | 3. Go to the right direction to the | Enter a value from 1 to 5: 4 |
| | kitchen | What direction you go to |
| | Enter a value from 0 to 4: 1 | 0. Go to the top direction to the |
| | | bedroom |
| | You win | 1. Go to left direction to the |
| | | street |
| | | 2. Go to bottom direction to the |
| | | basement |
| | | 3. Go to the right direction to |
| | | the kitchen |
| | | Enter a value from 0 to 4: 1 |
| | | |
| | | You win |
| | | |

3. Reflection

- a. The hardest part of the assignment was creating the game scenario. I think that because creativity is something I have trouble with, it was hard to come up with a concept. I decided to work on a relatively simple game that requires the player's character to run some errands. Each errand requires a prerequisite of sorts such as solving a calculation or having a certain item in the player's inventory. Upon completion of all tasks that are given to the character, the player has to move the character back to the street to win the game.
- b. I defined a new list so that it has a capacity limit.
- c. The player can continuously pick up and drop items so it should be a static variable of the class to reduce the run time.
- d. Each derived class has its own way to run "action" function of the abstract class.