Assignment 1A - UML & Sequence Diagrams
MA Lab11 Team 1

Group Members:

1. How Yu Chern
2. Eugene Kah Chun Fan

Work Breakdown Agreement (WBA)

Version 2
Last Updated: 6/4/2022

Group Members Signature:
1) How Yu Chern - I accept this WBA
2) Eugene Kah Chun Fan - I accept this WBA

Task Breakdown and Summary:

- Each person in charge of a requirement (REQ) will be in charge of it's respective UML Diagram and Design Rational components. Each member's components will be combined to create the complete version of the UML Diagram, and Design Rational for all 6 Requirements. This will be done in each member's own time until the deadline. Each person's work will be reviewed by other members of the group, to ensure that it is complete and up to date.
- Each person will pick one interesting feature in one of the 6 requirements, and will create a sequence diagram out of it.
- For Group Tasks, members will meet up and collaborate, working together to complete the groups tasks of the requirements.
- This WBA, and all 6 Requirement's Diagrams and Design Rational will combined into a single PDF for submission.

Tasks for How Yu Chern
Review By: Eugene Fan
Deadline: 9/4/2022

Tasks:
REQ1: Add Trees to Terrain
REQ2: Jump Ability

Tasks for Eugene Fan
Review By: How Yu Chern
Deadline: 9/4/2022

Tasks:
REQ3: Enemies
REQ4: Magical Items

Group Tasks

- These tasks will be done and will be reviewed by both group member.

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- Deadline: 10/4/2022

Tasks:
REQ5: Trading
REQ7: Reset Game

UML Diagrams

Req 1: Let It Grow

Design Rational:
Understanding relationships in between trees and other entities:
1 Dirt –<<creates>> -> 1 Sprout
1 Sprout –<<creates>> -> M Goombas
1 Sprout –<<creates>> -> 1 Sapling
1 Sapling –<<creates> -> M Coins
1 Sapling –<<creates>> -> 1 Mature
1 Mature –<<creates>> -> M Koopas
1 Mature –<<creates>> -> M Sprouts
1 Mature –<<creates>> -> 1 Dirt

Req 2:

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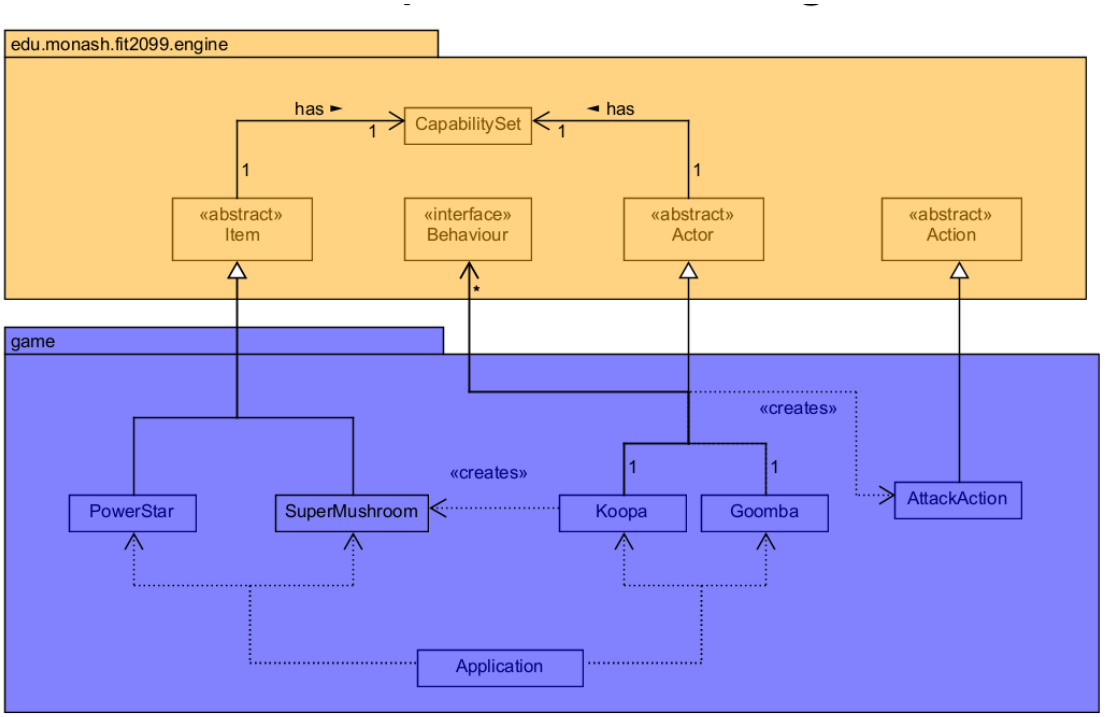
Req 3 & 4:



Design Rationale by Eugene:
***I have combined Req 3 & Req 4 ‘s UML together as the UML created is not too difficult to understand together.

-Req 3-

1. I’ve added Koopa which also inherits the actor class (includes actor’s methods and attributes). Both the enemies(Koopa & Goomba) create an attack action which allows the other_actor to attack the enemies given that the other actor has HOSTILE_TO_ENEMY capabilities (each actor has a capability set).
2. The enemies both have the ability to attack player too as they both have HOSTILE_TO_ENEMY capabilities. To have that ability to attack, the enemies each have a map of Behaviour objects which is basically what (console is to the user). Behaviours such as WanderBehaviour, Follow Behaviour and AttackBehaviour all help shape what enemies can do.
3. Koopa will also create a SuperMushroom and put it in their backpack. Once Koopa is killed, the SuperMushroom will be dropped for the player to pick up.

-Req 4-

1. I created two new classes (magical items) called SuperMushroom and PowerStar which both inherit the Item abstract class.
2. Since both magical items are Item objects, they also have their own capability set. This means when player obtains these magical items, the player will also inherit these capabilities

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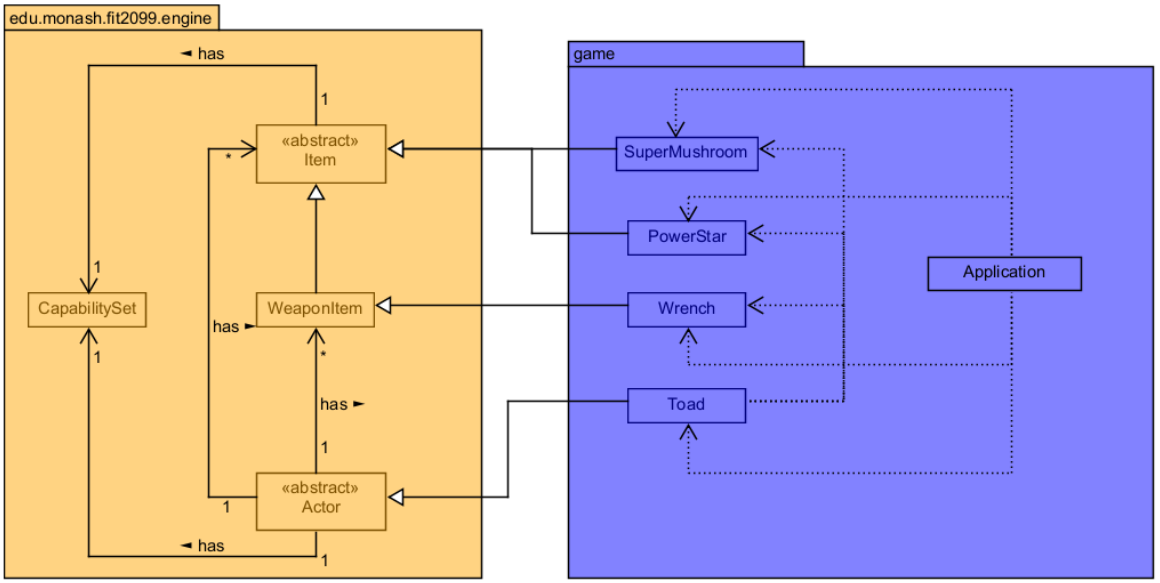
Req 5:



Design Rationale by Eugene:

1. I've created two new classes, one is Wrench class which extends WeaponItem class, and the other one is Toad class which extends abstract Actor class
2. The Wrench is a weapon item which means it can be used by the user to attack enemies. The Wrench also inherits a very important capability which is the ability to attack and kill Koopas which are in Dormant state.
3. The Toad class is a friendly actor as it cannot attack anyone, however it does have the capabilities to talk to the players (not implemented as there are only two members in this group) and handle transactions of items with the player.
4. The items that are sold by the Toad class are SuperMushroom objects, PowerStar objects and Wrench objects with their respective prices.

Req 7:

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Sequence Diagrams

1. Koopa's allowableActions()