DASS Assignment 2
Clash of Clans

1. Team Details:

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2. Overview:

The software system we are going to study is the Clash of clans game. It is a terminal-based game designed using the Oops concept. In this game, a player owns a village that consists of a Townhall as the main building and defenses like walls and cannons, builder huts, barbarians, and barbarian king as troops, and heal and rage as spells. Troops can attack another village whereas their defenses oppose the attack by re-attacking the army. In the game implemented, there are set of pre-defined rules for spawning the troops.

3. UML diagram and Summary of Classes:
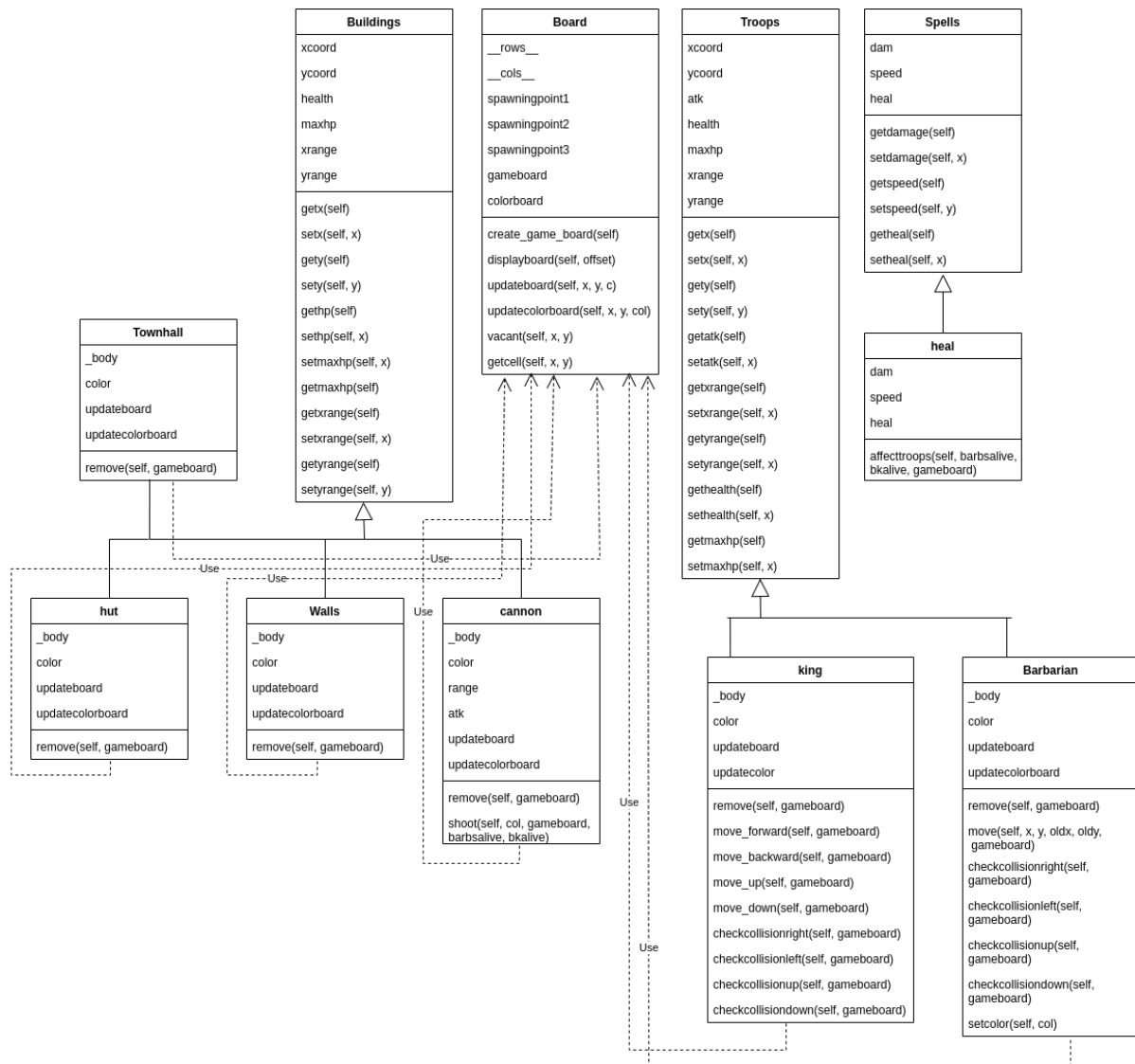
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4. Responsibilities:

Class	Responsibilities
Building	The default class, other classes inherit from it and it contains a set of default functions. It essentially is an abstract class.
hut	This class inherits from the Building class and contains functions for the functioning of the builder hut.
walls	This class inherits from the Building class and contains functions for the functioning of the walls.
cannon	This class inherits from the Building class and contains functions for the functioning of the cannon and the damage it causes to the spawned troop.
town hall	This class inherits from the Building class and contains functions for the functioning of the Town hall.
Troops	The default class, other classes inherit from it and it contains a set of default functions. It essentially is an abstract class.
king	This class inherits from the Troops class and contains functions for the functioning of the king i.e, the damage rate, health, and so on.
Barbarian	This class inherits from the Troops class and contains functions for the functioning of the barbarian i.e, damage rate, health, and number alive.

5. Code Smells:

File and line	Description	Suggested refactoring
main.py line 433: 504	Repetitive code: Written code multiple times for spawning the barbarians at different positions.	Can be defined as a function or class instead
headers.py lines: 1, 3, 5, 6, 8, 9	Unused Imports: There are many unused imports in the file	Can be neglected
cannon.py line: 19	Unused parameters: The attribute `gameboard` was left unused in the function.	Can be neglected
main.py lines: 434-436, 439, 447-449, 452, 460-463, 465, 473-476, 479	Dead Code: The code written in these lines is not functioning.	Change the constraints on the if condition.

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main.py lines: 514-526 till 575	Repetitive code: The code for moving the king is of repetitive.	Can be defined as a function or class instead
main.py	Comments: there are comments that don't provide clarity or are not used for clarification.	Can be removed
main.py	Inconsistent names: In this file, there are variables names f, hh, g, and ob which can be confusing	Can be renamed such that it represents its functionality, or adding comments can help.
Barbarian.py line:17	Long parameters list: In the function `move` there are too many parameters.	All the parameters can be pushed into a list and can be used.
Spell.py line: 11-22	Dead code: The functions defined in this class are not used anywhere in the application.	Can be removed
Utilities.py lines: 1, 2, 3, 9, 10	Unused Imports: There are many unused imports in the file	Can be neglected
Barbarian.py lines:12-15	Unused functions: `remove()` is defined which has no use in case of King	Can be removed
main.py lines: 514-526, 575	Repetitive code: The code for the movement of the king was repetitive.	Instead can be made a class or a function.

6. Bugs:

Bugs	Description of the Bugs	Suggested refactoring
Rage spell not implemented	This spell improves the damage rate of the army, which was not implemented	Implement Rage Spell
Cannon not firing bullets	The cannon must fire bullets from it, but it doesn't	Implement the functionality.
Not printing the warning statements	The statements indicating the number of barbarians alive were implemented but not working because they are being cleared off.	Redirecting the code to the place where the os.clear() doesn't have an effect

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Usage of undefined variable y in building.py lines: 47-48	In the function setyrange(), the attribute x is defined but used as y.	Rename x as y
Uneven movement of the barbarian king	In the move up and down functions, the y coordinate was changed twice.	Delete the change made for the second time or add the second change in the left/right functions also.
Healing of the army	All the troops alive are healed, which is not its functionality	Can be implemented as an area splash

7. Contributions:

All the team members equally contributed to drafting the UML diagram and gathering the code smell and bugs.

Regards.

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