Robot Death Arena

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<u>**Introduction**</u>:
Welcome to Robot Death Arena, a fighting game with futuristic fights that are expected to happen 100 years later. There are finalists(users) who are trying to compete with each other to gain the Robot Death Arena championship trophy. The main objective for each user is to knock out the other user with the weapons they choose to fight with. When the game begins, the user goes to a screen where he can choose weapons and armors, there are three different types of weapon namely: sword,spear and hammer. Each weapon has its own advantages and disadvantages, for example spears increase speed but lead to lower damage. Similarly there are three types of armor namely: Light, Medium , Heavy. The armors also have advantages and disadvantages, they affect the robots stats. Stats are numerical representations of a robot's strength, speed, health. Our program is really attractive to people who love WWE fights and fighting type games. The program uses WASD to move around and a mouse to attack. When the user clicks on the attack button in the mouse, the attack is automatically aimed at the space in front of where the user is facing. Our program specializes in real life situations of a fight through stats, for example a person could run faster with a sword than a hammer which means weapons affect speed, this real life to game transformation is our first and foremost priority when making and creating new things in the game. If the user doesn't customize his robot, his robot will have a default customization that is the first weapon and the first armor during battle.The game shows different types of animations for different types of weapons, for example if someone uses a hammer, the user can see hammer swinging and if there is a sword, the user can see the sword swinging. When the user hits the enemy user with their weapon, there is a bounce which means that the other character gets pushed back hence they have a chance to escape to not take more damage or to counterattack. After each slash by any weapon there is a delay of about 2 seconds before the user can attack again hence the user needs to be careful about attacking and cannot just randomly spam the attack button. The game also has special abilities that could be cast during battle, using special abilities brings up a new animation in which the special ability shows up, for example if the special ability is fireball then the game shows a fire type projectile going towards the enemy user. When a person presses the movement key, the character robot moves but it doesn't have any special animations for walking. The weapon can only attack a target in front or below the opponent, which means that a user could dodge an attack and then attack. The user could use the defend button to neglect all damages dealt if times are correct but the defend function has a cooldown of 4 seconds. The main rules for the program is to not cheat via hacking or disrupting the other person's movement and respecting the other people during gametime.

<u>**Instructions**</u>:
Which keyboard keys will do what?
The w key lets the user jump,the s key lets the user go down if there is no obstacle, the d key lets the user to move right, the a key lets the user to move left.

Where will you need to click?
The space key to attack and the c key to use ability.

Will you have menus that need to be navigated? What will they look like?
We have a menu that lets the user choose the attack and armor option and ability option. There are going to be buttons that show the types of armor, weapons and ability and once the user picks them there is a button that lets the user to battle.

Do actions need to be taken in a certain order?
The user needs to click on the battle button but after that there is no need for the user to move in a certain order.

Features List (THE ONLY SECTION THAT CANNOT CHANGE LATER):
Must-have Features:
- Pre Battle Screen: When the program starts, there are gonna be two robots staring at each other and once there is a battle button, once the battle button it goes to a new screen where the user can choose any weapon , armor and ability and then there is when the fight button is chosen the user enters the battle screen.
- Custom Weapons & Armor Slots: During the Pre Battle Screen, the user can select from three different armor types: Light, Medium, and Heavy. Lighter types will reduce the hit points of the robots and increase speed while the heavier types increase hit points and reduce speed. Medium is a mix of both. The user can also select three weapons: Sword, Spear, Hammer. If the user does not want to choose any weapon, armor or ability it is going to be automatically Picked for them.
- 1 v 1: Using firebase 2 users could connect into the battle screen and then battle
- Movement (wasd): A for right, D for left, W for jump, S for crouch.
- Stats Bar: Just like many fighting games, health for both players would be shown. Each player will have 150 Hp as a base stat but this hp could be more for armors that give more hp.
- Robot Stats: The robot has 3 stats: hp, damage, speed. The robot could move faster, slower based on speed and could deal damage based on their weapon.
- Special Abilities: Special Abilities are essentially special attacks that are obtained by storing up energy. This happens by pressing 'c' during the battle, which prevents the user from moving. Special abilities are kind of like an ultimate move, it could be meteor strike or kamehameha. It would be selected at the pre-battle screen.

Want-to-have Features:
- Background Music/Sound Effects: The background music would be different depending on the screen. Each screen would have its own song. Attacks would make a sound and special abilities would have their own sound.
- Different types of maps: These would purely be background images during the battle screen. The selected map would be randomly selected.
- More Stats other than Health, Speed, Attack: This could be a dodge stat, damage reduction, ect.

- More movement options like slide and kick. QA/QD for slide, EA/ED for kick. The slide would move the player, function as a duck and knock back the other player. The kick is a longer ranged attack but leaves the user "open to attacks" for a small duration after.
- Animations for Attacks: The attacks have their own animation and states the damage above each attack. For example, a sword slash would have an animation of a sword slashing, the above the attack, it would state the damage done. Each ability has some kind of cool animation when used.

Stretch Features:
- 3D animations: This would mean that all the robot sprites are replaced with 3d animations. It would use knockback mechanics.
- Cutscene for special abilities: When a special ability is going to activate, it would create a cutscene. The music would dampen to make room for the sound effects.
- Robot choice that have different abilities: During the pre-battle screen, the user can select between multiple robots. There would be a button to change the robots to another one. The robots would have different abilities like flying, mega-jumping, dash, ect.

Class List:
- Main: The main class.
- DrawingSurface: Has screens, take input, does multiplayer functions
- Sprite: Imported Class, which is basically a rectangle that moves
    - Robot: Carries all the Robot stats and actions
- Weapon: Superclass of all weapons, holds damage and reload time
    - Sword
    - Spear
    - Hammer
- Armor: Superclass of all armors, holds HP and speed reduction
    - Light
    - Medium
    - Heavy
- Ability: Superclass of all abilities, holds energy gathered and energy cap
    - Meteor
    - Kamehameha
- Screen
    - FirstScreen: Starting screen
    - SecondScreen: Item selection screen
    - ThirdScreen: The actual fighting screen
    - Screen - The super class for all screens
    - ScreenSwitcher - This class implements the switching mechanism of the screen.

Credits:
Outside Libraries:
- Processing

Tyler:
- Created Idea
- Backgrounds
- Robot Movement
- Screen Switching
- Multiplayer(really complicated!)
- Matchmaking
- Health bar
- Abilities
- Fixed a ton of bugs
- Added the firebase which allows different players to join the game.
- Worked on allowing the user to choose rooms.
- Worked on removing robots after the user leaves the game.
- Worked on allowing the user to choose their weapons, armors and ability in the second screen and drawing surface.
- Worked on getting data from the other robot
- Worked on getting the program to be more smooth
- Main class
- Worked on the Uml

Deeptesh:
- I came up with a clash royale type game even though it wasn't the one we ended up doing.
- Worked on the mechanics part of the program like robot ability, weapons and its armor.
- Worked on subclasses of the ability , weapons and armor that would get the data for each type of weapon, armor or ability.
- Worked on getting the images for weapons , robot.
- Fixed the screen implementation and switching mechanism and passing data through screens.
- Worked on attack and ability use mechanism
- Worked on the cooldown mechanism for attack and ability
- Worked on fixing the third screen so that the robot cannot go past the limited bounds.
- Worked on implementing the health part which could show the user their current health.
- Worked on getting data from the other robot
- Worked on getting the background for second screen
- Fixed null pointer exceptions in the drawing surface due to misplaced modifiers.
- Created the javadocs for all classes
- Worked on readme
- Worked on the UMl part