**Demo 1:**

**Input Specification:**

*/\*\*  
 \* This primary demo method is written to run a default game where the characters, gears are  
 \* automatically instantiated by the battle class. By default the game is played between 'Tony  
 \* Stark' and 'Thanos'. They have a respective set of gears to equip themselves for the battle.  
 \*/*public static void demo1() {  
 Battle endGame = new Battle();  
 try {  
 endGame.prepareRound();  
 } catch (Exception e) {  
 System.*out*.println("Error in preparing Game: " + e);  
 }  
 endGame.playGame();  
  
 System.*out*.println(endGame.toString());  
}

**Output: (copy pasted from the IntelliJ output)**

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Before Sorting:



1. Gear Name: Repulsor Gun -- Defense Strength: 2; Attack Strength: 5; Gear Type: HAND

2. Gear Name: Stark Helmet -- Defense Strength: 5; Attack Strength: 0; Gear Type: HEAD

3. Gear Name: Flight Thrusters -- Defense Strength: 4; Attack Strength: 3; Gear Type: FOOT

4. Gear Name: Heat Seeking Missiles -- Defense Strength: 0; Attack Strength: 4; Gear Type: HAND

5. Gear Name: Foot Clamps -- Defense Strength: 3; Attack Strength: 6; Gear Type: FOOT

6. Gear Name: Nano-Handblade -- Defense Strength: 1; Attack Strength: 7; Gear Type: HAND

7. Gear Name: Battering Rams -- Defense Strength: 4; Attack Strength: 6; Gear Type: FOOT

8. Gear Name: Energy Shield -- Defense Strength: 7; Attack Strength: 1; Gear Type: HAND

9. Gear Name: Stark Glasses -- Defense Strength: 1; Attack Strength: 0; Gear Type: HEAD

10. Gear Name: Repulsor Gun -- Defense Strength: 0; Attack Strength: 8; Gear Type: FOOT

After Sorting:

1. Gear Name: Stark Helmet -- Defense Strength: 5; Attack Strength: 0; Gear Type: HEAD

2. Gear Name: Stark Glasses -- Defense Strength: 1; Attack Strength: 0; Gear Type: HEAD

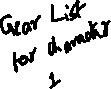
3. Gear Name: Nano-Handblade -- Defense Strength: 1; Attack Strength: 7; Gear Type: HAND

4. Gear Name: Repulsor Gun -- Defense Strength: 2; Attack Strength: 5; Gear Type: HAND

5. Gear Name: Heat Seeking Missiles -- Defense Strength: 0; Attack Strength: 4; Gear Type: HAND

6. Gear Name: Energy Shield -- Defense Strength: 7; Attack Strength: 1; Gear Type: HAND

7. Gear Name: Repulsor Gun -- Defense Strength: 0; Attack Strength: 8; Gear Type: FOOT



8. Gear Name: Foot Clamps -- Defense Strength: 3; Attack Strength: 6; Gear Type: FOOT

9. Gear Name: Battering Rams -- Defense Strength: 4; Attack Strength: 6; Gear Type: FOOT

10. Gear Name: Flight Thrusters -- Defense Strength: 4; Attack Strength: 3; Gear Type: FOOT



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Before Sorting:



1. Gear Name: Infinity Gauntlet -- Defense Strength: 10; Attack Strength: 10; Gear Type: HAND

2. Gear Name: Asgardian Helmet -- Defense Strength: 6; Attack Strength: 0; Gear Type: HEAD

3. Gear Name: Battle Stomper -- Defense Strength: 2; Attack Strength: 4; Gear Type: FOOT

4. Gear Name: Loki's Sceptre -- Defense Strength: 3; Attack Strength: 3; Gear Type: HAND

5. Gear Name: SHIELD's portal -- Defense Strength: 6; Attack Strength: 2; Gear Type: FOOT

6. Gear Name: Tesseract -- Defense Strength: 6; Attack Strength: 1; Gear Type: HAND

7. Gear Name: Battering Rams -- Defense Strength: 4; Attack Strength: 6; Gear Type: FOOT

8. Gear Name: Power Stone -- Defense Strength: 0; Attack Strength: 7; Gear Type: HAND

9. Gear Name: Magneto's Helmet -- Defense Strength: 5; Attack Strength: 0; Gear Type: HEAD

10. Gear Name: Space diver -- Defense Strength: 1; Attack Strength: 4; Gear Type: FOOT

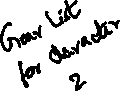
After Sorting:

1. Gear Name: Asgardian Helmet -- Defense Strength: 6; Attack Strength: 0; Gear Type: HEAD

2. Gear Name: Magneto's Helmet -- Defense Strength: 5; Attack Strength: 0; Gear Type: HEAD

3. Gear Name: Infinity Gauntlet -- Defense Strength: 10; Attack Strength: 10; Gear Type: HAND

4. Gear Name: Power Stone -- Defense Strength: 0; Attack Strength: 7; Gear Type: HAND



5. Gear Name: Loki's Sceptre -- Defense Strength: 3; Attack Strength: 3; Gear Type: HAND

6. Gear Name: Tesseract -- Defense Strength: 6; Attack Strength: 1; Gear Type: HAND

7. Gear Name: Battering Rams -- Defense Strength: 4; Attack Strength: 6; Gear Type: FOOT

8. Gear Name: Battle Stomper -- Defense Strength: 2; Attack Strength: 4; Gear Type: FOOT

9. Gear Name: Space diver -- Defense Strength: 1; Attack Strength: 4; Gear Type: FOOT

10. Gear Name: SHIELD's portal -- Defense Strength: 6; Attack Strength: 2; Gear Type: FOOT



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Tony Stark has 49 and 35 defense strength.



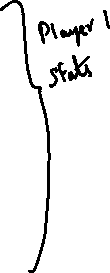
Thanos has 50 and 53 defense strength.

Tony Stark stats:

Tony Stark has Base Attack Points: 9 and Base Defense Points: 8.

Tony Stark's Arsenal:

1. Gear Name: Stark, Stark Glasses -- Defense Strength: 6; Attack Strength: 0; Gear Type: HEAD



2. Gear Name: Nano-Handblade, Repulsor Gun -- Defense Strength: 3; Attack Strength: 12; Gear Type: HAND

3. Gear Name: Heat, Energy Shield -- Defense Strength: 7; Attack Strength: 5; Gear Type: HAND

4. Gear Name: Repulsor, Foot Clamps -- Defense Strength: 3; Attack Strength: 14; Gear Type: FOOT

5. Gear Name: Battering, Flight Thrusters -- Defense Strength: 8; Attack Strength: 9; Gear Type: FOOT

Thanos stats:

Thanos has Base Attack Points: 13 and Base Defense Points: 10.



Thanos's Arsenal:

1. Gear Name: Asgardian, Magneto's Helmet -- Defense Strength: 11; Attack Strength: 0; Gear Type: HEAD

2. Gear Name: Infinity, Power Stone -- Defense Strength: 10; Attack Strength: 17; Gear Type: HAND

3. Gear Name: Loki's, Tesseract -- Defense Strength: 9; Attack Strength: 4; Gear Type: HAND



4. Gear Name: Battering, Battle Stomper -- Defense Strength: 6; Attack Strength: 10; Gear Type: FOOT

5. Gear Name: Space, SHIELD's portal -- Defense Strength: 7; Attack Strength: 6; Gear Type: FOOT



The battle ends with Tony Stark having 15 units of damage and Thanos having -4 units of damage.



**Thanos, Won the battle!**

**Demo 2:**

**Input Specification:**

*/\*\*  
 \* This demo method is written to run a game where the characters, gears are passed by the user  
 \* who is willing to play the duel with their choice of characters and gears. Here the user has to  
 \* define all the gears (max of 10 gears for each player to choose from) before the battle is  
 \* instantiated and these character and gear objects are passed as arguments (Character 1,  
 \* Character 2, Gear List 1, Gear List 2).  
 \*  
 \** ***@throws*** *Exception if more than ten gears are provided in the battlefield  
 \*/*public static void demo2() throws Exception {  
  
 ArrayList<Gear> gearList1 = new ArrayList<>();  
 gearList1.add(new HandGear(new HitPoint(5, 2), "Repulsor Gun"));  
 gearList1.add(new HeadGear(new HitPoint(0, 5), "Stark Helmet"));  
 gearList1.add(new FootGear(new HitPoint(3, 4), "Flight Thrusters"));  
 gearList1.add(new HandGear(new HitPoint(4, 0), "Heat Seeking Missiles"));  
 gearList1.add(new FootGear(new HitPoint(6, 3), "Foot Clamps"));  
 gearList1.add(new HandGear(new HitPoint(7, 1), "Nano-Handblade"));  
 gearList1.add(new FootGear(new HitPoint(6, 4), "Battering Rams"));  
 gearList1.add(new HandGear(new HitPoint(1, 7), "Energy Shield"));  
 gearList1.add(new HeadGear(new HitPoint(0, 1), "Stark Glasses"));  
 gearList1.add(new FootGear(new HitPoint(8, 0), "Repulsor Gun"));  
  
 ArrayList<Gear> gearList2 = new ArrayList<>();  
 gearList2.add(new HandGear(new HitPoint(10, 10), "Infinity Gauntlet"));  
 gearList2.add(new HeadGear(new HitPoint(0, 6), "Asgardian Helmet"));  
 gearList2.add(new FootGear(new HitPoint(4, 2), "Battle Stomper"));  
 gearList2.add(new HandGear(new HitPoint(3, 3), "Loki's Sceptre"));  
 gearList2.add(new FootGear(new HitPoint(2, 6), "SHIELD's portal"));  
 gearList2.add(new HandGear(new HitPoint(1, 6), "Tesseract"));  
 gearList2.add(new FootGear(new HitPoint(6, 4), "Battering Rams"));  
 gearList2.add(new HandGear(new HitPoint(7, 0), "Power Stone"));  
 gearList2.add(new HeadGear(new HitPoint(0, 5), "Magneto's Helmet"));  
 gearList2.add(new FootGear(new HitPoint(4, 1), "Space diver"));  
  
 Character char1 = new Character(new HitPoint(9, 8), CharacterType.*TECH*, "Tony Stark");  
  
 Character char2 = new Character(new HitPoint(13, 10), CharacterType.*SUPER\_BEING*, "Thanos");  
  
 Battle endGame = new Battle(char1, char2, gearList1, gearList2);  
 try {  
 endGame.prepareRound();  
 } catch (Exception e) {  
 System.*out*.println("Error in preparing Game: " + e);  
 }  
 endGame.playGame();  
  
 System.*out*.println(endGame.toString());  
}

**Output: (copy pasted from the IntelliJ output)**

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Before Sorting:



1. Gear Name: Repulsor Gun -- Defense Strength: 2; Attack Strength: 5; Gear Type: HAND

2. Gear Name: Stark Helmet -- Defense Strength: 5; Attack Strength: 0; Gear Type: HEAD

3. Gear Name: Flight Thrusters -- Defense Strength: 4; Attack Strength: 3; Gear Type: FOOT

4. Gear Name: Heat Seeking Missiles -- Defense Strength: 0; Attack Strength: 4; Gear Type: HAND

5. Gear Name: Foot Clamps -- Defense Strength: 3; Attack Strength: 6; Gear Type: FOOT

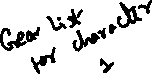
6. Gear Name: Nano-Handblade -- Defense Strength: 1; Attack Strength: 7; Gear Type: HAND

7. Gear Name: Battering Rams -- Defense Strength: 4; Attack Strength: 6; Gear Type: FOOT

8. Gear Name: Energy Shield -- Defense Strength: 7; Attack Strength: 1; Gear Type: HAND

9. Gear Name: Stark Glasses -- Defense Strength: 1; Attack Strength: 0; Gear Type: HEAD

10. Gear Name: Repulsor Gun -- Defense Strength: 0; Attack Strength: 8; Gear Type: FOOT



After Sorting:

1. Gear Name: Stark Helmet -- Defense Strength: 5; Attack Strength: 0; Gear Type: HEAD

2. Gear Name: Stark Glasses -- Defense Strength: 1; Attack Strength: 0; Gear Type: HEAD

3. Gear Name: Nano-Handblade -- Defense Strength: 1; Attack Strength: 7; Gear Type: HAND

4. Gear Name: Repulsor Gun -- Defense Strength: 2; Attack Strength: 5; Gear Type: HAND

5. Gear Name: Heat Seeking Missiles -- Defense Strength: 0; Attack Strength: 4; Gear Type: HAND

6. Gear Name: Energy Shield -- Defense Strength: 7; Attack Strength: 1; Gear Type: HAND

7. Gear Name: Repulsor Gun -- Defense Strength: 0; Attack Strength: 8; Gear Type: FOOT

8. Gear Name: Foot Clamps -- Defense Strength: 3; Attack Strength: 6; Gear Type: FOOT

9. Gear Name: Battering Rams -- Defense Strength: 4; Attack Strength: 6; Gear Type: FOOT

10. Gear Name: Flight Thrusters -- Defense Strength: 4; Attack Strength: 3; Gear Type: FOOT



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Before Sorting:



1. Gear Name: Infinity Gauntlet -- Defense Strength: 10; Attack Strength: 10; Gear Type: HAND

2. Gear Name: Asgardian Helmet -- Defense Strength: 6; Attack Strength: 0; Gear Type: HEAD

3. Gear Name: Battle Stomper -- Defense Strength: 2; Attack Strength: 4; Gear Type: FOOT

4. Gear Name: Loki's Sceptre -- Defense Strength: 3; Attack Strength: 3; Gear Type: HAND

5. Gear Name: SHIELD's portal -- Defense Strength: 6; Attack Strength: 2; Gear Type: FOOT

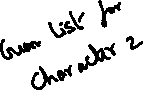
6. Gear Name: Tesseract -- Defense Strength: 6; Attack Strength: 1; Gear Type: HAND

7. Gear Name: Battering Rams -- Defense Strength: 4; Attack Strength: 6; Gear Type: FOOT

8. Gear Name: Power Stone -- Defense Strength: 0; Attack Strength: 7; Gear Type: HAND

9. Gear Name: Magneto's Helmet -- Defense Strength: 5; Attack Strength: 0; Gear Type: HEAD

10. Gear Name: Space diver -- Defense Strength: 1; Attack Strength: 4; Gear Type: FOOT



After Sorting:

1. Gear Name: Asgardian Helmet -- Defense Strength: 6; Attack Strength: 0; Gear Type: HEAD

2. Gear Name: Magneto's Helmet -- Defense Strength: 5; Attack Strength: 0; Gear Type: HEAD

3. Gear Name: Infinity Gauntlet -- Defense Strength: 10; Attack Strength: 10; Gear Type: HAND

4. Gear Name: Power Stone -- Defense Strength: 0; Attack Strength: 7; Gear Type: HAND

5. Gear Name: Loki's Sceptre -- Defense Strength: 3; Attack Strength: 3; Gear Type: HAND

6. Gear Name: Tesseract -- Defense Strength: 6; Attack Strength: 1; Gear Type: HAND

7. Gear Name: Battering Rams -- Defense Strength: 4; Attack Strength: 6; Gear Type: FOOT

8. Gear Name: Battle Stomper -- Defense Strength: 2; Attack Strength: 4; Gear Type: FOOT

9. Gear Name: Space diver -- Defense Strength: 1; Attack Strength: 4; Gear Type: FOOT

10. Gear Name: SHIELD's portal -- Defense Strength: 6; Attack Strength: 2; Gear Type: FOOT



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Tony Stark has 49 and 35 defense strength.



Thanos has 50 and 53 defense strength.

Tony Stark stats:

Tony Stark has Base Attack Points: 9 and Base Defense Points: 8.

Tony Stark's Arsenal:

1. Gear Name: Stark, Stark Glasses -- Defense Strength: 6; Attack Strength: 0; Gear Type: HEAD

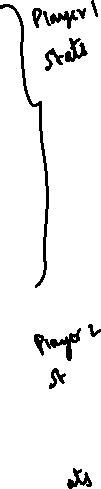
2. Gear Name: Nano-Handblade, Repulsor Gun -- Defense Strength: 3; Attack Strength: 12; Gear Type: HAND

3. Gear Name: Heat, Energy Shield -- Defense Strength: 7; Attack Strength: 5; Gear Type: HAND

4. Gear Name: Repulsor, Foot Clamps -- Defense Strength: 3; Attack Strength: 14; Gear Type: FOOT

5. Gear Name: Battering, Flight Thrusters -- Defense Strength: 8; Attack Strength: 9; Gear Type: FOOT

Thanos stats:



Thanos has Base Attack Points: 13 and Base Defense Points: 10.

Thanos's Arsenal:

1. Gear Name: Asgardian, Magneto's Helmet -- Defense Strength: 11; Attack Strength: 0; Gear Type: HEAD



2. Gear Name: Infinity, Power Stone -- Defense Strength: 10; Attack Strength: 17; Gear Type: HAND

3. Gear Name: Loki's, Tesseract -- Defense Strength: 9; Attack Strength: 4; Gear Type: HAND

4. Gear Name: Battering, Battle Stomper -- Defense Strength: 6; Attack Strength: 10; Gear Type: FOOT

5. Gear Name: Space, SHIELD's portal -- Defense Strength: 7; Attack Strength: 6; Gear Type: FOOT

The battle ends with Tony Stark having 15 units of damage and Thanos having -4 units of damage.



**Thanos, Won the battle!**

**Demo 3:**

**Input Specification:**

*/\*\*  
 \* This demo method is similar to demo2 and is written to run a game where the characters, gears  
 \* are passed by the user who is willing to play the duel with their choice of characters and  
 \* gears. The only difference from previous demo is that the user can provide/add one gear at a  
 \* time to the battlefield so that characters can equip them and upgrade themselves. Here the user  
 \* has to define the gears (max of 10 gears can be added for each player to choose from) before  
 \* the battle is instantiated and these character and empty list of gear objects are passed as  
 \* arguments (Character 1, Character 2, Gear List 1, Gear List 2). Then the user can add gears to  
 \* help Character 1 by using the method addGearToList1() and Character 2 by using the method  
 \* addGearToList2().  
 \*  
 \** ***@throws*** *Exception if more than ten gears are provided in the battlefield  
 \*/*public static void demo3() throws Exception {  
 Character char1 = new Character(new HitPoint(9, 8), CharacterType.*TECH*, "Tony Stark");  
  
 Character char2 = new Character(new HitPoint(13, 10), CharacterType.*SUPER\_BEING*, "Thanos");  
  
 ArrayList<Gear> gearList1 = new ArrayList<>();  
  
 ArrayList<Gear> gearList2 = new ArrayList<>();  
  
 Battle endGame = new Battle(char1, char2, gearList1, gearList2);  
 endGame.addGearToList1(new HandGear(new HitPoint(5, 2), "Repulsor Gun"));  
 try {  
 endGame.prepareRound();  
 } catch (Exception e) {  
 System.*out*.println("Error in preparing Game: " + e);  
 }  
 endGame.playGame();  
  
 System.*out*.println(endGame.toString());  
}

**Output: (copy pasted from the IntelliJ output)**

-------------------------------------------------------------------------------------------------------------------------------

Before Sorting:



1. Gear Name: Repulsor Gun -- Defense Strength: 2; Attack Strength: 5; Gear Type: HAND

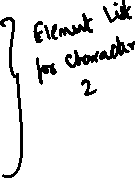


After Sorting:

1. Gear Name: Repulsor Gun -- Defense Strength: 2; Attack Strength: 5; Gear Type: HAND

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Before Sorting:



After Sorting:

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Tony Stark has 14 and 10 defense strength.



Thanos has 13 and 10 defense strength.

Tony Stark stats:

Tony Stark has Base Attack Points: 9 and Base Defense Points: 8.



Tony Stark's Arsenal:



1. Gear Name: Repulsor Gun -- Defense Strength: 2; Attack Strength: 5; Gear Type: HAND

Thanos stats:

Thanos has Base Attack Points: 13 and Base Defense Points: 10.



Thanos's Arsenal:



The battle ends with Tony Stark having 3 units of damage and Thanos having 4 units of damage.



**Tony Stark, Won the battle!**