Tank Trouble v2.01

1. TankTrouble.class

*… is used by: *All the classes*
*.. uses   : *Everything*

→ TankTrouble.class is the main class: it uses all the classes, that will be explained, and brings them together to initialize, end and continuously update the game. In many cases it's the medium by which public objects, that are a part of its instance field, can be called by other objects to make the necessary interactions.

2. Map.class
*… is used by:
  - TankTrouble.class
  - Tank.class
  - Scoring.class
  - Physics.class
  - Laser.class

→ Map.class generates a maze (map) before the game starts. When it is called by TankTrouble.class, it generates a 7x7 maze and then displays this maze 100x bigger than its actual size. Since "Maze Generation Algorithm" is used in the map designing process, each map is different than the other.

3. Tank.class
*… is used by: *All the classes* {except Vector2D.class}
*.. uses   :
  - TankTrouble.class
      Refers to the public variable map
  - Map.class
      Gets walls and origin coordinates to randomize initial Tank position
  - Physics.class
      Checks if the tank intersects with the walls to stop its motion

→ Tank class

4. **Menu.class**
     *… is used by:
          - TankTrouble.class
          - MouseHandler.class
          -

→ Menu.class is designed for the menu. It interacts with TankTrouble and MouseHandler classes, and awaits user to select one of the three options: "PLAY", "CREDITS" and "EXIT".

5. **Scoring.class**
     *… is used by:
          - TankTrouble.class
          - Tank.class
          - Map.class
→ Scoring class records the score of each player.

6. **Credits.class**
     *… is used by:
          - TankTrouble.class
          - MouseHandler.class
→ Credits class displays the credits page, and awaits user to return to the menu.

7. **KeyboardHandler.class**
     *… is used by:
          - TankTrouble.class
→ KeyboardHandler class handles the input received by the keyboard.

8. **MouseHandler.class**
     *… is used by:
          - TankTrouble.class
          - Menu.class
→ MouseHandler class handles the input received by the mouse.

9. **AllBullets.class**
     *… is used by:
          -TankTrouble.class
               Keeps track of all the bullets in the game

-Most Bullet subclasses

Adds or removes objects with specific usage to the class

*.. uses   :

-Bullet.class

Forms Bullet objects for insertion to the game

-TankTrouble.class

Refers to the public variables player1, player2 and map

-Tank.class

Gets Tank shape and checks intersections with the bullet

-Map.class

Gets Wall shapes, checks intersections and bounces bullet

→ AllBullets.class keeps account of all the Bullet objects in the game. It holds all Bullet (or Bullet subclass) objects and inserts, erases and calls the update methods of the Bullet objects as the game is updated.

10. Bullet.class

*… is used by:

- AllBullets.class

Holds references to all bullet objects (and its childs)

Inserts bullets

Erases bullets

Updates bullets

Renders bullets (Displays on the screen)

- TankTrouble.class

Calls the methods under AllBullets to:

Create bullets when "M" or "Q" is pressed

Update and render all bullets at each step

- Physics.class

Checks if the bullet hits a tank or a wall

If a wall is hit:

Changes bullet velocity accordingly to bounce the bullet

*.. uses   :

-TankTrouble.class

To make references to objects under the TankTrouble object

-Tank.class

To determine the initial position with respect to the tank its fired by

*.. parent of   :

-Bomb.class

-MachineGun.class

-Mine.class
                    -Laser.class
                    -GunAmmo.class
                    -Shrapnel.class
                    -TrollRocket.class
→ Bullet.class is the fundamental Bullet type that is inherited by all the other types of bullet. It has properties like position, velocity and shape that enable it to update interact with walls and tanks.

  11. **Bomb.class**
       *... child of Bullet.class
       *… is used by:
                    -TankTrouble (in addition to that of Bullet)
                          When "M/Q" is pressed for the second time:
                                Triggers bomb explosion, modifying a boolean value
       *.. uses   :
                    -Shrapnel.class
                          Creates Shrapnel objects after the explosion
                    -Vector2D.class
                          Makes it easy to form velocity vectors of Shrapnels
                    -TankTrouble.class
                          Refers to the public variable b of type AllBullets
                    -AllBullets.class
                          Inserts the Shrapnel objects to the LinkedList of all other bullets
→ Bomb.class is used to fire a bomb that will explode either at the end of its limited life span or when the shooting key is pressed for the second time. Upon explosion it'll send off many smaller Shrapnel objects that stop moving upon collision with the wall.
  12. **MachineGun.class**
       *... child of Bullet.class
       *… is used by:
                    -TankTrouble (in addition to that of Bullet)
                          When "M/Q" is released:
                                Removes the MachineGun object
       *.. uses   :
                    -GunAmmo.class
                          Creates GunAmmo objects after 0.5 sec is elapsed
                    -Vector2D.class
                          Calculates randomized velocities from the direction of the bullet
                    -TankTrouble.class

Refers to the public variable b of type AllBullets
-AllBullets.class
Inserts the GunAmmo objects to the LinkedList of all other bullets
→ MachineGun.class is used to fire many GunAmmo objects during the time interval from 0.5 sec after the shooting key is pressed until the end of its life-span or when the shooting key is released whichever is sooner.

13. Mine.class
*... child of Bullet.class
*… is used by:
-Physics.class
If it isn't active yet:
Skips looking for intersection with tanks (i.e. cannot explode)
*.. uses   :
(Nothing in addition to Bullet.class)
→ Mine.class activates after a second and detonates whenever a tank touches it. It has a comparatively longer life-span.

14. Laser.class
*… is used by:
-TankTrouble (in addition to that of Bullet)
When "M/Q" is pressed for the first time:
Shows the shortened laser path
When "M/Q" is pressed for the second time:
Shoots the laser along the path
-Physics:
Skips looking for wallBullet interactions (which is done elseway)
*.. uses   :
-TankTrouble.class
Refers to the public variables player1, player2 and map
-Tank.class
Gets Tank shape and checks intersections with the Laser
-Map.class
Gets Wall shapes, checks intersections and reflects laser path
→ Laser.class is used to show a short laser trajectory when the shooting key is pressed for the first time and shoots a laser for 0.5 seconds when the shooting key is pressed for the second time. The laser reflects off the walls and ends when it goes a certain distance or hit the tank.

15. Shrapnel.class

*... child of Bullet.class

*… is used by:

-Bomb.class

Creates many Shrapnel objects

-Physics.class

Makes the velocity 0 upon intersection with the wall

*.. uses   :

(Nothing in addition to Bullet.class)

→ Shrapnel.class is used to create objects that is similar to its superclass, but that stops when a wall is hit and starts from specified coordinates instead of adjusting itself to a tank.

16. GunAmmo.class

*... child of Bullet.class

*… is used by:

-MachineGun.class

Creates many GunAmmo objects

*.. uses   :

(Nothing in addition to Bullet.class)

→ GunAmmo.class is the same as its superclass but starts from specified coordinates instead.

17. TrollRocket.class

*... child of Bullet.class

*… is used by:

(Nothing in addition to Bullet.class)

*.. uses   :

(Nothing in addition to Bullet.class)

→ TrollRocket.class is an experimental weapon of great potential.

18. Rocket.class and HomingMissile.class

*... child of Bullet.class

*… is used by:

(Nothing in addition to Bullet.class)

*.. uses   :

(Nothing in addition to Bullet.class)

These classes were originally created for the rocket weapon, but since they had some technical problems, we did not use them in our program.

19. Vector2D.class

*… is used by:

Most Bullet subclasses

Vector2D.class is used by many bullet types to make it easier to make calculations concerning velocity and position vectors.