

* AliensMovement:

definition: charge on the movement of the aliens and arrange them in formation. accept list of aliens.

functions: - moveAll: move all the aliens, move x by dt, check if the movement is in the gui, if not - the aliens need to move by y and dt.

- time passed: call to moveAll.
- drawOn: don't do nothing.
- addToGame: add this to the gameLevel object.
- lastColumn: order the list of the aliens into columns, return the last column of the aliens.
- backToStart: remove all aliens to the start position and initialize their speed.
- shoot: make in random position shot and returns it.
- makeListOfLists: order the aliens in list of lists.
- getToShield: check if the aliens get to the shield.
- removeAliens: remove all the aliens from the list.

* Alien:

definition: charge on the alien type.

functions: - getRectStart: get the start rect of the alien - the rect into the position when the game begins.

- removeFromGame - remove the alien from the game.

* Shot:

definition: charge of the shot. make a ball and tell if the shot is from alien or from paddle.

functions: shotFromAlien - return boolean value.

* SpaceInvaders:

definition: charge to make gamelevel type of space invaders.

functions: - all of the functions of gameLevel.

- aliens: make aliens list and set each alien's position, and set their image.
- blocksShield: make the shield blocks.
- numberOfBlocksToRemove: 50, the number of the aliens.
- shieldStart: return the start of the shield.

how i implemented:

* aliens formation: in SpaceInvaders i created list of aliens (in the function aliens) then i ordered the aliens in formation of list of lists in the class AliensMovement (in the function makeListOfLists) - each item in the list is column.

* the shields: in SpaceInvaders i created loop inside loop. inside the second loop i created small blocks, each block is 5X5. then i checked if the i equals to specific value - if true, the value of i "jump" 80 pixels ahead.

* shots by aliens: i created shot object in AliensMovement in the function shoot. then in GameLevel i created a double value "dtShootAlien", for the dt value. in doOneFrame i decrease the value if dtShootAlien with dt. then i checked if the dtShootPaddle is <= then 0, if true - make shoot and change the dt to 0.35.

* shots by player: in GameLevel i created a double value "dtShootPaddle", for the dt value. in doOneFrame i decrease the value if dtShootPaddle with dt. if the user pressed space key, if dtShootPaddle <= 0 if true - make ball and change the dt to 0.35.

