GAME START

background image

background width

background height

tank-image

tank y coord.

GAME START

GAME ELEMENTS AND MOVEMENT

missile y coord.

missile velocity

missile x coord.

missile image

enemy y coord.

enemy x coord.

Enemies bounce off sides, switching x-velocity

enemy-image

enemy x + y velocity – 45 degree angle

tank-velocity

tank x coord.

tank changes direction on left / right arrow press

GAME ELEMENTS AND MOVEMENT

GAMEPLAY

Missiles that leave the top of the scene should be removed for efficiency

remove

Enemies spawn at random intervals at the top of the scene, at a random x-coordinate, moving down-left or down-right .

When a missile collides with an enemy, both the enemy and missile should be removed

remove

If an enemy reaches the bottom of the scene, game is over

Launch a missile from the tank when spacebar is pressed

GAMEPLAY

Constant

background scene width
background scene height
background scene image (empty-scene)

tank y coordinate (above bottom of scene)
tank image
tank x speed (left-right speed of tank)

missile velocity (vertical speed of missile)
missile image

enemy x/y speed (equal for 45 degree)
enemy image
enemy spawn probability
- note: some enemy properties could be changing, e.g. spawn probability or speed, in order to make the game gradually harder over time.
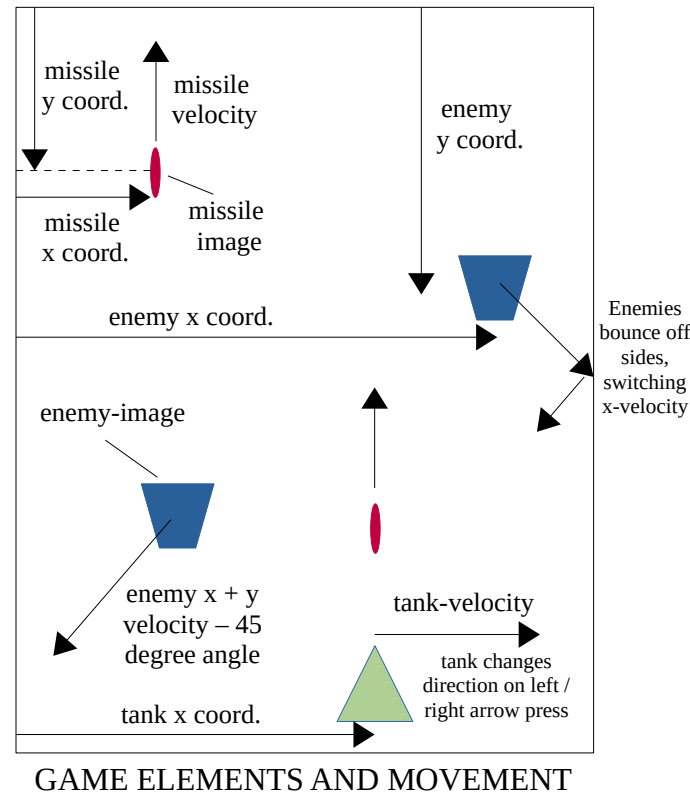
Changing

x coordinate of tank
x direction (velocity) of tank

number of missiles on screen each with:
- x-coordinate (fixed when fired)
- y-coordinate
(missiles are removed when they move outside the top edge of the background)

number of enemies on screen, each with:
- x-velocity
(enemies can move left or right, will change direction when they reach the left or right edge)
- x-coordinate
- y-coordinate
(when enemies reach the bottom edge, game is over)

(when an enemy collides with a missile, the enemy and missile are both removed from the game)
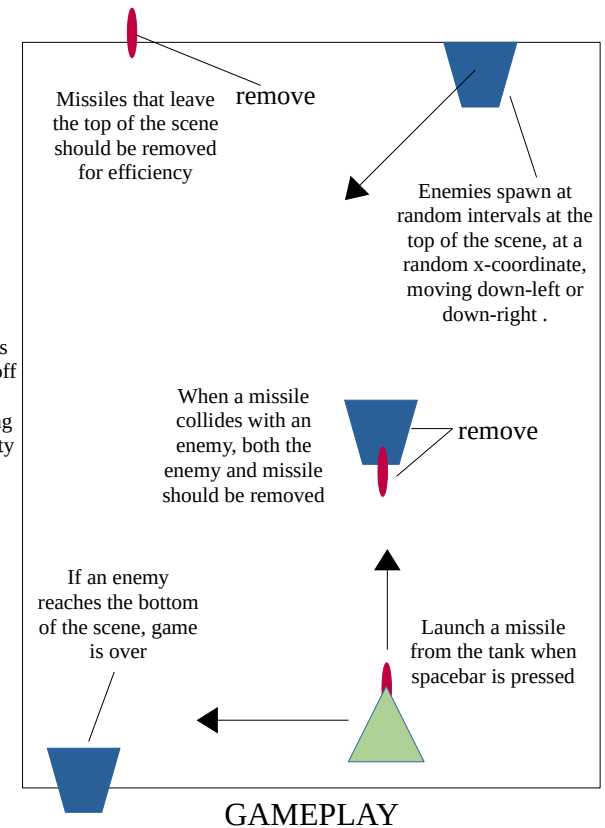
Big-bang options

on-tick
- detect collisions between enemies and missiles, removing the enemy and missile that collide
- move tank
- move enemies, spawn new enemies
- move missiles (remove missiles that leave screen)

to-draw
- render tank, missiles and enemies on background

stop-when
 - game stops when enemy reaches bottom of scene

on-key
- create missile at current tank x/y location when spacebar pressed
- tank x-velocity switches when left / right arrow pressed