Mohammad Amin Rajaee
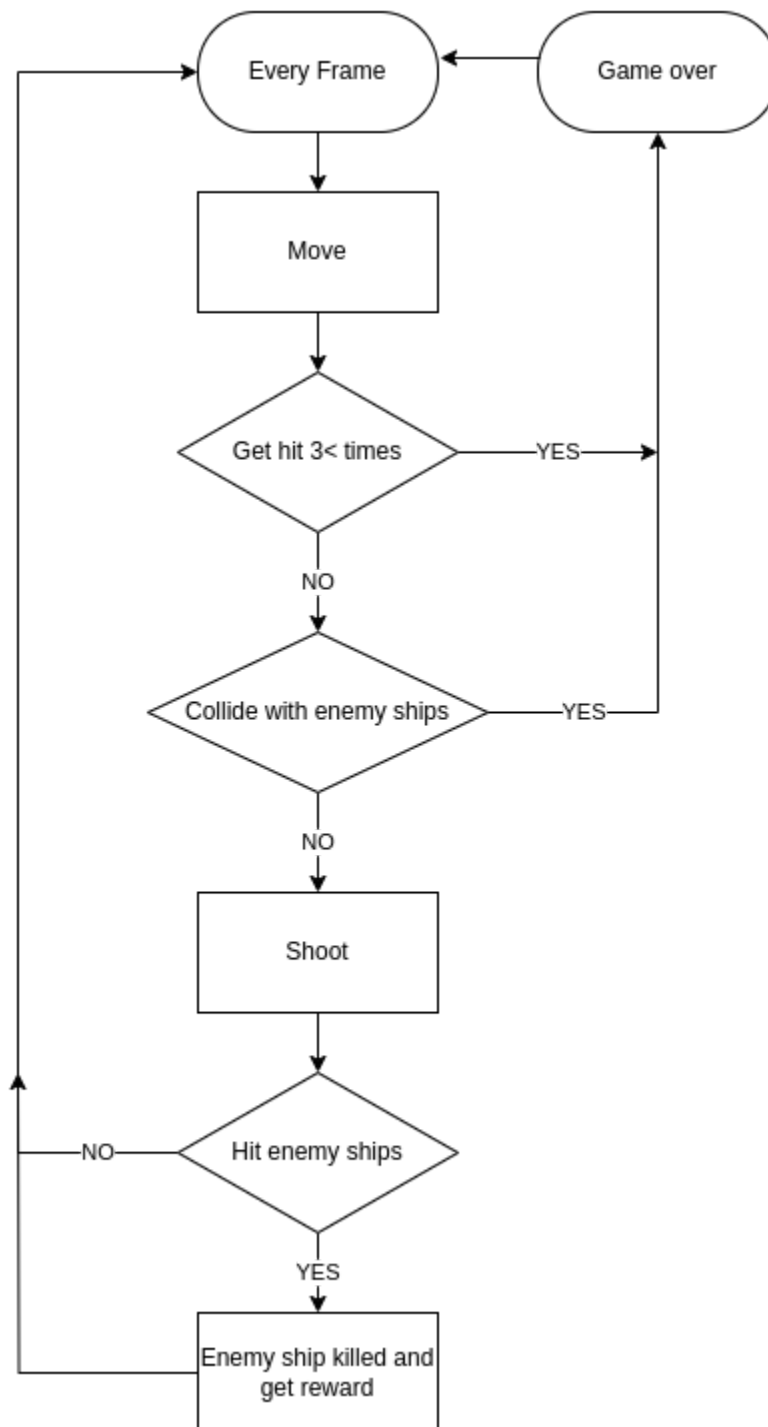
Objects:

1. Player ship
2. Ordinary enemy ship
3. Boss enemy ship
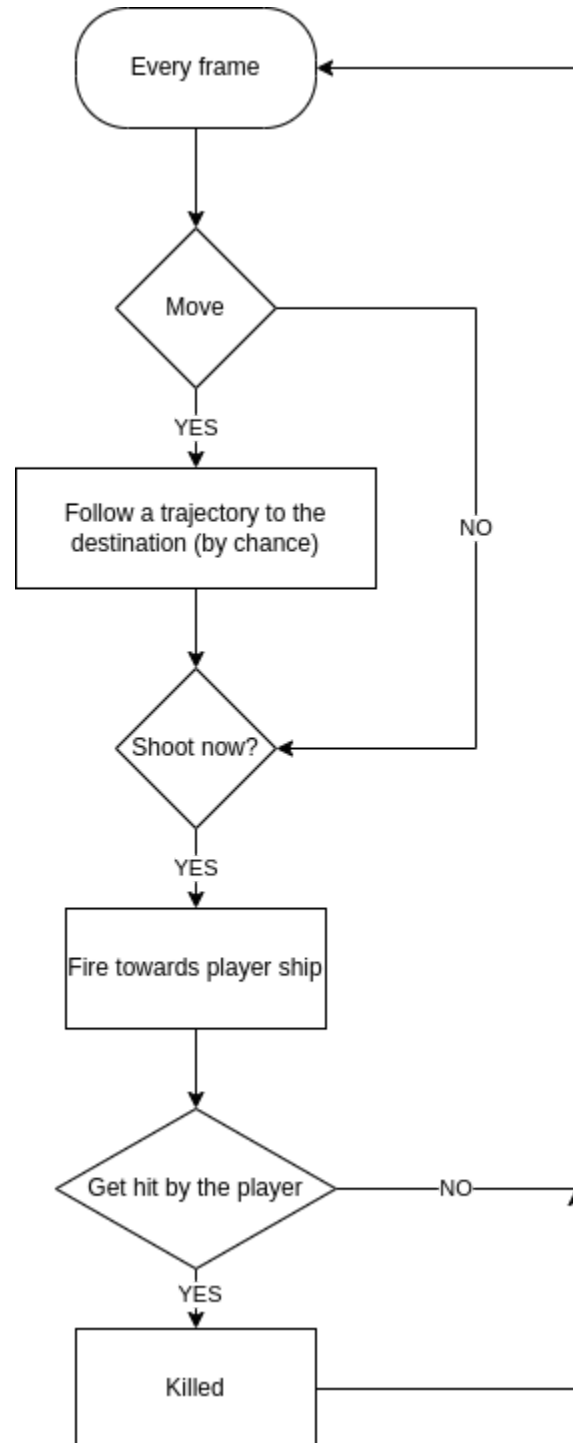
Action lists:

1. Player ship:
   - Movements (left, right, back, forward)
   - Shoot
   - Die, if get shot 3 times or collide with enemy objects
2. Ordinary enemy ship
   - Movements(left, right, back, forward, rotate)
   - Shoot
   - Die, if get shot by the player
3. Boss enemy ship
   - Shoot(light strike, heavy strike)
   - Die if get shot 50 times by the player

Player Flowchart

```
                    ┌──────────────┐        ┌──────────────┐
          ┌────────▶│  Every Frame │◀───────│   Game over  │
          │         └──────────────┘        └──────────────┘
          │                │                        ▲
          │                ▼                         │
          │         ┌──────────────┐                │
          │         │     Move     │                │
          │         └──────────────┘                │
          │                │                         │
          │                ▼                         │
          │           ╱──────────╲                   │
          │          ╱  Get hit   ╲                  │
          │         ╱  3< times    ╲──────YES────────┤
          │         ╲              ╱                  │
          │          ╲            ╱                   │
          │           ╲──────────╱                    │
          │                │                          │
          │                NO                         │
          │                ▼                          │
          │           ╱──────────╲                    │
          │          ╱ Collide with╲                  │
          │         ╱  enemy ships  ╲──────YES─────────┘
          │         ╲               ╱
          │          ╲             ╱
          │           ╲───────────╱
          │                │
          │                NO
          │                ▼
          │         ┌──────────────┐
          │         │    Shoot     │
          │         └──────────────┘
          │                │
          │                ▼
          │           ╱──────────╲
          │    NO    ╱ Hit enemy  ╲
          ├─────────╱    ships     ╲
          │         ╲              ╱
          │          ╲            ╱
          │           ╲──────────╱
          │                │
          │               YES
          │                ▼
          │       ┌──────────────────┐
          └───────│Enemy ship killed and│
                  │    get reward     │
                  └──────────────────┘
```

Ordinary Enemy Flowchart

Every frame

Move

YES

Follow a trajectory to the
destination (by chance)

NO

Shoot now?

YES

Fire towards player ship

Get hit by the player

NO

YES

Killed

Boss Enemy Flowchart

```
                          ┌──────────────────┐
          ┌───────────────│   Every frame    │◄──────────────┐
          │               └──────────────────┘               │
          │                        │                          │
          │                        ▼                          │
          │                  ╱─────────────╲                  │
          │                 ╱  Shoot heavy? ╲──NO─┐           │
          │                 ╲               ╱     │           │
          │                  ╲─────────────╱      │           │
          │                        │              │           │
          │                       YES             │           │
          │                        │              │           │
          │               ┌──────────────────┐   │           │
          │               │ Fire heavy bullets│   │           │
          │               └──────────────────┘   │           │
          │                        │              │           │
          │                        ▼              │           │
          │  ┌──────────┐   ╱─────────────────╲   │           │
          │  │ Game over │◄─YES─│Player ship get hit?│         │
          │  └──────────┘   ╲─────────────────╱   │           │
          │      ▲                 │              │           │
          │      │                NO              │           │
          │      │                 │              │           │
          │      │          ┌──────────────────┐ │           │
          │      │          │  Keep shooting   │◄┘           │
          │      │          └──────────────────┘             │
          │      │                 │                          │
          │      │                 ▼                          │
          │      │   ╱───────────────────────────────────╲    │
          └─YES──┴──│ Get hit by the player ship 50 times? │──NO┘
                    ╲───────────────────────────────────╱
```