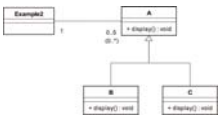
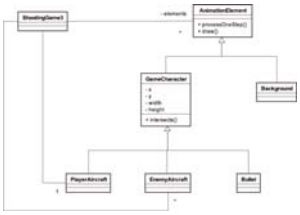
シューティングゲームへ応用

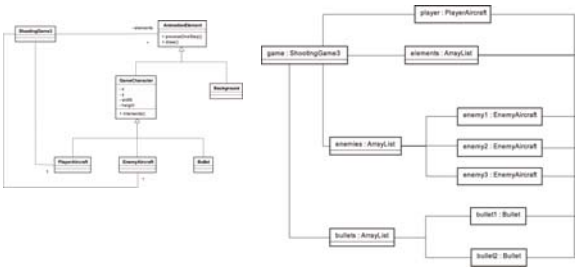
基本形



応用例

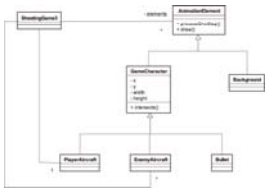


オブジェクト図



描画のプログラムが簡単

- private void processOneStep(BCanvas canvas){
  for(int i=0; i < elementSize; i++){
  elements[i].processOneStep(canvas);
  }
  }



あたり判定のプログラムが簡単

- 今までの方法
  - intersectsPlayer(),intersectsEnemy(), intersectsBullet()を別々に作っていた
  - クラスが増えるたびに
- ポリモーフィズムを使えば
  - intersects(ShootingCharacter x)
  - で，（サブクラスなら）何が来ても，あたり判定が出来る

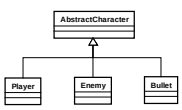
簡略化イメージ図

Playerクラスにあったメソッド

```
public boolean intersects(Enemy enemy) {
  int player_leftX = this.getX();
  int player_rightX = this.getX() + this.getWidth();
  int enemy_leftX = enemy.getX();
  int enemy_rightX = enemy.getX() + enemy.getWidth();
  int player_topY = this.getY();
  int player_bottomY = this.getY() + this.getHeight();
  int enemy_topY = enemy.getY();
  int enemy_bottomY = enemy.getY() + enemy.getHeight();
 return (enemy_leftX < player_rightX && enemy_rightX > player_leftX
  && enemy_topY < player_bottomY && enemy_bottomY > player_topY);
}
```

```
public boolean intersects(Bullet bullet) {
  int player_leftX = this.getX();
  int player_rightX = this.getX() + this.getWidth();
  int bullet_leftX = bullet.getX();
  int bullet_rightX = bullet.getX() + bullet.getWidth();
  int player_topY = this.getY();
  int player_bottomY = this.getY() + this.getHeight();
  int bullet_topY = bullet.getY();
  int bullet_bottomY = bullet.getY() + bullet.getHeight();
 return (bullet_leftX < player_rightX && bullet_rightX > player_leftX
  && bullet_topY < player_bottomY && bullet_bottomY > player_topY);
}
```

```
public boolean intersects(AbstractCharacter other) {
  int player_leftX = this.getX();
  int player_rightX = this.getX() + this.getWidth();
  int other_leftX = other.getX();
  int other_rightX = other.getX() + other.getWidth();
  int player_topY = this.getY();
  int player_bottomY = this.getY() + this.getHeight();
  int other_topY = other.getY();
  int other_bottomY = other.getY() + other.getHeight();
 return (other_leftX < player_rightX && other_rightX > player_leftX
  && other_topY < player_bottomY && other_bottomY > player_topY);
}
```



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