

Озмаден Дениз, БПИ-196

Домашнее задание 5

Результаты первого тестирования с помощью Pitest:

Pit Test Coverage Report

Package Summary

com.ozmaden

Number of Classes	Line Coverage	Mutation Coverage	Test Strength
1	100% <div><div>34/34</div></div>	76% <div><div>29/38</div></div>	76% <div><div>29/38</div></div>

Breakdown by Class

Name	Line Coverage	Mutation Coverage	Test Strength
FixedAccount.java	100% <div><div>34/34</div></div>	76% <div><div>29/38</div></div>	76% <div><div>29/38</div></div>

9 мутантов ВЫЖИЛО.

```
> org.pitest.mutationtest.engine.gregor.mutators.returns.PrimitiveReturnsMutator
>> Generated 2 Killed 1 (50%)
> KILLED 1 SURVIVED 1 TIMED_OUT 0 NON_VIABLE 0
> MEMORY_ERROR 0 NOT_STARTED 0 STARTED 0 RUN_ERROR 0
> NO_COVERAGE 0
-----

> org.pitest.mutationtest.engine.gregor.mutators.MathMutator
>> Generated 3 Killed 2 (67%)
> KILLED 2 SURVIVED 1 TIMED_OUT 0 NON_VIABLE 0
> MEMORY_ERROR 0 NOT_STARTED 0 STARTED 0 RUN_ERROR 0
> NO_COVERAGE 0
=====
org.pitest.mutationtest.engine.gregor.mutators ConditionalsBoundaryMutator
Generated 8 Killed 1 (13%)
KILLED 1 SURVIVED 7 TIMED_OUT 0 NON_VIABLE 0
MEMORY_ERROR 0 NOT_STARTED 0 STARTED 0 RUN_ERROR 0
NO_COVERAGE 0
```

Это 1 мутант с PrimitiveReturnsMutator, 1 мутант с MathMutator, и 7 мутантов с ConditionalsBoundaryMutator. Все остальные 29 мутантов были убиты.

M1. getBalance()

```
public int getBalance() {  
    return balance;  
}
```

- 1) return balance;
- 2) return 0;
- 3) Выжил.

M2. getMaxCredit()

```
public int getMaxCredit() {  
    return mc;  
}
```

- 1) return mc;
- 2) return 0;
- 3) Убит.
- 4) setMaxCredit_accountNotBlocked(),
 setMaxCredit_accountNotBlocked_MaxBound(),
 setMaxCredit_accountBlocked_SmallerThanBound(),

M3. isBlocked()

```
public boolean isBlocked() {  
    return blocked;  
}
```

- 1) return mc;
- 2) return 0;
- 3) Убит.
- 4) balance_not_blocked_withdraw_max(),
 withdraw_blocked_account(),
 setMaxCredit_accountNotBlocked(),
 setMaxCredit_accountNotBlocked_MaxBound(),
 setMaxCredit_accountBlocked_SmallerThanBound(),
 unblock()

M4. unblock()

```
public boolean unblock() {  
    2 if (balance < mc) {  
    1 return false;  
    } else {  
        blocked = false;  
    }  
    1 return true;  
}
```

- 1) If (balance < mc);
- 2) If (balance <= mc);
- 3) Выжил.

M5. setMaxCredit(int mc)

```
public boolean setMaxCredit(int mc) {  
    1 if (isBlocked()) {  
    4 if (mc < -bound || mc > bound) {  
    1 return false;  
    }  
    this.mc = mc;  
    1 return true;  
    1 } else return false;  
}
```

- 1) If (mc < -bound || mc bound > bound);
- 2) If (mc <= -bound && mc bound >= bound);
- 3) Выжил.

M6. deposit()

```
public boolean deposit(int sum) {  
    if (blocked) {  
        return false;  
    } else if (sum < 0 || sum > bound) {  
        return false;  
    } else {  
        balance += sum;  
        return true;  
    }  
}
```

- 1) else If (sum < 0 || sum > bound);
- 2) else If (sum <= 0 && sum >= bound);
- 3) Выжил.

M7. withdraw()

```
public boolean withdraw(int sum) {  
    if (isBlocked()) {  
        return false;  
    } else if (sum < 0 || sum > bound) {  
        return false;  
    } else if (balance <= mc + sum) {  
        return false;  
    } else {  
        balance -= sum;  
        return true;  
    }  
}
```

- 1) else If (sum < 0 || sum > bound);
- 2) else If (sum <= 0 && sum >= bound);
- 3) Выжил.

- 1) else If (balance <=mc + sum);
- 2) else If (balance < mc + sum);
- 3) Выжил.

- 1) balance -= sum;
- 2) balance += sum;
- 3) Выжил.

Чтобы без ошибок пройти мутационное тестирование, мне пришлось добавить несколько тестов в файл AccountTest (для удобства проверки они находятся сразу после метода setUp).

Список новых методов:

- 1) depositBoundaryTest()
- 2) withdrawBalanceTest()
- 3) withdrawBalanceTest2()
- 4) withdrawBalanceTest3()
- 5) withdrawBoundaryTest()
- 6) unblockPitest()
- 7) setMaxCreditPitest()
- 8) balancePitest()

После исправлений тестов мутационное тестирование
прошло успешно:

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Breakdown by Class

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FixedAccount.java	100% <div>34/34</div>	100% <div>38/38</div>	100% <div>38/38</div>

M1. getBalance()

```
public int getBalance() {  
    return balance;  
}
```

3. Мутант убит.
4. balancePitest()

M4. unblock()

```
public int getMaxCredit() {  
    return mc;  
}
```

3. Мутант убит.
4. unblockPitest()

M5. setMaxCredit(int mc)

```
public boolean setMaxCredit(int mc) {  
1     if (isBlocked()) {  
4         if (mc < -bound || mc > bound) {  
1             return false;  
        }  
        this.mc = mc;  
1     return true;  
1     } else return false;  
}
```

3. Мутант убит.
4. setMaxCreditPitest()

M6. deposit()

```
public boolean deposit(int sum) {  
    if (blocked) {  
        return false;  
    } else if (sum < 0 || sum > bound) {  
        return false;  
    } else {  
        balance += sum;  
        return true;  
    }  
}
```

3. Мутант убит.
4. depositBoundaryPitest()

M7. withdraw()

```
public boolean withdraw(int sum) {  
    if (isBlocked()) {  
        return false;  
    } else if (sum < 0 || sum > bound) {  
        return false;  
    } else if (balance <= mc + sum) {  
        return false;  
    } else {  
        balance -= sum;  
        return true;  
    }  
}
```

3. Мутант убит.
4. withdrawBalanceTest(),
 withdrawBalanceTest2(),
 withdrawBalanceTest3(),
 withdrawBoundaryTest()