12.技术预研-测试覆盖率

介绍

TODO 待完善

- 官网：EclEmma - Java Code Coverage for Eclipse (jacoco.org)
- GitHub：jacoco/jacoco: :microscope: Java Code Coverage Library (github.com)

使用

- 测试目标：data-sync（同步程序）。
- 采用的方式：JaCoCo提供的Javaagent无侵入方式。

切换到data-sync项目下。

1.执行打包

```
1    $ mvn clean package -DskipTests
```

2.启动程序

```
1    $ java -
     javaagent:lib/jacocoagent.jar=includes=*,output=tcpserver,port=6301,address=lo
     calhost,append=false -jar data-sync-web/target/WRMSSync.jar
```

3.转储数据

```
1    $ java -jar lib/jacococli.jar dump --address localhost --port 6301 --destfile
     ./jacoco-sync.exec
2    [INFO] Connecting to localhost/127.0.0.1:6301.
3    [INFO] Writing execution data to D:\IdeaProjects2\data_sync\.\jacoco-
     sync.exec.
```

4.生成报告

```
1    # 乱码问题，使用--encoding utf-8
2    $ java -jar lib/jacococli.jar report ./jacoco-sync.exec --classfiles data-
     sync-web/target/classes --sourcefiles data-sync-web/target/source --html
     report --encoding utf-8
3    [INFO] Loading execution data file D:\IdeaProjects2\data_sync\.\jacoco-
     sync.exec.
4    [INFO] Analyzing 753 classes.
```

使用浏览器打开生成的report目录下的index.html文件：

JaCoCo Coverage Report

JaCoCo Coverage Report

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed	Cxty	Missed	Lines	Missed	Methods	Missed	Classes
com.lachesis.windranger.emr.model		0%		0%	5,231	5,231	1,035	1,035	1,856	1,856	44	44
com.lachesis.datasync.strategy.tablesavestrategy.impl		1%		0%	1,541	1,643	4,241	4,357	447	549	0	69
com.lachesis.datasync.util		1%		0%	1,552	1,583	4,109	4,165	408	437	39	51
com.lachesis.datasync.service.impl		2%		1%	1,007	1,065	3,186	3,287	293	348	7	32
com.lachesis.datasync.processor.impl		5%		0%	612	650	2,145	2,288	151	189	0	19
com.lachesis.windranger.consumableaux.model		0%		0%	1,140	1,140	227	227	424	424	14	14
com.lachesis.windranger.iwip.model		0%		0%	983	983	260	260	372	372	20	20
com.lachesis.windranger.hospital.model		0%		0%	870	870	224	224	347	347	11	11
com.lachesis.windranger.sync.service.impl		4%		2%	371	406	1,096	1,155	99	131	0	20
com.lachesis.windranger.sync.model		5%		0%	720	790	315	355	303	373	15	18
com.lachesis.windranger.prcc.model		0%		0%	573	573	105	105	204	204	6	6
com.lachesis.windranger.mnis.model		0%		0%	555	555	176	176	232	232	6	6
com.lachesis.windranger.pharmaux.model		0%		0%	518	518	108	108	199	199	9	9
com.lachesis.windranger.qm.model		0%		0%	388	388	67	67	133	133	1	1
com.lachesis.windranger.sync.vo.page.queryVo		0%		0%	444	444	122	122	234	234	38	38
com.lachesis.datasync.task.core		12%		4%	222	246	299	344	111	135	9	13
com.lachesis.windranger.sync.vo		0%		0%	303	303	76	76	136	136	10	10
com.lachesis.windranger.wam.model		0%		0%	284	284	52	52	102	102	2	2
com.lachesis.datasync.vo		0%		0%	280	280	195	195	159	159	17	17
com.lachesis.datasync.service.post		9%		3%	218	240	168	221	92	113	3	11
com.lachesis.datasync.service.support.pull		12%		4%	218	240	151	210	102	124	8	12
com.lachesis.datasync.core.element		0%		0%	205	205	341	341	120	120	14	14
com.lachesis.datasync.ibmmq		7%		3%	89	107	326	361	30	48	1	8

5.动态覆盖率

5.1.新增覆盖率

通过调用接口触发程序运行，观察覆盖率变化。
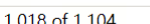
com.lachesis.datasync.controller

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed	Cxty	Missed	Lines	Missed	Methods	Missed	Classes
⊕ UpgradeController	▬▬▬▬▬▬▬	2%	▬▬▬▬▬▬▬	0%	11	13	55	57	2	4	0	1
⊕ TaskController	▬▬▬	4%	▬▬▬	0%	8	9	32	33	3	4	0	1
⊕ VitalSignSendTestController	▬▬▬	5%	▬	0%	6	8	28	30	4	6	0	1
⊕ TestController	▬▬▬	3%		n/a	8	9	29	30	8	9	0	1
⊕ OptionalSyncController	▬▬▬	7%		n/a	9	11	13	15	9	11	0	1
⊕ ReceiveMessageController	▬▬	3%	▬▬	0%	7	8	19	20	4	5	0	1
⊕ ValidationController	▬▬	4%		n/a	2	3	15	16	2	3	0	1
⊕ DirectSyncController	▬▬	0%		n/a	9	9	12	12	9	9	1	1
⊕ SyncToHisController	▬	16%		n/a	4	6	7	9	4	6	0	1
⊕ JmsModelController	▬	18%		n/a	2	4	8	10	2	4	0	1
⊕ SysTableSyncLogViewController	▬	9%		n/a	3	4	4	5	3	4	0	1
⊕ SysTableSyncCheckController	▬	12%		n/a	2	3	3	4	2	3	0	1
⊕ OrderTestController	▬	30%		n/a	2	4	4	6	2	4	0	1
⊕ SysTableSyncConfigViewController	▮	23%		n/a	2	3	2	3	2	3	0	1
⊕ SysTableFiledMappingViewController	▮	23%		n/a	2	3	2	3	2	3	0	1
⊕ DirectInquirySyncController	▮	0%		n/a	2	2	3	3	2	2	1	1
⊕ SysTableSyncViewController	▮	33%		n/a	1	2	1	2	1	2	0	1
⊕ RedisCacheController	▮	37%		n/a	1	2	2	3	1	2	0	1
⊕ SysTableFiledValidationViewController	▮	42%		n/a	1	2	1	2	1	2	0	1
Total	1,026 of 1,104	7%	38 of 38	0%	82	105	240	263	63	86	2	19

触发测试接口调用：

```
1   curl -X POST "http://10.2.43.39:9098/data-sync/test/testtask" -H "accept:
    application/json;charset=UTF-8" -H "Authorization:
    E1qdCcuKokd3KxOBDS16cl2KJM4Cqwo24c7xxvkFw3trIcLuZpLYjRfraxCxgX31"
```

重新执行上述的第3和4步骤，观察变化。

com.lachesis.datasync.controller

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed	Cxty	Missed	Lines	Missed	Methods	Missed	Classes
UpgradeController		2%		0%	11	13	55	57	2	4	0	1
TaskController		4%		0%	8	9	32	33	3	4	0	1
VitalSignSendTestController		5%		0%	6	8	28	30	4	6	0	1
TestController		11%		n/a	7	9	26	30	7	9	0	1
OptionalSyncController		7%		n/a	9	11	13	15	9	11	0	1
ReceiveMessageController		3%		0%	7	8	19	20	4	5	0	1
ValidationController		4%		n/a	2	3	15	16	2	3	0	1
DirectSyncController		0%		n/a	9	9	12	12	9	9	1	1
SyncToHisController		16%		n/a	4	6	7	9	4	6	0	1
JmsModelController		18%		n/a	2	4	8	10	2	4	0	1
SysTableSyncLogViewController		9%		n/a	3	4	4	5	3	4	0	1
SysTableSyncCheckController		12%		n/a	2	3	3	4	2	3	0	1
OrderTestController		30%		n/a	2	4	4	6	2	4	0	1
SysTableSyncConfigViewController		23%		n/a	2	3	2	3	2	3	0	1
SysTableFiledMappingViewController		23%		n/a	2	3	2	3	2	3	0	1
DirectInquirySyncController		0%		n/a	2	2	3	3	2	2	1	1
SysTableSyncViewController		33%		n/a	1	2	1	2	1	2	0	1
RedisCacheController		37%		n/a	1	2	2	3	1	2	0	1
SysTableFiledValidationViewController		42%		n/a	1	2	1	2	1	2	0	1
Total	1,018 of 1,104	7%	38 of 38	0%	81	105	237	263	62	86	2	19

已经由原来的3%增长到11%。

这里的TestController是类层面，我们可以点击该类，跳转到具体方法的覆盖情况。

TestController

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed	Cxty	Missed	Lines	Missed	Methods
testDataChangeEvent()		0%		n/a	1	1	12	12	1	1
testSyncForTable(String, Boolean)		0%		n/a	1	1	3	3	1	1
lambda$testSyncForTable$0(AtomicReference, Boolean, MappingConstants)		0%		n/a	1	1	2	2	1	1
testDataSync(String)		0%		n/a	1	1	3	3	1	1
testSendMsg2MnisNewInWard(Set)		0%		n/a	1	1	2	2	1	1
testpacs()		0%		n/a	1	1	2	2	1	1
testdelpacs()		0%		n/a	1	1	2	2	1	1
testtask()		100%		n/a	0	1	0	3	0	1
TestController()		100%		n/a	0	1	0	1	0	1
Total	88 of 99	11%	0 of 0	n/a	7	9	26	30	7	9

已经由0%变化为100%，说明这两个方法级别都覆盖到了。

再点击该方法，将会跳转到具体代码覆盖情况。

```
27.  @RestController
28.  @RequestMapping(value = "/test", produces = {"application/json;charset=UTF-8"})
29.  @Api(value = "/test", tags = {"test"})
30.  public class TestController {
31.
32.      @Autowired
33.      IHttp2MnisService http2MnisService;
34.      @Autowired
35.      private ISyncDataService syncDataService;
36.      @Autowired
37.      PatExamMasterMapperExt patExamMasterMapperExt;
38.      @Autowired
39.      PatExamPacsMapperExt patExamPacsMapperExt;
40.      @Autowired
41.      PatInhosRecordMapperExt patInhosRecordMapperExt;
42.      @Autowired
43.      PacsTasks pacsTasks;
44.
45.      @RequestMapping(value = {"/sendMsg2MnisNewInWard"}, method = RequestMethod.POST)
46.      @ResponseBody
47.      @ApiOperation(value = "testSendMsg2MnisNewInWard", httpMethod = "POST")
48.      public void testSendMsg2MnisNewInWard(@RequestBody() Set<String> list) {
49.          http2MnisService.sendMsg2MnisNewInWard(list);
50.      }
51.
52.      @RequestMapping(value = "/testtask", method = RequestMethod.POST)
53.      @ApiOperation(value = "测试", httpMethod = "POST")
54.      @ResponseBody
55.      public void testtask() {
56.          String tablename = "PAT_INHOS_ORDER";
57.          syncDataService.syncForTableByTableName(tablename);
58.
59.      }
60.
61.      @RequestMapping(value = "/testpacs", method = RequestMethod.POST)
62.      @ApiOperation(value = "测试", httpMethod = "POST")
63.      @ResponseBody
64.      public void testpacs() {
65.          pacsTasks.pacsDownLoad();
66.      }
67.
68.      @RequestMapping(value = "/testdelpacs", method = RequestMethod.POST)
69.      @ApiOperation(value = "测试", httpMethod = "POST")
70.      @ResponseBody
71.      public void testdelpacs() {
72.          pacsTasks.deleteOutPatInhosRecord();
73.      }
74.
75.      @PostMapping("/testSyncForTable")
76.      @ApiOperation(value = "测试", httpMethod = "POST")
77.      public JSONObject testSyncForTable(@RequestParam String name, @RequestParam Boolean checkStatus) {
78.          AtomicReference<SysTableSyncLogExt> logExt = new AtomicReference<>(new SysTableSyncLogExt());
79.          Optional.ofNullable(MappingConstants.enumOfCode(name)).ifPresent(constants -> {
80.              logExt.set(syncDataService.syncForTable(constants, checkStatus));
81.          });
82.          return JSON.parseObject(JSON.toJSONString(logExt));
83.      }
```

当我们在此调用 */test/testpacs* 接口时，重新执行上述的第3和4步骤，观察变化。

```
27.  @RestController
28.  @RequestMapping(value = "/test", produces = {"application/json;charset=UTF-8"})
29.  @Api(value = "/test", tags = {"test"})
30.  public class TestController {
31.
32.      @Autowired
33.      IHttp2MnisService http2MnisService;
34.      @Autowired
35.      private ISyncDataService syncDataService;
36.      @Autowired
37.      PatExamMasterMapperExt patExamMasterMapperExt;
38.      @Autowired
39.      PatExamPacsMapperExt patExamPacsMapperExt;
40.      @Autowired
41.      PatInhosRecordMapperExt patInhosRecordMapperExt;
42.      @Autowired
43.      PacsTasks pacsTasks;
44.
45.      @RequestMapping(value = {"/sendMsg2MnisNewInWard"}, method = RequestMethod.POST)
46.      @ResponseBody
47.      @ApiOperation(value = "testSendMsg2MnisNewInWard", httpMethod = "POST")
48.      public void testSendMsg2MnisNewInWard(@RequestBody() Set<String> list) {
49.          http2MnisService.sendMsg2MnisNewInWard(list);
50.      }
51.
52.      @RequestMapping(value = "/testtask", method = RequestMethod.POST)
53.      @ApiOperation(value = "测试", httpMethod = "POST")
54.      @ResponseBody
55.      public void testtask() {
56.          String tablename = "PAT_INHOS_ORDER";
57.          syncDataService.syncForTableByTableName(tablename);
58.
59.      }
60.
61.      @RequestMapping(value = "/testpacs", method = RequestMethod.POST)
62.      @ApiOperation(value = "测试", httpMethod = "POST")
63.      @ResponseBody
64.      public void testpacs() {
65.          pacsTasks.pacsDownLoad();
66.      }
67.
68.      @RequestMapping(value = "/testdelpacs", method = RequestMethod.POST)
69.      @ApiOperation(value = "测试", httpMethod = "POST")
70.      @ResponseBody
71.      public void testdelpacs() {
72.          pacsTasks.deleteOutPatInhosRecord();
73.      }
```

6.总结

可以看到，要获取当前程序运行的覆盖率需要重新手动转储和生成报告。

- TODO 集成测试探索与Jekins的整合

- TODO JaCoCo实现原理深究

- **TODO** 开源二开的JaCoCo探索

踩坑

记录心路历程，以解他人之忧~

多模块问题

TODO 后续补充

中文乱码问题

TODO 后续补充

Original Confluence page attachments

Name	Size	Created by	Created on	Labels	Comments
image-2023-9-11_10-13-… 192.51KB	192.51 KB	王鹏博	2023-09-11T10:08:08.000+08:00		
image-2023-9-7_18-11-… 267.80KB	267.80 KB	王鹏博	2023-09-07T18:06:55.000+08:00		
image-2023-9-7_18-9-42.png 88.65KB	88.65 KB	王鹏博	2023-09-07T18:04:41.000+08:00		
	132.96 KB	王鹏博	2023-09-07T18:01:		

image-2023-9-7_18-6-43.png 132.96KB 👁			43.000+08: 00		
image-2023-9-7_18-3-54.png 132.92KB 👁	132.92 KB	王鹏博	2023-09-07T17:58: 53.000+08: 00		
image-2023-9-7_17-58-8.png 174.46KB 👁	174.46 KB	王鹏博	2023-09-07T17:53: 08.000+08: 00		