

flowable

flowable

Flowable OA

1. ()

2. , 2/3 ()

3. 1 a 0.2 0.1

5. a b,b c,

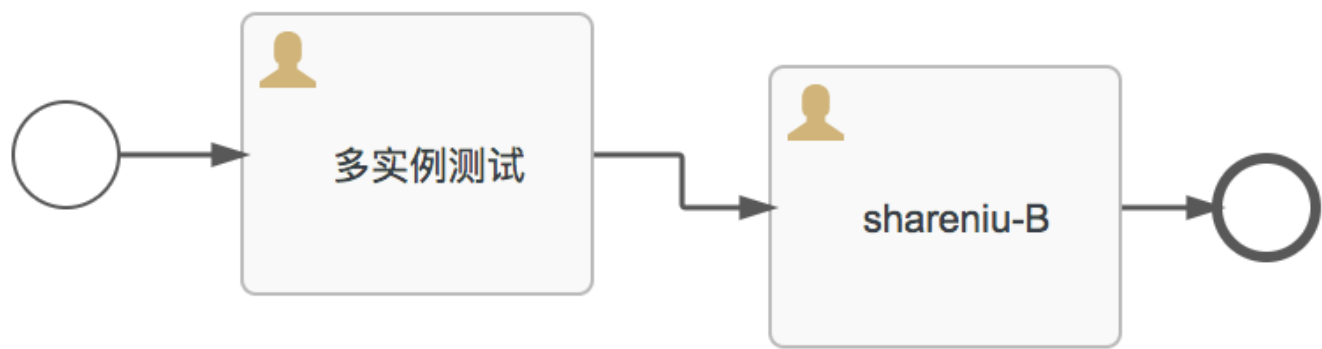
activiti

6. ()

6 4 2 activiti 5 6

xml

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xml :

```
<?xml version="1.0" encoding="UTF-8"?>

<definitions xmlns="http://www.omg.org/spec/BPMN/20100524/MODEL"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:flowable="http://flowable.org/bpmn"
xmlns:bpmndi="http://www.omg.org/spec/BPMN/20100524/DI"
xmlns:omgdc="http://www.omg.org/spec/DD/20100524/DC"
```

```

xmlns:omgdi="http://www.omg.org/spec/DD/20100524/DI"
typeLanguage="http://www.w3.org/2001/XMLSchema"
expressionLanguage="http://www.w3.org/1999/XPath"
targetNamespace="http://www.flowable.org/processdef">

  <process id="multiInstance" name="multiInstance" isExecutable="true">

    <documentation>multiInstance</documentation>

    <startEvent id="startEvent1"></startEvent>

    <userTask id="A" name="      "
flowable: candidateUsers="shareniu1,shareniu2,shareniu3,shareniu4"
xmlns:shareniu="http://www.shareniu.com/" shareniu:shareniuext=""
shareniu:shareniuextboolean="false">

      <multiInstanceLoopCharacteristics isSequential="true">

        <loopCardinality>2</loopCardinality>

      </multiInstanceLoopCharacteristics>

    </userTask>

    <sequenceFlow id="sid-6D482A8A-F796-4E2B-AB2C-ABBF2DA428D" sourceRef="startEvent1"
targetRef="A"></sequenceFlow>

    <userTask id="shareniu-B" name="shareniu-B" xmlns:shareniu="http://www.shareniu.com/"
shareniu:shareniuext="" shareniu:shareniuextboolean="false"></userTask>

    <sequenceFlow id="sid-BA8FC337-40DC-493B-805C-F213B7C4A17D" sourceRef="A"
targetRef="shareniu-B"></sequenceFlow>

    <endEvent id="sid-4AC81F5B-49F8-4135-B68E-1C182D004080"></endEvent>

    <sequenceFlow id="sid-DF962BB4-EA4C-4D86-9A91-214EB2EC1A47" sourceRef="shareniu-B"
targetRef="sid-4AC81F5B-49F8-4135-B68E-1C182D004080"></sequenceFlow>

  </process>

```

```

<bpmndi: BPMNDiagram id=" BPMNDiagram_multiInstance">

  <bpmndi: BPMNPlane bpmnElement="multiInstance" id="BPMNPlane_multiInstance">

    <bpmndi: BPMNShape bpmnElement="startEvent1" id="BPMNShape_startEvent1">

      <omgdc: Bounds height="30.0" width="30.0" x="100.0" y="130.0"></omgdc: Bounds>

    </bpmndi: BPMNShape>

    <bpmndi: BPMNShape bpmnElement="A" id="BPMNShape_A">

      <omgdc: Bounds height="80.0" width="100.0" x="165.0" y="105.0"></omgdc: Bounds>

    </bpmndi: BPMNShape>

    <bpmndi: BPMNShape bpmnElement="shareniu-B" id="BPMNShape_shareniu-B">

      <omgdc: Bounds height="80.0" width="100.0" x="315.0" y="120.0"></omgdc: Bounds>

    </bpmndi: BPMNShape>

    <bpmndi: BPMNShape bpmnElement="sid-4AC81F5B-49F8-4135-B68E-1C182D004080"
id="BPMNShape_sid-4AC81F5B-49F8-4135-B68E-1C182D004080">

      <omgdc: Bounds height="28.0" width="28.0" x="442.0" y="146.0"></omgdc: Bounds>

    </bpmndi: BPMNShape>

    <bpmndi: BPMNEdge bpmnElement="sid-DF962BB4-EA4C-4D86-9A91-214EB2EC1A47"
id="BPMNEdge_sid-DF962BB4-EA4C-4D86-9A91-214EB2EC1A47">

      <omgdi: waypoint x="414.94999999999902" y="160.0"></omgdi: waypoint>

      <omgdi: waypoint x="442.0" y="160.0"></omgdi: waypoint>

    </bpmndi: BPMNEdge>

    <bpmndi: BPMNEdge bpmnElement="sid-BA8FC337-40DC-493B-805C-F213B7C4A17D"
id="BPMNEdge_sid-BA8FC337-40DC-493B-805C-F213B7C4A17D">

```

```
<omgdi: waypoint x="264.95000000000005" y="145.0"></omgdi: waypoint>
```

```
<omgdi: waypoint x="290.0" y="145.0"></omgdi: waypoint>
```

```
<omgdi: waypoint x="290.0" y="160.0"></omgdi: waypoint>
```

```
<omgdi: waypoint x="314.99999999998477" y="160.0"></omgdi: waypoint>
```

```
</bpmndi: BPMNEdge>
```

```
<bpmndi: BPMNEdge bpmnElement="sid-6D482A8A-F796-4E2B-AB2C-ABBFD2DA428D"
id="BPMNEdge_sid-6D482A8A-F796-4E2B-AB2C-ABBFD2DA428D">
```

```
<omgdi: waypoint x="129.94999817301806" y="145.0"></omgdi: waypoint>
```

```
<omgdi: waypoint x="165.0" y="145.0"></omgdi: waypoint>
```

```
</bpmndi: BPMNEdge>
```

```
</bpmndi: BPMNPlane>
```

```
</bpmndi: BPMNDiagram>
```

```
</definitions>
```

“ xml

1. flowable:candidateUsers="shareniu1,shareniu2,shareniu3,shareniu4" 4
2. `<loopCardinality>2</loopCardinality>` 2
3. `<multiInstanceLoopCharacteristics isSequential="true">`

`<multiInstanceLoopCharacteristics isSequential="true">` isSequential true isSequential false

@Test

```
public void addBytes() {
```

```

byte[] bytes = IoUtil.readInputStream(

ProcessengineTest.class.getClassLoader()

getResourceAsStream("com/shareniu/shareniu_flowable_study/bpmn/ch3/multiInstance.bpmn20.xml");

"multiInstance.bpmn20.xml");

String resourceName = "multiInstance.bpmn";

Deployment deployment = repositoryService.createDeployment().addBytes(resourceName,
bytes).deploy();

System.out.println(deployment);

```

```

@Test

public void startProcessInstanceByKey() {

String processDefinitionKey = "multiInstance";

ProcessInstance startProcessInstanceByKey =
runtimeService.startProcessInstanceByKey(processDefinitionKey);

System.out.println(startProcessInstanceByKey);
}

```

ACT_RU_TASK

ID_	REV_	PROC_DEF_ID_	NAME_ ▼	EXECUTION_ID_	PROC_INST_ID_	TASK_DEF_ID_	SC
15011	1	multiInstance:1:1250	多实例测试	15005	15001	(NULL)	(N

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ACT_RU_IDENTITYLINK

ID_	REV_	GROUP_ID_	TYPE_	USER_ID_	TASK_ID_	PROC_INST_ID_
15012	1	(NULL)	candidate	shareniu1	15011	(NULL)
15013	1	(NULL)	participant	shareniu1	(NULL)	15001
15014	1	(NULL)	candidate	shareniu2	15011	(NULL)
15015	1	(NULL)	participant	shareniu2	(NULL)	15001
15016	1	(NULL)	candidate	shareniu3	15011	(NULL)
15017	1	(NULL)	participant	shareniu3	(NULL)	15001
15018	1	(NULL)	candidate	shareniu4	15011	(NULL)
15019	1	(NULL)	participant	shareniu4	(NULL)	15001

ACT_RU_IDENTITYLINK

shareniu1,shareniu2,shareniu3,shareniu4

ACT_RU_VARIABLE

ID_	REV_	TYPE_	NAME_	EXECUTION_ID_	PROC_INST_ID_	TASK_ID_	SCOPE_ID_	SUB_SCOPE_ID_
15006	1	integer	nrOfInstanc	15004	15001	(NULL)	(NULL)	(NULL)
15007	1	integer	nrOfCompl	15004	15001	(NULL)	(NULL)	(NULL)
15008	1	integer	nrOfActiveI	15004	15001	(NULL)	(NULL)	(NULL)
15009	1	integer	loopCounte	15005	15001	(NULL)	(NULL)	(NULL)

1. nrOfInstances
2. nrOfCompletedInstances nr number
3. loopCounter
4. nrOfActiveInstances

```
@Test
```

```
public void complete() {

    String taskId="15011";

    taskService.complete( taskId);
}
```

ACT_RU_VARIABLE

TYPE_	NAME_	EXECUTION_ID_	PROC_INST_ID_	LONG_ ▾	TEXT_ ▾
integer	nrOfInstances	15004	15001	2	2
integer	nrOfCompletedInstances	15004	15001	1	1
integer	nrOfActiveInstances	15004	15001	1	1
integer	loopCounter	15005	15001	1	1

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nrOfCompletedInstances loopCounter nrOfActiveInstances 1

2 ACT_RU_IDENTITYLINK

```
@Test

public void complete() {

    String taskId="17502";

    taskService.complete( taskId);

}
```

ACT_RU_TASK

isSequential="false",

isSequential="false",

ACT_RU_TASK

ID_	REV_	PROC_DEF_ID_	NAME_ ▾	EXECUTION_ID_	PROC_INST_ID_	TASK_DEF_ID_	SCOPE_ID_	SUB_S
27512	1	multiInstance:2:250	多实例测试	27508	27501	(NULL)	(NULL)	(NULL)
27523	1	multiInstance:2:250	多实例测试	27509	27501	(NULL)	(NULL)	(NULL)

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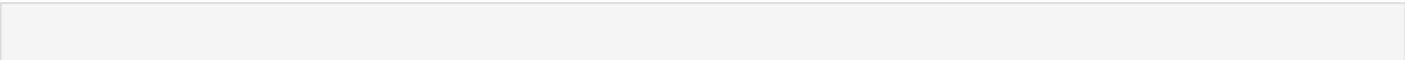
2 2 2

ok

2

1

1.



```

<process id="multiInstance" name="multiInstance"
isExecutable="true">

  <<documentation>multiInstance</documentation>

  <<startEvent id="startEvent1"></startEvent>

  <<userTask id="A" name="      "

    <<<flowable: candidateUsers="shareniu1,shareniu2,shareniu3,shareniu4">

      <<<multiInstanceLoopCharacteristics

        <<<<isSequential="true">

          <<<<loopCardinality>4</loopCardinality>

          <<<<completionCondition>${nrOfCompletedInstances/nrOfInstances >= 0.25}</completionCondition>

        <<<</multiInstanceLoopCharacteristics>

      <<<</userTask>

    <<<<sequenceFlow

      <<<<id="sid- 6D482A8A- F796- 4E2B- AB2C- ABBFD2DA428D" sourceRef="startEvent1"

      <<<<targetRef="A"></sequenceFlow>

    <<<<userTask id="shareniu-B" name="shareniu-B"

      <<<<xmlns:shareniu="http://www.shareniu.com/" shareniu:shareniuext=""

      <<<<shareniu:shareniuextboolean="false"></userTask>

    <<<<sequenceFlow

      <<<<id="sid- BA8FC337- 40DC- 493B- 805C- F213B7C4A17D" sourceRef="A"

      <<<<targetRef="shareniu-B"></sequenceFlow>

```



```

</endEvent id="sid-4AC81F5B-49F8-4135-B68E-1C182D004080"></endEvent>

<sequenceFlow

    id="sid-DF962BB4-EA4C-4D86-9A91-214EB2EC1A47" sourceRef="shareniu-B"

    targetRef="sid-4AC81F5B-49F8-4135-B68E-1C182D004080"></sequenceFlow>

</process>

```

<completionCondition>\${nrOfCompletedInstances/nrOfInstances >= 0.25}</completionCondition>

nrOfCompletedInstances nrOfInstances 1/4

ACT_RU_TASK

ID_	REV_	PROC_DEF_ID_	NAME_ ▾	EXECUTION_ID_	PROC_INST_ID_	TASK_DEF_ID_	SCOPE_ID_	SUB_SC
37511	1	multiInstance:3:350	多实例测试	37505	37501	(NULL)	(NULL)	(NULL)

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ACT_RU_TASK

```

@Test

public void complete() {

    String taskId="40003";

    taskService.complete(taskId);

}

```

ACT_RU_TASK 4 1/4,

xml xml 2 2

xml

```

<process id="multiInstance" name="multiInstance"

```

```

    <isExecutable="true">

    <documentation>multiInstance</documentation>

    <startEvent id="startEvent1"></startEvent>

    <userTask id="A" name="      " flowable: assignee="{assignee}">

        <multiInstanceLoopCharacteristics

            isSequential="false" flowable: collection="assigneeList"

            flowable: elementVariable="assignee">

                <completionCondition>${nrOfCompletedInstances/nrOfInstances >= 0.25}

                </completionCondition>

            </multiInstanceLoopCharacteristics>

        </userTask>

        <sequenceFlow

            id="sid- 6D482A8A- F796- 4E2B- AB2C- ABBFD2DA428D" sourceRef="startEvent1"

            targetRef="A"></sequenceFlow>

        <userTask id="shareniu-B" name="shareniu-B"

            xmlns: shareniu="http://www.shareniu.com/" shareniu: shareniuext=""

            shareniu: shareniuextboolean="false"></userTask>

        <sequenceFlow

            id="sid- BA8FC337- 40DC- 493B- 805C- F213B7C4A17D" sourceRef="A"

            targetRef="shareniu-B"></sequenceFlow>

```

```

<<endEvent id="sid- 4AC81F5B- 49F8- 4135- B68E- 1C182D004080" ></endEvent>

<<sequenceFlow

    <<id="sid- DF962BB4- EA4C- 4D86- 9A91- 214EB2EC1A47" sourceRef="shareniu- B"

    <<targetRef="sid- 4AC81F5B- 49F8- 4135- B68E- 1C182D004080" ></sequenceFlow>

</process>

```

```

<userTask id="usertask1" name="      " flowable: assignee="${assignee}">

    <multiInstanceLoopCharacteristics isSequential="false"
    activiti: collection="assigneeList" activiti: elementVariable="assignee">

        <completionCondition>${nrOfCompletedInstances/nrOfInstances >=
0.25}</completionCondition>

    </multiInstanceLoopCharacteristics>

</userTask>

```

- activiti:assignee="\${assignee}"
- activiti:elementVariable="assignee" \${assignee}
- activiti:collection="assigneeList"

assigneeList

```

@Test

public void startProcessInstanceByKey() {

    <<Map<String, Object> vars = new HashMap<>();

    <<String[] v = { "shareniu1", "shareniu2", "shareniu3", "shareniu4" };

    <<vars.put("assigneeList", Arrays.asList(v));

    <<String processDefinitionKey = "multiInstance";

```

```

ProcessInstance startProcessInstanceByKey =
runtimeService.startProcessInstanceByKey( processDefinitionKey,

    vars);

// Sys

```

ok

1. flowable:candidateUsers="shareniu1,shareniu2,shareniu3,shareniu4" 4
 2. |loopCardinality>2</loopCardinality>| 2
 3. |<multiInstanceLoopCharacteristics isSequential="true">|
|<completionCondition>\${nrOfCompletedInstances/nrOfInstances >=
0.25}</completionCondition>|
- nrOfActiveInstances 1 +1
- ()

Revision #1

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