Generated Annotations

The handwritten and generated annotations for the Fast-MD5 test case can be seen in Listing 1 and 2, respectively. Similar handwritten and generated annotations for the Thruster-Engine test case can be found in Listing 3 and 4, respectively.

Listing 1: Handwritten annotations for Fast-MD5

```
1 @DefineScope(name = "Level0App", parent = IMMORTAL)
2 @DefineScope(name="MD5SCJ", parent="Level0App")
3 @RunsIn("Level0App") Method: initialize()
4 @RunsIn("MD5SCJ") Method: handleAsyncEvent()
5 @RunsIn("MD5SCJ") Method: doMD5work()
6 @Scope(IMMORTAL) Class: Level0App
7 @Scope("Level0App") Class: MD5SCJ
```

Listing 2: Generated annotations for Fast-MD5

```
 1 @DefineScope(name="Level0App", parent=IMMORTAL)
 2 @DefineScope(name="MD5SCJ", parent="Level0App")
 3 @RunsIn("Level0App") Method: getSequencer(), Class: Level0App
 4 @RunsIn("Level0App") Method: initializeApplication(), Class: Level0App
 5 @RunsIn("Level0App") Method: initialize(), Class: Level0App
 6 @RunsIn("MD5SCJ") Method: Decode(), Class: MD5
 7 @RunsIn("MD5SCJ") Method: doMD5work(), Class: MD5SCJ
 8 @RunsIn("MD5SCJ") Method: handleAsyncEvent(), Class: MD5SCJ
 9 @RunsIn("MD5SCJ") Method: Init(), Class: MD5
10 @RunsIn("MD5SCJ") Method: read(), Class: MyMD5Input
11 @RunsIn("MD5SCJ") Method: run(), Class: MyMD5Input
12 @RunsIn("MD5SCJ") Method: Transform(), Class: MD5
13 @RunsIn("MD5SCJ") Method: TransformPart2(), Class: MD5
14 @RunsIn("MD5SCJ") Method: Update(), Class: MD5
15 @Scope(IMMORTAL) Class: Level0App
16 @Scope("Level0App") Class: MD5SCJ
17 @Scope("MD5SCJ") Field: buffer in class: MD5State
18 @Scope("MD5SCJ") Field: md5 in class: MyMD5Input
19 @Scope("MD5SCJ") Field: state in class: MD5
```

Listing 3: Handwritten annotations for Thruster-Engine

```
 1 @DefineScope(name="EngineControl", parent="ThrusterMission")
 2 @DefineScope(name = "MyTerminatorPeriodicEventHandler", parent = "ThrusterMission")
 3 @DefineScope(name = "ThrusterMission", parent = IMMORTAL)
 4 @RunsIn("EngineControl") Method: handleAsyncEvent(), Class: EngineControl
 5 @RunsIn("EngineControl") Method: stop(), Class: EngineControl
 6 @RunsIn("MyTerminatorPeriodicEventHandler") Method: handleAsyncEvent(), Class:
        MyTerminatorPeriodicEventHandler
 7 @RunsIn("ThrusterMission") Method: getNextMission(), Class: ThrusterControlSequencer
 8 @RunsIn(IMMORTAL) Method: getSequencer(), Class: ThrusterControlSystem
 9 @RunsIn(IMMORTAL) Method: getInstance(), Class: ThrusterControlSystem
10 @Scope(IMMORTAL) Class: ThrusterControlSequencer
11 @Scope("ThrusterMission") Class: MyDummyMission
12 @Scope("ThrusterMission") Class: EngineControl
13 @Scope("ThrusterMission") Class: MyTerminatorPeriodicEventHandler
14 @Scope("ThrusterMission") Class: MyTerminatorMission
15 @Scope("ThrusterMission") Class: ThrusterMission
16 @Scope(IMMORTAL) Method: getSequencer, Class: ThrusterControlSystem
17 @Scope(IMMORTAL) Method: getInstance, Class: ThrusterControlSequencer
18 @Scope("ThrusterMission") Method: getNextMission, Class: ThrusterControlSequencer
```

Listing 4: Generated annotations for Thruster-Engine

```
 1 @DefineScope(name="EngineControl", parent="ThrusterControlSystem")
 2 @DefineScope(name="MyTerminatorPeriodicEventHandler", parent="ThrusterControlSystem")
 3 @DefineScope(name="ThrusterControlSystem", parent=IMMORTAL)
 4 @RunsIn("EngineControl") Method: handleAsyncEvent(), Class: EngineControl
 5 @RunsIn("EngineControl") Method: stop(), Class: EngineControl
 6 @RunsIn("MyTerminatorPeriodicEventHandler") Method: handleAsyncEvent(), Class:
        MyTerminatorPeriodicEventHandler
 7 @RunsIn("ThrusterControlSystem") Method: getNextMission(), Class: ThrusterControlSequencer
 8 @RunsIn("ThrusterControlSystem") Method: initialize(), Class: MyDummyMission
 9 @RunsIn("ThrusterControlSystem") Method: initialize(), Class: MyTerminatorMission
10 @RunsIn("ThrusterControlSystem") Method: initialize(), Class: ThrusterMission
11 @RunsIn(IMMORTAL) Method: getInstance(), Class: ThrusterControlSequencer
12 @RunsIn(IMMORTAL) Method: getSequencer(), Class: ThrusterControlSystem
13 @RunsIn(IMMORTAL) Method: initializeApplication(), Class: ThrusterControlSystem
14 @Scope(IMMORTAL) Class: ThrusterControlSystem>
15 @Scope("ThrusterControlSystem") Class: MyDummyMission
16 @Scope("ThrusterControlSystem") Class: EngineControl
17 @Scope("ThrusterControlSystem") Class: MyTerminatorPeriodicEventHandler
18 @Scope("ThrusterControlSystem") Class: MyTerminatorMission
19 @Scope("ThrusterControlSystem") Class: ThrusterMission
20 @Scope("ThrusterControlSystem") Field: burnTime in class: EngineControl
21 @Scope("ThrusterControlSystem") Field: myPEH in class: MyTerminatorMission
22 @Scope("ThrusterControlSystem") Field: myPeriodicParams in class: EngineControl
23 @Scope("ThrusterControlSystem") Field: period in class: ThrusterMission
24 @Scope("ThrusterControlSystem") Field: priority in class: ThrusterMission
25 @Scope("ThrusterControlSystem") Field: storage in class: ThrusterMission
26 @Scope("ThrusterControlSystem") Field: zero in class: EngineControl
```