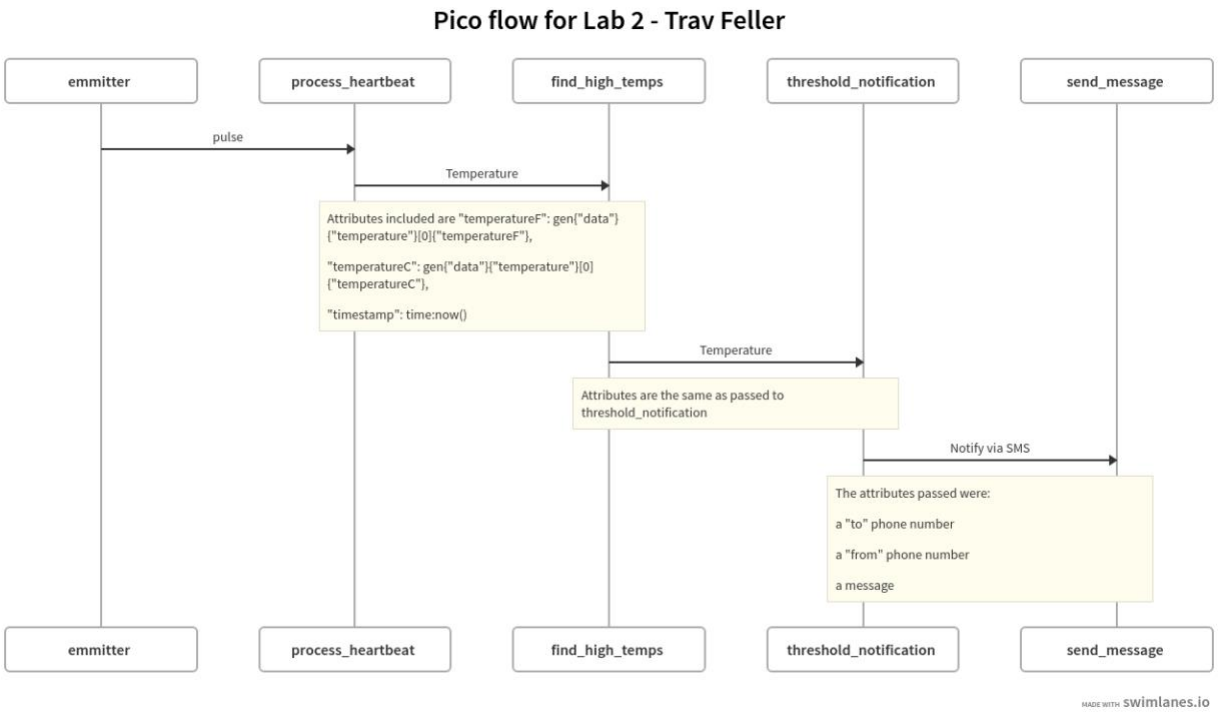
Trav Feller
Lab 2

1. Did you accomplish step 5 with an event expression or a rule conditional statement? What are the advantages and disadvantages of the method you used compared with the other?
    - I used an event expression, using assigning the event attribute to a local variable “gen” and then evaluating my action based on the value of “gen”. This is an event expression. The difference between this and the rule conditional is that a rule conditional will not select if the genericThing is not present, but in my example the rule will still select and then you can evaluate genericThing later and do other actions if the conditional does not fire. If you want to do something based off if genericThing is provided, use my rule. If you don’t need to do anything if genericThing is not provided, use the other one.
2. Suppose you had multiple temperature sensors all sending temperatures to your pico. What would be the advantages of creating a separate channel for each sensor?
    - You would be able to track the different logs based on channel, and you could potentially have different ruleset configurations based on channel. If they all ran on the same channel, it would be hard to differentiate sensors and they would all be running into race conditions.
3. What was the output of the testing your ruleset before the `find_high_temps` rule was added? How many directives were returned? How many rules do you think ran?
    - Before ‘find_high_temps’ was added, we were just returning the one directive from process_heartbeat. I had it set to "Do", {"something": "Here"}. Although the next event was raised, there was no rule to select it. It was only running the one process_heartbeat rule in my krl ruleset.
4. What was the output of the test after the `find_high_temps` rule was added? How many directives were returned? How many rules do you think ran?
    - After I added ‘find_high_temps’, it then still only returned one directive because I was no longer sending directives when it fired, I changed to use noop() functions. But, we were now successfully chaining pico rules. Now it was running the process heartbeat rule and the find high temps rule.
5. How do you account for the difference? Diagram the event flow within the pico (i.e. show the event flow from when the pico receives the first event to the directives being created) using a swimlane diagram (Links to an external site.).
    - I would account for the difference because ‘find_high_temps’ wasn’t initialized and the event was not caught so no other rules were raised and didn’t send directives.



6. Would you say that your find_high_temps rule is an event intermediary? If so, what kind? Justify your answer.
    - Yes. find_high_temps is never called except for internally, and with the current chain of rules, it is the only event that calls threshold_notification, therefore it sits intermediate between these two rules. This rule also has no action, it gets data in the prelude and then raises an event in the postlude, there is no main action. Find_high_temps is an event preprocessing. It takes data, evaluates the parameters and then passes on the event raised based on those parameters.
7. How do your logs show that the find_high_temps rule works? Pick out specific lines and explain them.
    - Below are two logs – one with the temperatureF set below the threshold, one with it set above the threshold
    - In the first labeled "TEMPERATURE BELOW THRESHOLD", you can see that the temperature was passed down at 7.6 degrees farenheight. In blue and white, you can see that process_hearbeat was called, and fired when it called the say_directive() function. It then triggered the "find_high_temps" function which you can see in blue and white did not fire. This is because the value of tempF was less than 70.
    - In the next log message on the next page, you can see that the same values were passed except the temperatureF was 71.6 which is above the threshold of 70. By following the trail of blue and white highlighted text, you can see that

"find_high_temps" fired and then triggered the event threshold_notification, which then triggered send_message

TEMPERATURE BELOW THRESHOLD

2022-01-27T02:45:01.464Z - EVENT ckyw7fcj1002u2oxxd0dw8q9s wovyn:heartbeat {"genericThing":{"typeId":"2.1.2","typeName":"generic.simple.temperature","healthPercent":74,"heartbeatSeconds":1,"data":{"temperature":[{"name":"enclosure temperature","transducerGUID":"ckyw8ddkw00dz2oxx3fkfehr5","units":"degrees","temperatureF":7.6,"temperatureC":22}]}}}

02:45:01.464Z [DEBUG] txnQueued EVENT ckyw7fcj1002u2oxxd0dw8q9s wovyn:heartbeat {"genericThing":{"typeId":"2.1.2","typeName":"generic.simple.temperature","healthPercent":74,"heartbeatSeconds":1,"data":{"temperature":[{"name":"enclosure temperature","transducerGUID":"ckyw8ddkw00dz2oxx3fkfehr5","units":"degrees","temperatureF":7.6,"temperatureC":22}]}}}

02:45:01.466Z [DEBUG] txnStart {}

02:45:01.466Z [DEBUG] event added to schedule {"eci":"ckyw7fcj1002u2oxxd0dw8q9s","domain":"wovyn","name":"heartbeat","data":{"attrs":{"genericThing":{"typeId":"2.1.2","typeName":"generic.simple.temperature","healthPercent":74,"heartbeatSeconds":1,"data":{"temperature":[{"name":"enclosure temperature","transducerGUID":"ckyw8ddkw00dz2oxx3fkfehr5","units":"degrees","temperatureF":7.6,"temperatureC":22}]}},.....

02:45:01.467Z [DEBUG] rule selected wovyn_base : process_heartbeat

02:45:01.467Z [DEBUG] fired

02:45:01.468Z [DEBUG] event added to schedule {"eci":"ckyw7fcj1002u2oxxd0dw8q9s","domain":"wovyn","name":"new_temperature_reading","data":{"attrs":{"temperatureF":7.6,"temperatureC":22,"timestamp":"2022-01-27T02:45:01.467Z"}},"time":1643251501467}

02:45:01.472Z [DEBUG] rule selected wovyn_base : find_high_temps

02:45:01.472Z [DEBUG] not fired

02:45:01.472Z [DEBUG] txnDone {}

TEMPERATURE ABOVE THRESHOLD

2022-01-27T02:44:48.207Z - EVENT ckyw7fcj1002u2oxxd0dw8q9s wovyn:heartbeat {"genericThing":{"typeId":"2.1.2","typeName":"generic.simple.temperature","healthPercent":74,"heartbeatSeconds":1,"data":{"temperature":[{"name":"enclosure temperature","transducerGUID":"ckyw8ddkw00dz2oxx3fkfehr5","units":"degrees","temperatureF":71.6,"temperatureC":22}]}}}

02:44:48.207Z [DEBUG] txnQueued EVENT ckyw7fcj1002u2oxxd0dw8q9s wovyn:heartbeat {"genericThing":{"typeId":"2.1.2","typeName":"generic.simple.temperature","healthPercent":74,"heartbeatSeconds":1,"data":{"temperature":[{"name":"enclosure temperature","transducerGUID":"ckyw8ddkw00dz2oxx3fkfehr5","units":"degrees","temperatureF":71.6,"temperatureC":22}]}}}

02:44:48.208Z [DEBUG] txnStart {}

02:44:48.209Z [DEBUG] event added to schedule {"eci":"ckyw7fcj1002u2oxxd0dw8q9s","domain":"wovyn","name":"heartbeat","data":{"attrs":{"genericThing":{"typeId":"2.1.2","typeName":"generic.simple.temperature","healthPercent":74,"heartbeatSeconds":1,"data":{"temperature":[{"name":"enclosure temperature","transducerGUID":"ckyw8ddkw00dz2oxx3fkfehr5","units":"degrees","temperatureF":71.6,"temperatureC":22... ... ...

02:44:48.212Z [DEBUG] rule selected wovyn_base : process_heartbeat

02:44:48.212Z [DEBUG] fired

02:44:48.212Z [DEBUG] event added to schedule {"eci":"ckyw7fcj1002u2oxxd0dw8q9s","domain":"wovyn","name":"new_temperature_reading","data":{"attrs":{"temperatureF":71.6,"temperatureC":22,"timestamp":"2022-01-27T02:44:48.212Z"}},"time":1643251488212}

02:44:48.214Z [DEBUG] rule selected wovyn_base : find_high_temps

02:44:48.214Z [DEBUG] fired

02:44:48.214Z [DEBUG] event added to schedule

{"eci":"ckyw7fcj1002u2oxxd0dw8q9s","domain":"wovyn","name":"threshold_violation","data":{"attrs":{"temperatureF":71.6,"temperatureC":22,"timestamp":"2022-01-27T02:44:48.212Z"}},"time":1643251488214}

02:44:48.216Z [DEBUG] rule selected wovyn_base : threshold_notification

02:44:48.216Z [DEBUG] fired

02:44:48.216Z [DEBUG] event added to schedule {"eci":"ckyw7fcj1002u2oxxd0dw8q9s","domain":"message","name":"send_message","data":{"attrs":{"to":"+14357035885","from":"+19377447606","message":"The coaxium was getting too hot at 2022-01-27T02:44:48.212Z!"}},"time":1643251488216}

02:44:48.222Z [DEBUG] rule selected test : send_message

02:44:48.688Z [DEBUG] fired

02:44:48.688Z [DEBUG] txnDone {}