

What I learned on this project.

I learned how to use RTI DDS to make a distributed program, using this was a lot easier than trying to implement some sort of server myself. The RTI DDS tool has certainly made its usefulness apparent. This project helped me to learn advanced techniques and tools of the RTI DDS system, especially with how topics work and modifying what to listen to on the reader end of things.

### Challenges Encountered

I encountered my largest problem with trying to get the filtered topic to work. It kept throwing errors at me for the longest time and I eventually found that there was a mistake in my PositionTypeCode file. I simply ended up regenerating it and it worked correctly. I spent longer than I care to admit on this but finding the solution didn't offer up any revelation of systematic error on my end. Everything else was fairly straight forward throughout the project and I don't feel that it posed too many challenges on me, other than the long amount of time it took to implement everything.

### Final Status

I feel like everything worked in my project, but the oddest part of it all was writing and reading from the different topics. I'm not sure if I have done this optimally, but I made a new reader and writer for each topic that I wanted to subscribe to, this made the project a bit more cumbersome to program. Another thing is that since I was using a lot of generated files, when I needed to reuse code I would just copy and paste because I wasn't sure how exactly to refactor the code. I thought it would be easier to copy and paste and this led to more duplicated code that I usually use, so if I were to do it again, I would make parts of the code more reusable to reduce duplicate code.

## Passenger one output

```
Position    Express1    Bus13          5      5      2.00          19      20:41:35
Position    Express1    Bus12          2      5      2.00          30      20:41:36
Boarding bus Bus12
Position    Express1    Bus11  light   5      5      1.50          85      20:41:36
Boarding bus Bus12
Position    Express1    Bus12  light   3      5      1.50          30      20:41:38
Position    Express1    Bus12  light   4      5      1.50          30      20:41:39
Unboarding bus Bus12at stop 4
Ending
RTI Data Distribution Service Nonprofit License issued to Washington State University (WSU02-UP) ... For non-production use only.
Expires on 30-jun-2019 See www.rti.com for more information.

Process finished with exit code 0
```

## Passenger two output

```
Position    Express2    Bus22          5      6      3.00          4      20:41:40
Position    Express2    Bus23  light   6      6      2.25          87      20:41:40
Position    Express2    Bus21          3      6      3.00          61      20:41:40
Boarding bus Bus21
Boarding bus Bus21
Position    Express2    Bus21  light   5      6      2.25          61      20:41:46
Position    Express2    Bus21          6      6      3.00          61      20:41:48
Position    Express2    Bus21          1      6      3.00          61      20:41:51
Position    Express2    Bus21          2      6      3.00          61      20:41:54
Unboarding bus Bus21at stop 2
Ending
RTI Data Distribution Service Nonprofit License issued to Washington State University (WSU02-UP) ... For non-production use only.
Expires on 30-jun-2019 See www.rti.com for more information.

Process finished with exit code 0
```

## PubLauncher Output

```
Bus11 published a Message at stop 1 on route 5 at 20:41:49
Bus12 published a Message at stop 4 on route 5 at 20:41:49
Bus13 published a Message at stop 2 on route 5 at 20:41:50
Bus11 published a Message at stop 2 on route 5 at 20:41:50
Bus12 published a Message at stop 5 on route 5 at 20:41:51
Bus22 published a Message at stop 3 on route 6 at 20:41:51
Bus23 published a Message at stop 4 on route 6 at 20:41:51
Bus21 published a Message at stop 1 on route 6 at 20:41:51
Bus11 published a Message at stop 3 on route 5 at 20:41:52
Bus13 published a Message at stop 3 on route 5 at 20:41:52
Bus12 published a Message at stop 1 on route 5 at 20:41:53
Bus11 published a Accident at stop 4 on route 5 at 20:41:54
Bus22 published a Accident at stop 4 on route 6 at 20:41:54
Bus23 published a Message at stop 5 on route 6 at 20:41:54
Bus21 published a Message at stop 2 on route 6 at 20:41:54
Bus12 published a Message at stop 2 on route 5 at 20:41:55
Bus13 published a Message at stop 4 on route 5 at 20:41:55
Bus11 published a Message at stop 5 on route 5 at 20:41:56
Bus12 published a Message at stop 3 on route 5 at 20:41:56
Bus23 published a Message at stop 6 on route 6 at 20:41:56
Bus13 published a Message at stop 5 on route 5 at 20:41:57
Bus21 published a Message at stop 3 on route 6 at 20:41:57
Bus22 published a Message at stop 5 on route 6 at 20:41:57
Bus11 published a Message at stop 1 on route 5 at 20:41:57
Bus12 published a Message at stop 4 on route 5 at 20:41:58
Bus13 published a Message at stop 1 on route 5 at 20:41:59
Bus11 published a Message at stop 2 on route 5 at 20:41:59
Bus21 published a Message at stop 4 on route 6 at 20:41:59
Bus22 published a Message at stop 6 on route 6 at 20:42:00
Bus12 published a Message at stop 5 on route 5 at 20:42:00
Bus23 published a Message at stop 1 on route 6 at 20:42:01
Bus13 published a Message at stop 2 on route 5 at 20:42:01
Bus11 published a Message at stop 3 on route 5 at 20:42:01
Bus21 published a Message at stop 5 on route 6 at 20:42:02
```

## Operator output

Position	Express1	Bus11	light	1	5	1.50	85	20:41:49
Position	Express1	Bus12		4	5	2.00	30	20:41:49
Position	Express1	Bus13		2	5	2.00	19	20:41:50
Position	Express1	Bus11	light	2	5	1.50	85	20:41:50
Position	Express1	Bus12		5	5	2.00	30	20:41:51
Position	Express2	Bus22		3	6	3.00	4	20:41:51
Position	Express2	Bus23		4	6	3.00	87	20:41:51
Position	Express2	Bus21		1	6	3.00	61	20:41:51
Position	Express1	Bus11		3	5	2.00	85	20:41:52
Position	Express1	Bus13	heavy	3	5	3.00	19	20:41:52
Position	Express1	Bus12		1	5	2.00	30	20:41:53
Accident	Express1	Bus11		4				20:41:54
Position	Express2	Bus23	light	5	6	2.25	87	20:41:54
Accident	Express2	Bus22		4				20:41:54
Position	Express2	Bus21		2	6	3.00	61	20:41:54
Position	Express1	Bus12	light	2	5	1.50	30	20:41:55
Position	Express1	Bus13		4	5	2.00	19	20:41:55
Position	Express1	Bus11	light	5	5	1.50	85	20:41:56
Position	Express1	Bus12		3	5	2.00	30	20:41:56
Position	Express2	Bus23	heavy	6	6	4.50	87	20:41:56
Position	Express1	Bus13		5	5	2.00	19	20:41:57
Position	Express2	Bus21	light	3	6	2.25	61	20:41:57
Position	Express2	Bus22		5	6	3.00	4	20:41:57
Position	Express1	Bus11		1	5	2.00	85	20:41:57
Position	Express1	Bus12		4	5	2.00	30	20:41:58
Position	Express1	Bus13		1	5	2.00	19	20:41:59
Position	Express1	Bus11		2	5	2.00	85	20:41:59
Position	Express2	Bus21	light	4	6	2.25	61	20:41:59
Position	Express2	Bus22	heavy	6	6	4.50	4	20:42:00
Position	Express1	Bus12		5	5	2.00	30	20:42:00
Position	Express2	Bus23		1	6	3.00	87	20:42:01
Position	Express1	Bus13		2	5	2.00	19	20:42:01
Position	Express1	Bus11		3	5	2.00	85	20:42:01
Position	Express2	Bus21	light	5	6	2.25	61	20:42:02

