

US EPA ARCHIVE DOCUMENT

Appendix B

Examples of Coding

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The specifications for the FRAMES-HWIR Technology Software System follow an object-oriented approach to computer programming, using a specific format in coding. The following are some examples of variables stored in the format described in Section 7.2 of the main document. Comments follow the semicolon and indicate the bolded portion of the pseudo code executed the file. An example of a scalar variable format would be as follows:

```
"Variable1",0,"float",1,"units"           ; lines 10 - 14
1.0e-3                                     ; line 42
```

An example of two, two-dimensional variables (which is how water concentration data are stored, in Conc and ConcTimes) would be as follows. Note that some specific values are highlighted to illustrate how to interpret the indices for a two-dimensional array. ConcTimes(1,3) and Conc(3,4) are bolded, and ConcTimes(4,9999) and Conc(4,9999) are underlined.

```
3
"Header Information Line 1"
"Header Information Line 2"
"Header Information Line 3"
3
"ConName",1,"String",1,"NA",
4,"Benzene","Toluene","Ethylene","Xylene",
"ConcTimes",2,"Float",2,"yrs",
4,
4,10.0,20.0,30.0,40.0,
10,1.0,2.0,3.0,4.0,5.0,6.0,7.0,8.0,9.0,10.0,
5,100.0,200.0,300.0,400.0,500.0,
10000,1.0,2.0,3.0,4.0,... ...,9998.0,9999.0,10000.0,
"Conc",2,"Float",2,"mg/l"
4,
4,111.0,222.0,333.0,444.0,
10,11.0,22.0,33.0,44.0,55.0,66.0,77.0,88.0,99.0,100.0,
5,1.0,2.0,3.0,4.0,5.0,
10000,1.10,2.20,3.30,4.40,... ...,9.998,9.999,10.,
```

ConName

Benzene	Toulene	Ethylene	Xylene
---------	---------	----------	--------

ConcTimes

10	20	30	40						
1	2	3	4	5	6	7	8	9	10
100	200	300	400	500					
1.0	2.0	3.0	4.0	....			9998	9999	10000

Conc

111	222	333	444						
11	22	33	44	55	66	77	88	99	100
1.0	2.0	3.0	4.0	5.0					
1.1	2.2	3.3	4.4	.....			9.998	.9999	10.

An example format of a Data Group file that contains both a scalar and a two-dimensional variable would be as follows:

```

3 ; line 1
"Header Line 1" ; line 4
"Header Line 2" ; line 4
"Header Line 3" ; line 4
2 ; line 7
"Variable1",0,"float",1,"units" ; lines 10 - 14
1.0e-3 ; line 42
"Variable2",3,"string",2,"units" ; lines 10 - 14
3,4 ; lines 31, 35
5,"a","b","c","d","e" ; lines 39, 42 five times
4,"f","g","h","I" ; lines 39, 42 four times
3,"j","k","l" ; lines 39, 42 three times
2,"m","n" ; lines 39, 42 two times
2 ; line 35
4,"A","B","C","D" ; lines 39, 42 four times
5,"E","F","G","H","I" ; lines 39, 42 five times
I ; line 35
2,"X","Y" ; lines 39, 42 two times

```

An example of data stored in one three-dimensional variable, ConcAndTimes, for concentrations in water is shown below. The assumption is that this Data Group used the variable ConcAndTimes to store both Concentrations and Times in the same variable. This is not recommended but it is possible. The

elements with indices of (1,?,?) are times; indices of (2,?,?) are concentrations. Again, some specific values are highlighted to illustrate how to interpret the indices for a three-dimensional array. ConcAndTimes(1,4,9999) is bolded, and ConcAndTimes(2,3,5) is underlined.

```

3
"Header Information Line 1"
"Header Information Line 2"
"Header Information Line 3"
3
"ConName",1,"String",1,"NA",
4,"Benzene","Toluene","Ethylene","Xylene",
"ConcAndTimes",3,"Float",2,"yrs and mg/l",
2,4,
4,10.0,20.0,30.0,40.0,
10,1.0,2.0,3.0,4.0,5.0,6.0,7.0,8.0,9.0,10.0,
5,100.0,200.0,300.0,400.0,500.0,
10000,1.0,2.0,3.0,4.0,... ...,9998.0,9999.0,10000.0,
4,
4,111.0,222.0,333.0,444.0,
10,11.0,22.0,33.0,44.0,55.0,66.0,77.0,88.0,99.0,100.0,
5,1.0,2.0,3.0,4.0,5.0,
10000,1.10,2.20,3.30,4.40,... ...,9.998,9.999,10.,
    
```

ConName

Benzene	Toulene	Ethylene	Xylene
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ConcAndTimes

10	20	30	40						
1	2	3	4	5	6	7	8	9	10
100	200	300	400	500					
1.0	2.0	3.0	4.0			9998	9999	10000

111	222	333	444						
11	22	33	44	55	66	77	88	99	100
1.0	2.0	3.0	4.0	5.0					
1.1	2.2	3.3	4.4	.....			9.998	.9999	10.