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Professor Labouseur  
1/27/21  
Lab 1

2. Short Essay: Data vs Information - Select a database in use today (real or imagined) and identify the elements of “data” stored therein and describe how the database organizes the “data” into “information”. Give contrasting examples of “data” and “information” that illustrate the meaningless of “data” without context and organization. Talk about the value the “information” provides once the component data is given context.  
(Couldn't find single data for Rocket League so I changed my answer)

The National Oceanic and Atmospheric Administration holds data for weather around airport stations. This data is put into a spreadsheet with a multitude of variables. The website offers a search engine to look up the airports in which their data is collected. The data is sent out to the airports and used to calculate air traffic and decide if flights should continue for safety reasons.

This is a snapshot of their data table.

U.S. Department of Commerce National Oceanic & Atmospheric Administration National Environmental Satellite, Data, and Information Service Current Location: Elev: 5319 ft. Lat: 42.8978° N Lon: -106.4736° W Station: CASPER NATRONA CO AIRPORT, WY US WBAN: 72569024089 (KCPR)												Local Climatological Data Daily Summary January 2021 Generated on 01/29/2022												National Centers for Environmental Information 151 Patton Avenue Asheville, North Carolina 28801											
Date	Temperature (F)							Degree Days (base 65F)		Sun (LST)		Weather		Precipitation (in)			Pressure (inHg)		Wind		Maximum Wind Speed = MPH														
	Max	Min	Avg	Dep	ARH	ADP	AWB	Heat	Cool	Rise	Set	Weather Type		TLC	Snow Fall	Snow Depth	Avg Stn	Avg SL	Avg Speed	Peak Speed	Peak Dir	Sust. Speed	Sust. Dir												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23												
01	32	13	23	-1.1	69	14	20	42	0	0737	1642			0.00	0.0	3	24.74	30.18	14.8	37	220	28	210												
02	36	23	30	5.8	61	15	23	35	0	0737	1643	SN		0.00	0.0	3	24.60	29.98	21.4	48	200	37	210												
03	37	23	30	5.7	62	18	26	35	0	0737	1644	SN		0.00	0.0	2	24.57	29.93	19.8	42	210	32	210												
04	42	23	33	8.6	55	19	27	32	0	0737	1645	SN		0.00	0.0	2	24.67	30.04	21.8	46	220	35	220												
05	40	14	27	2.5	76	23	27	38	0	0737	1646	SN FZFG BR FG		0.09	1.6	2	24.67	29.99	16.7	40	220	31	210												
06	31	12	22	-2.6	65	13	20	43	0	0737	1647			0.00	0.0	2	24.82	30.29	19.2	37	220	29	220												
07	38	20	29	4.4	63	18	26	36	0	0737	1648	SN BR		0.01	T	2	24.78	30.18	12.9	34	220	28	220												
08	33	9	21	-3.7	79	19	23	44	0	0737	1649			T	0.4	1	24.87	30.30	9.8	23	200	20	200												
09	28	6	17	-7.8	83	14	17	48	0	0736	1650	SN FZFG BR FG		0.01	0.1	1	24.91	30.41	5.5	14	230	12	250												
10	31	12	22	-2.8	69	13	19	43	0	0736	1651			0.00	0.0	1	24.88	30.36	18.9	39	210	29	200												
11	33	20	27	2.1	53	11	21	38	0	0736	1652			0.00	0.0	1	24.84	30.30	21.8	43	210	33	200												
12	39	23	31	6.1	48	15	26	34	0	0736	1653	SN		0.00	0.0	1	24.76	30.14	25.6	52	210	43	210												
13	48	26	37	12.1	54	22	32	28	0	0735	1655	TS RA SN BR		0.05	0.4	T	24.60	29.91	26.8	56	230	43	230												
14	30	13	22	-2.9	55	8	18	43	0	0735	1656			0.00	0.0	T	24.88	30.30	16.3	44	310	33	310												
15	38	13	26	1.0	50	10	21	39	0	0734	1657			0.00	0.0	T	24.81	30.28	15.1	32	210	25	210												
16	36	11	24	-1.0	75	19	23	41	0	0734	1658	SN BR		0.08	1.4	2	24.78	30.18	6.8	23	360	18	360												
17	38	17	28	3.0	64	18	25	37	0	0733	1659			0.00	0.0	2	24.65	30.04	14.4	35	200	28	210												
18	34	14	24	-1.0	77	18	22	41	0	0733	1701	SN FZFG BR FG		T	0.3	1	24.79	30.19	9.6	36	320	29	340												
19	32	11	22	-2.9	65	13	20	43	0	0732	1702	SN		T	T	1	24.89	30.38	17.1	50	200	39	210												
20	42	25	34	9.1	39	9	24	31	0	0731	1703	SN		0.00	0.0	T	24.64	30.01	25.0	53	200	38	210												
21	36	17	27	2.1	55	12	22	38	0	0731	1704	SN		0.01	T	T	24.65	30.03	6.8	31	230	24	230												
22	27	20	24	-0.9	86	19	22	41	0	0730	1706	SN BR		0.01	0.3	1	24.58	29.98	6.9	17	080	14	090												
23	23	4	14	-10.9	88	16	18	51	0	0729	1707	SN FZFG BR FG		0.22	3.0	1	24.52	29.92	6.5	19	360	15	360												
24	30	7	19	-5.8	81	13	16	46	0	0728	1708	FZFG BR FG		0.00	0.0	4	24.42	29.85	10.6	27	210	22	210												
25	21	-6*	8	-16.8	81	6	10	57	0	0728	1710			0.00	0.0	4	24.44	29.90	4.7	19	080	16	080												
26	19	3	11	-13.8	80	9	13	54	0	0727	1711	SN BR		T	0.1	3	24.50	29.93	7.0	30	200	23	210												
27	29	13	21	-3.8	65	13	20	44	0	0726	1712	SN BLSN		0.00	0.0	3	24.67	30.09	30.0	68	220	53	220												
28	43	28	36	11.2	46	18	30	29	0	0725	1713	RA SN		0.00	0.0	3	24.67	30.02	27.6	59	220	44	220												
29	51*	34	43	18.2	43	20	33	22	0	0724	1715			0.00	0.0	1	24.44	29.69	18.9	52	230	39	230												
30	44	24	34	8.2	72	24	29	31	0	0723	1716	SN		T	T	0	24.64	29.91	7.3	25	340	18	340												
31	41	21	31	6.2	52	14	25	34	0	0722	1717			0.00	0.0	0	24.94	30.36	19.1	45	210	35	210												
Monthly Averages   Totals																																			
-0.3												-0.03																							
Departure from Normal (1981-2010)												Number of days with...																							
Degree Days				Season-to-date				Temperature				Precipitation				Snow				Weather															
Total				Departure				Max				>=90"				>=0.1"				T-Storms															
Heating				1224				<=32"				<=32"				>=0.1"				Heavy Fog															
Cooling				0				0				0				1				2															
Date of 5-sec to 3-sec wind equipment change												Sea Level Pressure				Greatest...																			
2007-04-11												Maximum				30.53				19				0653											
												Minimum				29.56				29				2353											
																0.22				Precip				Snowfall											
																				3.0				4.0											
																				Date				23-23											
																				23-23				25											
Station Augmentation																																			
Name:PAID SNOW OBSERVER Lat: 42.885 Lon: -108.4408 Elevation: N/A Distance: 1mi SW Elements: PRECIP. SNOWFALL. SNOWDPTH Equipment: SRG. SNOWSTICK. SNOWBOARD																																			

This is a data table for Casper Natrona airport in Wyoming. It consists of variables such as

temperature, weather type, precipitation, pressure, and wind. All of the data is collected by the airport stations to use and help with their own measurements. This is also what is used to create maps to illustrate the weather. This data transforms into information from the airports. It is imperative that simplified weather information is given to pilots about to fly out of these airports and the weather information of the airports they intend to fly into. Without that communication, pilots would have to look into these databases themselves and decipher which information is needed. The “value” of this information instead of data is that pilots have efficient comms and proper safety checks.

3. Short Essay: Data Models - Briefly describe the hierarchical and network pre-relational data models. Explain their shortcomings in reaction to the relational model. Considering this, what do you think of XML as a model for data storage?

Before relational modeling, data was structured in a hierarchy. Given the example in class, Dungeons & Dragons, the hierarchy would start at the game then branch out to the players, and then finally branch out to the items. An issue with this structure is that there are duplicates of data for separate parent branches of data and also having items in the game that are there but not being used by any players. This was an inefficient way to structure the data. Improving on this in the future, the relational model was then produced from this. The relation model consisted of putting the items and characteristics into tables with ID numbers. This allowed for these data points to be selected and organized. XML or “extensible markup language” as a model for data storage is not an efficient tool. XML is a text-based format and does not have the same models as a relational model. You cannot use XML to create tables with similar characteristics to the relational model.