Przykładowe rozwiązanie projektu końcowego

Bartosz Czernecki 26/04/2018

Zadanie 1:

Stacja: Warszawa

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## 21 1986
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## 25 1990
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## 26 1991
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## 29 1994
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## 33 1998
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## 34 1999
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## 35 2000
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## 36 2001
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## 37 2002
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## 38 2003
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## 39 2004
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## 41 2006
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## 42 2007
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## 43 2008
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## 45 2010
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## 47 2012
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## 48 2013
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## 49 2014
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## 50 2015
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## 51 2016
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                     4.2 9.7 16.0 19.5 20.0 18.8 16.4 7.6
                                                             3.2
                                                                      9.78
## 52 2017
          -3.7 -0.8 6.1 7.7 14.6 18.5 18.9 19.7 14.0 10.0 4.9
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Docelowo zamiast wklejać całą tabelę jak poniżej można ją przesłać w jednym ze wskazanych formatów danych w formie załącznika do wykonanego projektu

Zadanie 2:

Poniższa tabela może być także w formie "obróconej" o 90 stopni (jak w treści polecenia)

Tabela 2: Wartości charakterystyczne

okres	srednia	maximum	rok_wyst_max	minimun	rok_wyst_min
Jan	-2.43	3.70	2007	-12.30	1987
Feb	-1.15	4.70	1990	-9.60	1986
Mar	2.80	7.20	2007	-2.20	1987
Apr	8.33	12.40	2000	5.00	1997
May	13.97	17.50	2002	9.90	1980
Jun	16.95	19.80	1979	14.40	1984
Jul	18.82	23.50	2006	15.00	1979
Aug	18.19	23.10	2015	15.20	1987
Sep	13.48	16.40	1967	10.60	1996
Oct	8.39	11.60	2000	5.40	2003
Nov	3.43	6.00	1996	-2.70	1993
Dec	-0.45	4.70	2015	-8.50	1969
rok	8.36	10.32	2015	6.57	1987

Zadanie 3:

		т	T 1	M	Α	M	т	T 1	Ι Δ		0.4	NT.	D	
1968 -1.57 -0.35	1000	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	year
1968 -1.57														
1969 -3.97 -3.15 -4.8 -1.63 0.83 0.15 0.18 0.89 0.32 -0.19 1.97 -8.05 -1.60 1970 -3.67 -4.45 -2.6 -1.23 -1.37 0.25 -1.52 -0.89 -1.28 -0.09 -1.13 -1.55 -0.14 1972 -4.97 0.45 0.9 -0.43 -0.27 0.15 1.88 -1.19 -1.68 -2.29 0.77 0.05 -0.55 1973 -0.37 2.45 1.1 -1.33 -0.97 -0.55 -0.62 -0.39 -0.68 -2.19 -0.03 -0.49 1974 1.23 3.25 1.8 -1.03 -2.67 -2.25 -3.02 -0.09 0.02 -1.69 -0.03 -2.75 -0.14 1975 5.03 0.55 1.6 -1.33 1.03 -0.45 -0.78 -0.09 -0.33 -1.39 -0.49 1976 -0.07 -3.05 -3.7 -0.43 -1.77 -1.75 -0.02 -2.39 -0.38 -1.49 -1.77 -0.35 -0.26 1978 1.03 -3.35 0.4 -1.93 -1.77 -1.75 -0.02 -2.39 -0.38 -1.49 -1.77 -0.35 -0.26 1979 -3.77 -4.75 -1.1 -1.53 0.73 -2.85 -3.82 -3.39 0.22 -2.29 -0.53 -3.65 -1.35 1980 -3.77 -4.75 -1.1 -1.53 0.73 -2.85 -3.82 -3.39 0.22 -2.29 -0.53 -3.65 -1.35 1981 -0.85 0.25 -1.17 -2.35 -2.22 -1.79 -0.88 0.01 -1.53 -0.25 -1.75 1983 -0.85 0.25 -1.7 0.77 -0.77 -2.55 -3.12 -0.19 -0.18 -1.19 -0.03 -1.35 -0.75 1984 -2.63 -0.55 -1.7 0.77 -0.77 -2.55 -3.12 -0.19 -0.18 -1.19 -0.33 -0.45 -0.19 1985 -5.87 -8.05 -0.8 0.07 -1.23 -2.15 -1.52 0.19 -1.28 -0.39 -2.73 0.05 -1.75 1989 4.23 5.85 -0.9 0.57 0.73 -1.15 -0.93 -0.99 -0.68 -0.11 -0.33 -0.55 -1.75 1989 -4.85 -0.99 -0.57 0.73 -0.15 -1.79 -0.88 -0.99 -0.75														
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$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1996	-3.37		-4.4			-0.35	-2.72	0.41	-2.88			-4.95	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		-1.97		-0.1	-3.33	-0.27	-0.35	-0.93	0.91		-2.29		0.25	
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$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	2000	1.03	3.65	0.6	4.07	1.33	0.85	-2.22	-0.09	-1.48	3.21	2.47	1.85	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		1.93	0.35	-0.6	-0.33	0.73	-1.75			-1.38	2.51		-3.75	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		1.73		1.7	0.67	3.53	0.65	2.28	2.51	0.22	-1.19	0.67	-6.15	0.95
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2014 -0.17 3.05 4.2 2.37 0.53 -0.55 2.57 0.01 1.62 1.31 1.37 1.35 1.47 2015 3.83 2.25 2.7 0.27 -0.57 0.75 1.28 4.91 1.92 -0.79 1.87 5.15 1.96 2016 -0.47 4.75 1.4 1.37 2.03 2.55 1.18 0.61 2.92 -0.79 -0.23 1.65 1.42										1.22				
2015 3.83 2.25 2.7 0.27 -0.57 0.75 1.28 4.91 1.92 -0.79 1.87 5.15 1.96 2016 -0.47 4.75 1.4 1.37 2.03 2.55 1.18 0.61 2.92 -0.79 -0.23 1.65 1.42							1.65		1.51	-1.08			2.85	
2016 -0.47 4.75 1.4 1.37 2.03 2.55 1.18 0.61 2.92 -0.79 -0.23 1.65 1.42		-0.17			2.37	0.53	-0.55		0.01	1.62	1.31	1.37	1.35	1.47
		3.83	2.25	2.7									5.15	
2017 -1.27 0.35 3.3 -0.63 0.63 1.55 3 0.07 1.51 0.52 1.61 1.47 2.95 1.01										2.92	-0.79	-0.23	1.65	
	2017	-1.27	0.35	3.3	-0.63	0.63	1.55	3 0.07	1.51	0.52	1.61	1.47	2.95	1.01

Podobnie jak w zadaniu nr1powyższa tabela może zostać przesłana w formie załącznika zapisanego w jednym z zaproponowanych formatów.

Zadanie 4:

Klasyfikacja termiczna miesięcy i lat według Lorenc:

klasa	JAN1	JAN2	FEB1	FEB2	MAR1	MAR2	APR1	APR2	MAY1	MAY2	JUN1	JUN2	JUL1	JUL2	AUG1	AUG2	SEP1	SEP2	OCT1	OCT2	NOV1	NOV2	DEC1	DEC2	ROK1	ROK2
ekstremalnie chłodny	NA	-10.81	NA	-9.20	NA	-3.05	NA	4.61	NA	10.23	NA	13.73	NA	14.24	NA	14.64	NA	9.70	NA	4.51	NA	-1.51	NA	-7.27	NA	6.01
anomalnie chłodny	-10.80	-9.14	-9.19	-7.59	-3.04	-1.88	4.62	5.35	10.24	10.98	13.74	14.37	14.25	15.15	14.65	15.35	9.71	10.45	4.52	5.29	-1.50	-0.53	-7.26	-5.91	6.02	6.48
bardzo chłodny	-9.13	-7.46	-7.58	-5.99	-1.87	-0.72	5.36	6.10	10.99	11.73	14.38	15.01	15.16	16.07	15.36	16.06	10.46	11.21	5.30	6.06	-0.52	0.46	-5.90	-4.55	6.49	6.95
chłodny	-7.45	-5.79	-5.98	-4.38	-0.71	0.45	6.11	6.84	11.74	12.47	15.02	15.66	16.08	16.98	16.07	16.77	11.22	11.96	6.07	6.83	0.47	1.45	-4.54	-3.19	6.96	7.42
lekko chłodny	-5.78	-4.11	-4.37	-2.77	0.46	1.62	6.85	7.58	12.48	13.22	15.67	16.30	16.99	17.90	16.78	17.47	11.97	12.72	6.84	7.61	1.46	2.43	-3.18	-1.83	7.43	7.88
normalny	-4.10	-0.77	-2.76	0.44	1.63	3.95	7.59	9.07	13.23	14.71	16.31	17.59	17.91	19.73	17.48	18.89	12.73	14.23	7.62	9.15	2.44	4.41	-1.82	0.90	7.89	8.82
lekko ciepły	-0.76	0.91	0.45	2.05	3.96	5.12	9.08	9.81	14.72	15.45	17.60	18.23	19.74	20.65	18.90	19.60	14.24	14.99	9.16	9.92	4.42	5.39	0.91	2.26	8.83	9.29
ciepły	0.92	2.58	2.06	3.66	5.13	6.29	9.82	10.55	15.46	16.20	18.24	18.87	20.66	21.56	19.61	20.31	15.00	15.74	9.93	10.70	5.40	6.38	2.27	3.62	9.30	9.76
bardzo ciepły	2.59	4.25	3.67	5.27	6.30	7.46	10.56	11.29	16.21	16.95	18.88	19.52	21.57	22.48	20.32	21.01	15.75	16.50	10.71	11.47	6.39	7.37	3.63	4.98	9.77	10.22
anomalnie ciepły	4.26	5.93	5.28	6.87	7.47	8.62	11.30	12.04	16.96	17.69	19.53	20.16	22.49	23.39	21.02	21.72	16.51	17.25	11.48	12.24	7.38	8.36	4.99	6.35	10.23	10.69
ekstremalnie ciepły	5.94	NA	6.88	NA	8.63	NA	12.05	NA	17.70	NA	20.17	NA	23.40	NA	21.73	NA	17.26	NA	12.25	NA	8.37	NA	6.36	NA	10.70	NA

Zadanie 5:

Klasyfikacja termiczna miesięcy i lat wg wyznaczonych wartości percentyli:

klasa	JAN1	JAN2	FEB1	FEB2	MAR1	MAR2	APR1	APR2	MAY1	MAY2	JUN1	JUN2	JUL1	HH 9	AUG1	AUG2	SEP1	SEP2	OCT1	OCT2	NOV1	NOV2	DEC1	DEC2	ROK1	ROK2
Klasa	JAINI	JAINZ	FEDI	FED2	MARI	MAR(2	AFKI	AF I\2	MAII	MAIZ	JUNI	JUNZ	JULI	JULZ	AUGI	AUG2	SEF I	OEF 2	OCII	0012	NOVI	NOV2	DECI	DEC2	ROKI	KOK2
ekstremalnie chłodny	NA	-8.14	NA	-6.00	NA	-1.70	NA	6.17	NA	11.68	NA	15.01	NA	15.96	NA	16.00	NA	11.09	NA	6.09	NA	-0.04	NA	-5.41	NA	6.73
anomalnie chłodny	-8.13	-6.39	-5.99	-5.54	-1.69	-0.59	6.18	6.60	11.69	12.10	15.02	15.49	15.97	16.32	16.01	16.41	11.10	11.25	6.10	6.10	-0.03	1.39	-5.40	-4.20	6.74	7.01
bardzo chłodny	-6.38	-5.07	-5.53	-4.13	-0.58	0.91	6.61	7.09	12.11	12.59	15.50	15.79	16.33	17.05	16.42	17.29	11.26	12.19	6.11	6.95	1.40	1.91	-4.19	-2.31	7.02	7.76
chłodny	-5.06	-3.78	-4.12	-2.43	0.92	1.89	7.10	7.41	12.60	13.59	15.80	16.12	17.06	17.89	17.30	17.48	12.20	12.59	6.96	7.69	1.92	2.65	-2.30	-0.95	7.77	7.90
lekko chłodny	-3.77	-2.91	-2.42	-1.43	1.90	2.69	7.42	7.83	13.60	13.69	16.13	16.59	17.90	18.39	17.49	17.89	12.60	13.03	7.70	7.99	2.66	3.27	-0.94	-0.59	7.91	8.18
normalny	-2.90	-1.29	-1.42	-0.61	2.70	3.69	7.84	8.95	13.70	14.45	16.60	17.25	18.40	19.39	17.90	18.55	13.04	13.75	8.00	8.49	3.28	4.15	-0.58	0.75	8.19	8.67
lekko ciepły	-1.28	-0.54	-0.60	0.23	3.70	3.89	8.96	9.09	14.46	14.69	17.26	17.66	19.40	19.96	18.56	18.76	13.76	14.20	8.50	9.06	4.16	4.76	0.76	1.03	8.68	8.89
ciepły	-0.53	0.27	0.24	1.61	3.90	4.57	9.10	9.47	14.70	15.27	17.67	17.99	19.97	20.17	18.77	19.07	14.21	15.01	9.07	9.97	4.77	5.17	1.04	1.39	8.90	9.12
bardzo ciepły	0.28	1.75	1.62	3.18	4.58	5.48	9.48	9.87	15.28	15.59	18.00	18.58	20.18	21.05	19.08	19.67	15.02	15.58	9.98	10.38	5.18	5.59	1.40	2.38	9.13	9.61
anomalnie ciepły	1.76	2.26	3.19	3.59	5.49	6.31	9.88	10.87	15.60	15.82	18.59	18.99	21.06	21.61	19.68	20.14	15.59	15.98	10.39	10.94	5.60	5.83	2.39	2.81	9.62	9.78
ekstremalnie ciepły	2.27	NA	3.60	NA	6.32	NA	10.88	NA	15.83	NA	19.00	NA	21.62	NA	20.15	NA	15.99	NA	10.95	NA	5.84	NA	2.82	NA	9.79	NA

Zadanie 6:

Wynik klasyfikacji miesięcy i lat wg klasyfikacji kwantylowej

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	year
1966	4	6	5	6	4	7	6	4	4	10	4	6	6
1967	4	8	9	5	6	5	7	4	10	10	6	4	7
1968	4	6	6	9	2	9	3	6	7	6	6	3	5
1969	2	3	1	3	8	6	6	3	7	6	9	1	2
1970	3	2	3	3	3	6	4	3	3	4	7	6	3
1971	4	7	3	5	9	4	6	9	1	6	4	10	6
1972	2	6	6	6	5	6	9	3	3	1	7	6	4
1973	6	8	7	3	4	5	5	5	5	3	2	5	4
1974	7	9	9	4	1	1	1	6	6	3	6	9	6
1975	10	6	8	3	8	5	7	8	10	5	3	7	8
1976	6	3	2	6	3	2	6	1	6	3	7	4	3
1977	6	7	9	2	4	7	2	2	2	7	9	5	5
1978	6	3	6	2	3	2	2	1	1	6	8	3	2
1979	3	2	4	3	7	10	1	3	6	1	5	8	3
1980	3	5	3	2	1	3	3	2	4	6	3	5	1
1981	5	6	7	1	6	6	5	3	7	7	6	3	4
1982	5	5	6	1	6	3	6	9	9	7	7	8	6
1983	10	4	8	9	9	6	6	6	8	7	4	5	8
1984	8	5	4	7	5	1	1	6	6	9	4	4	4
1985	1	1	5	6	8	1	4	6	3	5	2	9	1
1986	6	1	4	6	7	6	4	3	2	5	8	6	3
1987	1	6	1	3	2	3	4	1	5	6	6	7	1
1988	9	8	4	4	9	6	6	4	6	4	2	7	6
1989	10	10			6	3		5	8	9	2	8	
$\frac{1989}{1990}$	10	10	10	7	6	6	6	5	1	8	7	6	9
$\frac{1990}{1991}$	8	3	7	5	1	2	6	6	8	5	6	4	5
$\frac{1991}{1992}$			6		4	9		10	4	1	6		7
$\frac{1992}{1993}$	7 8	8		7		3	8	3	3	5		5	
		5 4	3		10						1	9	3
$\frac{1994}{1995}$	10 6		6	7 5	3	3 7	10 8	6 7	8	8	6	6 2	6
		10	6						6				
$\frac{1996}{1997}$	3	9	2	6	8 5	5	4	9	1	8	10	6	4
	4		5		7				5		5		
$\frac{1998}{1999}$	9	10	4	10		8	4	2	6	4	1	3	5
	8	6	9	10	9	8	9	5	10	6	3	6	8
2000	6	9	6	10		8	3	6	3	10	10	8	10
2001	8	6	5	6	7	2	9	9	3	10	4	2	6
2002	7	10	8	7	10	7	10	10	6	4	6	1	9
2003	5	3	4	4	10	8	9	7	7	1	8	7	6
2004	3	7	6	6	2	3	4	8	6	9	6	9	6
2005	9	4	3 2	7	5	4	9	5	10	8	5	6	6
2006	1	4		7	6	9	10	5	10	10	10	10	8
2007	10	6	10	9	10	10	6	8	6	6	3	6	10
2008	9	9	7	8	6	10	6	7	5	9	9	8	10
2009	6	6	5	10	4	5	7	7	9	3	9	4	7
2010	2	5	7	9	4	8	10	10	4	1	10	1	5
2011	7	4	6	10	6	10	5	8	9	6	5	10	9
2012	7	1 7	9	8	9	7	10	9	8	6	10	3	7
2013	5	7	1	6	9	10	8	10	4	10	9	10	8
2014	6	9	10	10	7	5	10	6	9	8	8	7	10
2015	9	8	10	6	4	8	8	10	9	4	9	10	10
2016	5	10	8	9	10	10	8	8	10	4	5	8	10
2017	5	6	10	5	7	9	6	10	7	9	8	10	9

Wynik tego zadania również można załączyć w postaci pliku w jednym z wymienionych wcześniej	formatów