Course: **Human-Computer Interaction**
Topic: **Statistical data analysis in HCI research**
Resource: **A mock-up case (student assignment)**

The experiment investigates the efficiency of text entry based on the WPM metric using a specially developed virtual keyboard for mobile devices. The special feature of this keyboard is that it does not have a standard QWERTY layout, but is based on two alternatives: the user can use an alphabetical order of the keys or a specific order determined as part of predictive modeling using a genetic algorithm.

In the controlled experiment, 30 participants took part in the typing tasks in both versions of the keyboard (with alphabetical and specific layout) and in three different ways: one-handed typing with the thumb, typing with two thumbs and typing in cradle mode (while one hand holds the device, the index finger of the other hand is used for typing). The order of the test conditions was properly
counterbalanced. Each user entered 30 different phrases for each test condition so that the average performance for each condition could be determined. The mean values of the WPM metric for each participant are available in an Excel file (below).

Perform a statistical analysis of the available data and draw appropriate conclusions.

DATA

CASE 04	ALPHABETICAL LAYOUT			SPECIFIC LAYOUT		
	One-thumb	Two thumbs	Cradling	One-thumb	Two thumbs	Cradling
	Average WPM					
Participant 01	18.22	23.63	19.66	17.87	26.39	11.79
Participant 02	15.81	23.66	26.95	18.76	16.26	10.44
Participant 03	20.99	24.36	26.95	21.37	28.16	15.61

Participant 04	16.96	21.59	12.50	18.61	18.17	15.74
Participant 05	18.21	22.07	22.65	23.24	25.70	14.01
Participant 06	9.78	15.62	24.61	19.01	21.84	12.07
Participant 07	17.45	27.71	25.06	9.66	16.92	12.43
Participant 08	22.21	20.20	15.39	23.07	30.30	11.85
Participant 09	13.53	15.23	16.51	21.25	23.63	15.06
Participant 10	14.94	20.35	14.27	17.06	15.70	14.94
Participant 11	21.34	20.46	7.59	18.37	25.79	18.29
Participant 12	18.53	25.13	21.26	16.06	17.54	10.44
Participant 13	19.48	22.70	10.62	18.63	21.86	11.23
Participant 14	19.66	19.89	22.15	19.90	23.99	17.44
Participant 15	12.86	20.10	9.68	20.28	24.60	13.30
Participant 16	19.55	25.89	28.02	17.01	21.21	17.54
Participant 17	17.16	18.15	20.69	22.08	25.66	15.84
Participant 18	16.96	13.99	20.04	17.80	23.33	17.07
Participant 19	11.18	23.01	7.77	26.65	23.74	16.57
Participant 20	18.91	26.00	20.88	10.31	25.10	9.83
Participant 21	19.23	25	18.17	14.36	24.63	16.77
Participant 22	15.95	20.66	19.32	17.85	20.68	14.38
Participant 23	16.98	18.54	15.3	16.88	25.13	16.08
Participant 24	15.55	19.29	8.6	17.73	19	12.53
Participant 25	14.38	21.28	21.94	23.25	33.47	12.95
Participant 26	16.5	31.12	23.2	22.71	24.36	12.5
Participant 27	15.06	18.61	17.11	19.06	20.2	15.61
Participant 28	15.56	19.41	19.12	21.9	19.87	6.65
Participant 29	15.86	24.8	10.77	11.48	28.09	14.91
Participant 30	16.65	20.22	30.21	10.67	31.74	14.3