

# KONGU ENGINEERING COLLEGE

## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Program & Department of the Students : BE & CSE

22CSH01 - Data Preparation and Analysis

### Tutorial - 2

1.	<p>A researcher was interested in correlating ranks in languages and ranks in mathematics. She collected the data in 12 students. Their ranks are given below. Find the correlation between ranks in Language and Science using Spearman's rho and Kendall's tau.</p> <p style="text-align: center;"><b>Students</b></p> <table><tr><td></td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td><td>G</td><td>H</td><td>I</td><td>J</td><td>K</td><td>L</td></tr><tr><td>Rank in Language</td><td>3</td><td>2</td><td>5</td><td>6</td><td>7</td><td>9</td><td>10</td><td>8</td><td>1</td><td>4</td><td>12</td><td>11</td></tr><tr><td>Rank in Science</td><td>11</td><td>8</td><td>6</td><td>9</td><td>12</td><td>1</td><td>2</td><td>5</td><td>10</td><td>7</td><td>3</td><td>4</td></tr></table>		A	B	C	D	E	F	G	H	I	J	K	L	Rank in Language	3	2	5	6	7	9	10	8	1	4	12	11	Rank in Science	11	8	6	9	12	1	2	5	10	7	3	4	CO3	K3	5 M			
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2.	<p>A company manufactures an electronic device to be used in a very wide temperature range. The company knows that increased temperature shortens the life time of the device, and a study is therefore performed in which the life time is determined as a function of temperature. The following data is found:</p> <table><tr><td>Temperature (in Celsius)</td><td>10</td><td>20</td><td>30</td><td>40</td><td>50</td><td>60</td><td>70</td><td>80</td><td>90</td></tr><tr><td>Life time (in hours)</td><td>420</td><td>365</td><td>285</td><td>220</td><td>176</td><td>117</td><td>69</td><td>34</td><td>5</td></tr></table> <p>Check temperature and lifetime are correlated or not using Pearsons rank correlation.</p>	Temperature (in Celsius)	10	20	30	40	50	60	70	80	90	Life time (in hours)	420	365	285	220	176	117	69	34	5	CO3	K3	5 M																						
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3.	<table><tr><td>Call Center A</td><td>Call Center B</td></tr><tr><td>136</td><td>124</td></tr><tr><td>145</td><td>131</td></tr><tr><td>139</td><td>128</td></tr><tr><td>132</td><td>130</td></tr><tr><td>141</td><td>129</td></tr><tr><td>143</td><td>135</td></tr><tr><td>138</td><td>132</td></tr><tr><td>139</td><td></td></tr></table> <p>————— Calls processed by two different call centres are shown above. Test for their mean difference.</p>	Call Center A	Call Center B	136	124	145	131	139	128	132	130	141	129	143	135	138	132	139		CO3	K3	5 M																								
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4.	<p>Grades in a Data Science course and Machine Learning course taken simultaneously were as follows for a group of students.</p> <p>Are the grades in machine learning and Data Science are related? Use <math>\alpha = 0.05</math>.</p> <table><tr><td>Machine Learning</td><td colspan="4">Data Science</td><td></td></tr><tr><td></td><td>O</td><td>A+</td><td>A</td><td>B+</td><td>Total</td></tr><tr><td>O</td><td>25</td><td>6</td><td>17</td><td>13</td><td>61</td></tr><tr><td>A+</td><td>17</td><td>16</td><td>15</td><td>6</td><td>54</td></tr><tr><td>A</td><td>18</td><td>4</td><td>18</td><td>10</td><td>50</td></tr><tr><td>B+</td><td>10</td><td>8</td><td>11</td><td>20</td><td>49</td></tr><tr><td>Total</td><td>70</td><td>34</td><td>61</td><td>49</td><td>214</td></tr></table>	Machine Learning	Data Science						O	A+	A	B+	Total	O	25	6	17	13	61	A+	17	16	15	6	54	A	18	4	18	10	50	B+	10	8	11	20	49	Total	70	34	61	49	214	CO3	K3	5 M
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## Course Faculty