```matlab
 1 % NAME: ADITYA BARMAN
 2 % ROLL: 002320601024
 3 % PROBLEM 11. Spearman's Rank Correlation
 4
 5
 6 clc, clearvars, close all
 7
 8 math_x = [43 77 64 96 48 35 86 71];
 9 phys_y = [36 68 49 79 50 41 82 65];
10 math_x_cp = math_x;
11 phys_y_cp = phys_y;
12 n = length(math_x);
13
14 R_x = zeros(1, n);
15 R_y = zeros(1, n);
16
17 for i = 1:n
18     [valx, idx] = max(math_x);
19     math_x(idx) = -Inf;
20     R_x(idx) = i;
21
22     [valy, idx] = max(phys_y);
23     phys_y(idx) = -Inf;
24     R_y(idx) = i;
25 end
26
27 d_sq = (R_x - R_y) .^ 2;
28 d_sq_sum = sum(d_sq);
29
30 sp_num = 6 * d_sq_sum;
31 sp_denom = n * ((n ^ 2) - 1);
32
33 sp = 1 - (sp_num / sp_denom);
34 table_t = zeros(8,5);
35 table_t(1:8, 1) = math_x_cp;
36 table_t(1:8, 2) = phys_y_cp;
37 table_t(1:8, 3) = R_x;
38 table_t(1:8, 4) = R_y;
39 table_t(1:8, 5) = d_sq;
40 disp(table_t)
41 fprintf('The Spearman Rank Correlation is %.4f\n', sp);
```

```
42
43
44
45 % ================= OUTPUT =================
46
47 %     43     36     7     8     1
48 %     77     68     3     3     0
49 %     64     49     5     6     1
50 %     96     79     1     2     1
51 %     48     50     6     5     1
52 %     35     41     8     7     1
53 %     86     82     2     1     1
54 %     71     65     4     4     0
55
56 % The Spearman Rank Correlation is 0.9286
57
58 % =========================================
59
```