Assignment 04: Week 05-06 Academic Content Creation: Data Processing
Practice of Basic Informatics – E2 (2024 Second Semester)
(Report Due: Nov. 29, 16:30)

Note:

1. Please download "Assignment04.xlsx" before you read the questions below. You will find four sheets (**Q1, Q2, Q3, Q4**) in the downloaded Spreadsheet.

2. You can create all the tables, graphs and summary in the provided Spreadsheet and only submit the Spreadsheet for this assignment. Please confirm that all the calculation results and graphs can be correctly displayed in the Spreadsheet before your submission.

3. You can also explain the details of the results and summary by submitting a document together with the Spreadsheet.

Questions:

1. Create the following tables and graphs from the data in **Q1**.

(1) Create a table for the aggregated sales amount (Price*Quantity) and quantity per product.

(2) Create a table for the aggregated sales amount (Price*Quantity) per half month (2014/4/1-2014/4/15, 2014/4/16-2014/4/30, etc.).

(3) Create a graph for showing the aggregated sales amount per product.

(4) Create a graph for showing the aggregated sales amount per half month.

2. Use the techniques of relative and absolute cell references to create a multiplication table in **Q2** by filling an equation in C4 and copying it to all other cells. Please note that you do not need to fill equations directly in other cells other than C4.

3. Use the techniques of relative and absolute cell references to complete Table 3 and Table 4 in **Q3**. Fill an equation in D17 and copy the equation to all the other cells in Table 3. Fill an equation in D26 and copy the equation to all the other cells in Table 4.

4. Create the following tables and graphs in **Q4** by simulating and analyzing the Two Dice Sum Game.

(1) Create a table of theoretical probabilities for all possible sums on two dice.

(2) Create a graph for showing the theoretical probabilities for all possible sums on two dice.

(3) Create a table of 100 trials of two dice sum. Then, create a table for aggregating the frequency (number of appearances) and experimental probability (frequency/100) for each possible sum (2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12) on dice for the 100 trials.

(4) Create a graph for showing the experimental probabilities for all possible sums on two dice in above 100 trials.

(5) Create a table of 1,000 trials of two dice sum. Then, create a table for aggregating the frequency (number of appearances) and experimental probability (frequency/1000) for each possible sum (2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12) on dice for the 1,000 trials.

(6) Create a graph for showing the experimental probabilities for all possible sums on two dice in above 1,000 trials.

(7) Make a brief summary to analyze the simulation results.

Two Dice Sum Game

A traditional die is a cube, with each of its six faces showing a different number of dots (pips) from 1 to 6.

Pick up a pair of dice and roll them. When they stop, two faces will be showing. The dice might show 1 and 3, or maybe 2 and 4. Roll them again and there is a good chance that a different pair of faces will show up. We say that the experimental result is not reproducible and that the results from the dice fluctuate. By rolling two dice, the sum of the scores on the two dice is an integer between 2 and 12. Let's look at the theoretical probabilities for all possible sums.

Sum on dice	Pairs of dice	Probability
2	1+1	1/36 = 3%
3	1+2, 2+1	2/36 = 6%
4	1+3, 2+2, 3+1	3/36 = 8%
5	1+4, 2+3, 3+2, 4+1	4/36 = 11%
6	1+5, 2+4, 3+3, 4+2, 5+1	5/36 = 14%
7	1+6, 2+5, 3+4, 4+3, 5+2, 6+1	6/36 = 17%
8	2+6, 3+5, 4+4, 5+3, 6+2	5/36 = 14%
9	3+6, 4+5, 5+4, 6+3	4/36 = 11%
10	4+6, 5+5, 6+4	3/36 = 8%
11	5+6, 6+5	2/36 = 6%
12	6+6	1/36 = 3%

Here, we're going to see the different probabilities for each integer to appear for different trial times and represent this with a simulation with Spreadsheet.

Throw a die by using the function RANDBETWEEN(1,6) in a Spreadsheet.