Full Stack Development with AI

Lab 5.2 – Variables, Data Types and Operators in JavaScript

Lab Overview

In this lab, you will learn how to work with variables, data types and operators in JavaScript through some basic programming exercises.

In the following programming exercises, you should use the Node.js environment to write and run the JavaScript source files. To obtain the input data from the user, use the `prompt-sync` package. For output, use the `console.log()` function.

You can install the `prompt-sync` package using the following `npm` command:

```
npm install prompt-sync
```

To run a JavaScript in Node.js, you need to use the `node` command and followed by the filename. For example:

```
node ex01.js
```

Exercise 1 – Chicken Rice Cooking

Chicken rice is a dish of poached chicken and seasoned rice, served with chilli sauce. It is a very popular dish in Southeast Asian countries, including Singapore, Thailand and Malaysia.

Write a JavaScript that asks user to enter separately the amount of chicken, rice and chili in kilogram that is required to cook a portion of chicken rice for 1 diner. The JavaScript should then ask the user for the number of diners that is required.

Finally, the JavaScript should compute and print out the total amount of chicken, rice and chili that is required for the required number of diners. Note that the amount that is required for each type of raw ingredient per diner may be less than 1 kg.

Exercise 2 – Currency Exchange

Assume that the prevailing exchange rate from US Dollar (USD) to Singapore Dollar (SGD) is 1.3100. Write a JavaScript that asks the user for the amount of USD to be exchanged for SGD and print out the equivalent amount in SGD.

Write another JavaScript that asks user for the amount of SGD to be exchanged into for USD and print out the equivalent amount in USD.

Sample Input	Sample Output
USD to SGD, 100	131
USD to SGD, 250	327.5
SGD to USD, 100	76.33587786259541
SGD to USD, 250	190.83969465648855

Exercise 3 – Currency Exchange Rounding

Observe that the floating-point results in Exercise 2 may consist of many fractional digits. How can you round the results to at most 2 fractional digits?

***Hint**: In JavaScript, the `Math.round()` method returns the value of a number rounded to the nearest integer.*

Sample Input	Sample Output
USD to SGD, 100	131
USD to SGD, 250	327.5
SGD to USD, 100	76.34
SGD to USD, 250	190.84

Exercise 4 - Temperature Conversion

The two most commonly used temperature scales are the Celsius scale (°C) and the Fahrenheit scale (°F). On the Celsius scale, the freezing point of water is defined as 0°C and the boiling point of water is defined as 100°C. On the Fahrenheit scale, the freezing point of water is defined as 32°F and the boiling point of water is defined as 212°F.

Write a JavaScript that asks user to input a temperature in Celsius and print out the temperature converted to Fahrenheit.

Write another JavaScript that asks user to input a temperature in Fahrenheit and print out the temperature converted to Celsius.

All converted temperatures should be rounded to at most 1 fractional digits.

Sample Input	Sample Output
Celsius to Fahrenheit, 0	32
Celsius to Fahrenheit, 33.3	91.9
Fahrenheit to Celsius, 180.5	82.5
Fahrenheit to Celsius, 212	100

Exercise 5 – Find the Last Digit

Write a JavaScript to print out the last digit, i.e., the rightmost digit, of any positive integer input by the user. The input must be treated as a number.

Sample Input	Sample Output
1	1
5	5
17	7
258	8

-- End of Lab --