B2.1a

Programming fundamentals, part 1

CHAPTER ASSIGNMENT

Name _____ Class _____ No. _____ Date _____

Answer every question in the space given. Show your working. You may use the chapter page to help you.

Questions from *Computer Science for the IB Diploma*, 1st edition (2025), Paul Baumgarten, Ioana Ganea, Carl Turland (Hachette Learning), for classroom use.

Review Questions — Variables and Data Types (pp. 298–299)

1. Define the term "variable".

2. Explain why variables are used in programming.

3. State three data types used in programming.

4. Suggest a way to declare a variable in the programming language you are currently studying.

5. Identify rules and conventions that you could follow when naming variables.

6. Explain why it is important to choose an appropriate data type for a variable.

7. Identify a situation where you need to change the data type of a variable during the execution of a program.

8. Identify an example of a common error when using variables and explain how you would fix it.

9. Explain how the choice of data type affects memory usage and performance in a program.

10. Evaluate the following Boolean expressions if `a = 8` and `b = 3`:

    (a) `E = (a < b) or (a > 5)`

    (b) `E = !(a >= b)`

    (c) `E = (a < 8) and (b > 3)`

    (d) `E = (a == 8)`

    (e) `E = !(a == b) or (a > b)`

11. Identify the most appropriate data type to store:

    (a) your name

    (b) your age

(c) your phone number

(d) whether an item is out of stock

(e) the price of a flight ticket.

12 Identify three legal and three illegal identifier names in the programming language you study.

Programming Exercises — Variables and Expressions (p. 299)

1 Construct code to output a joke on the screen.

2 Construct code to ask the user to enter their name, store it in a variable and display it on the screen, together with a welcome message.

3 Copy the following expressions and display the value of `E` after each one of them. Check whether your answers to review question 10 above are correct.

```
a = 8
b = 3
E = (a < b) or (a > 5)
E = !(a >= b)
E = (a < 8) and (b > 3)
E = (a == 8)
E = !(a == b) or (a > b)
```

Programming Exercises — Operators (p. 304)

1. Ask the user to enter three numbers. Output their average. For example, if the input is: 3, 4 and 5, the output is 4.

2. Ask the user to enter their name and age. Output a message that includes the name and the age that the user will be in 10 years. For example, if the input is Bob, 15, the output should be `[Bob, in ten years you'll be 25 years old]`.

3. Ask the user to enter a three-digit number. Output the sum of all three digits. For example, if the input is 125, the output should be 8.

Programming Exercises — String Manipulation (p. 310)

1. Construct code that asks the user to provide their name, house / flat number and their street number or name. Concatenate this information to display a message such as the following. (Attempt to write the message by using one single line of code, and ensure it is displayed on two separate lines, as shown.)

```
From: Name Address: Full Address
Message: Why was there a bug in the computer? Because it was looking for a "byte" to
eat!
```

2. Construct code that allows the user to enter their first and last names. Concatenate the two values, add a space in between and display the full name together with its length without the space.

3. Construct code that allows the user to enter a noun and a letter. Replace all occurrences of that letter with the `@` symbol.

End of assignment · Check your answers against the chapter at gurujazzy.com/subjects/ib-computer-science/b2-1-fundamentals-1/