

# IS1110 Tutorial 3 – Exercises

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This tutorial builds on last week. You will continue to practise variables, types, operators, user input, flowcharts and pseudocode.

## 0) SETUP

Create a folder Tutorial\_3 and a Python file tutorial3.py. Save your code for each exercise there.

## 1) Receipt: subtotal, tax, and total

A shop applies a sales tax to a purchase. Ask for the **subtotal** and the **tax rate** as a percentage (e.g., enter 23 for 23%). Compute the **tax amount** and the **grand total**.

- Print in the following format: Subtotal: €X.XX | Tax (XX%): €X.XX | Total: €X.XX

## 2) Seconds → hh:mm:ss

Ask a user for a **number of seconds** (int). Convert it to hours:minutes:seconds using // and % only.

- Result should look like 01:05:09

## 3) Triangle area (base & height)

Ask user for base and a height in metres. Compute  $\text{area} = 0.5 * \text{base} * \text{height}$ .

Round answer to 1 decimal place and print answer with unit

#### 4) Concatenate vs Add (casting practice)

Ask the user for **two whole numbers**, but read them **as strings** first.

1. Print their string concatenation (variable a + variable b).
2. Then convert both to integers and
  - Calculate sum
  - Multiply together
  - Find average as a float with 1 decimal place.
  - Print results for sum, multiply and average

#### 5) Tip & split calculator

Ask for the **bill amount** (float), **tip percent** (e.g., 12.5), and **number of people** (int).  
Compute **tip**, **total**, and **amount per person**.

- Print in the following format: Tip: €X.XX | Total: € X.XX | Each: € X.XX

## 6) pseudocode & flowchart exercises (no coding)

For each: is is required to

- (a) list **I/P/O**,
- (b) write **pseudocode**,
- (c) draw a **flowchart**.

### 1) Library late fee

A library charges **€0.25 per day** late. Ask for **days late** (int). Compute and output the **fee** in euros to 2 decimals.

### 2) Travel time calculator

Ask for **distance in km** (float) and **average speed in km/h** (float). Compute **time in hours** as distance / speed. Also compute **hours** and **minutes** (minutes are the fractional part  $\times 60$ , rounded to nearest whole minute).

### 3) Unit converter combo

Ask for a **length in centimetres** (float). Output the equivalent in **meters** and **millimetres**.

# 1. Library Late Fee

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## I/P/O

Inputs:

- days\_late (integer)

Processes:

- Compute  $\text{late\_fee} = \text{days\_late} * €0.25$
- Round late\_fee to 2 decimal points

Output:

- late\_fee in Euro

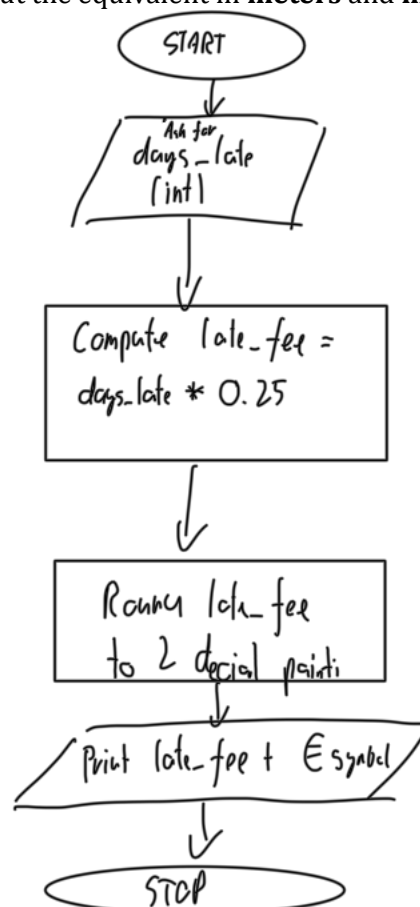
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## Pseudocode

INPUT days\_late

PROCESS ~~late~~ fee = days\_late \* 0.25

PROCESS round(late\_fee, 2)



## # 2. Travel Time Calculator

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### ## I/P/O

Inputs:

- distance (float)
- avg\_speed (float)

Processes:

- Compute time = distance / speed
- Compute hours = time // 60
- Compute minutes = time % 60

Output:

- late\_fee in Euro

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### ## Pseudocode

INPUT distance

INPUT avg\_speed