

CSE 1300 - Assignment 1

Summer 2025

This assignment continues to build on computational thinking skills. You will apply **Decomposition**, **Algorithmic Thinking**, **Abstraction**, and **Pattern Recognition** to solve the given problems.

This is an **individual assignment**, but you may attend a CCSE Tutoring Session if you need help.

Instructions

Document Setup:

- Create a new text document using Microsoft Word.
- Include your **full name**, **KSU ID**, and **Assignment Number** at the top.
- Label each answer clearly.

Submission Guidelines:

- Save your document as a **PDF**.
- Submit your file on D2L under **Assignments** -> "**Assignment 1**" before the deadline.

QUESTION 1 – Decomposition (25 points)

Scenario:

You are designing a **smart home system** to automate tasks in different rooms of a house (e.g., living room, kitchen, bedroom). The system controls lights, temperature, appliances, and entertainment systems.

Task:

List at least **five distinct tasks or features** this smart home system should support in the **kitchen**.

Note: Do not list general tasks like “turn on lights” if it's already assumed; think of unique or useful tasks specific to a kitchen.

QUESTION 2 – Algorithmic Thinking (25 points)

Scenario:

You are helping a friend set a secure password for their new online account. The password must meet the following criteria:

- At least **8 characters long**.
- Must contain **at least one uppercase letter, one lowercase letter, one number, and one special character** (e.g., @, #, \$).

Task:

Write out the **step-by-step algorithm** that your friend should follow to create a valid password. Your steps should ensure the password meets all the criteria above.

QUESTION 3 – Abstraction (25 points)

Scenario:

A clothing store is organizing its inventory to improve customer shopping experience. Each section should have a simple, clear label to guide customers quickly.

Task:

Based on the following inventory items, create a **label** with **four or fewer words** that covers all these products:

- Jeans
- T-Shirts
- Hoodies
- Casual Jackets
- Sneakers

QUESTION 4 – Pattern Recognition (25 points)

Scenario:

The following tables represent numeric patterns based on unknown formulas.

Task:

1. Identify the calculation sequence (e.g., " $A \times B + C = D$ ").
2. Solve for the missing values (**W**, **X**, **Y**, **Z**) based on your identified sequence.

Table 1:

A	B	C	D
2	3	4	10
3	2	5	11
5	4	2	22
W	3	6	21
4	2	1	X

Table 2:

E	F	G	H
10	2	5	20
8	3	4	16
6	4	3	12
Y	5	2	15
7	1	3	Z

Submitting Your Work

1. Ensure all answers are in a **single document**.
2. Save the document as a **PDF**.
3. Submit it via D2L before the deadline.
4. Verify that the correct file has been uploaded successfully.