POLYTECHNIQUE MONTREAL

ASSIGNMENT 1: THREAT MODELING

Course	CR440E – Application Security
Session	Winter 2026
Lecturer	Thierry Giroux Veilleux
Weight	25%
Due Date	February 17th, 2026
Suggested format	Teams of 3
Course objectives covered	• Describe the main principles and issues of application security • Model threats for a system • Adopt best practices in application security

CONTENT

GENERAL INFORMATION

SUBMISSION

Complete the 3 parts described in the instructions. (Read the instructions!)

Submit your .tm7 file on Moodle in the assignment activity /60

For Part 4, answer the individual Moodle quiz on your understanding of this assignment /40. For this quiz, you may submit as many attempts as you want until the assignment due date/closing date (the later of the two is your personal submission date).

TEAMWORK

Teams of 3 to share ideas and reflection paths.

Mandatory involvement: reply within one week to your teammates' messages on Moodle.

If a student becomes unreachable, the instructor may remove them from the team and require them to complete the work individually.

PREPARATION

Get your file here: .tm7 file generated from: https://t-gv.dev/cr440e-hmk01/

This file must only be shared with your team (if your team changes, generate a new one).

In the form used to generate the file, you are asked for a team name. If you don't know it, invent one. (This is only to create a consistent filename.)

Do not share your .tm7 file with other teams; doing so will result in a grade of zero for the teams that reuse another team's file.

CASE STUDY

We will study an electronic voting system.

The voting system includes three main modules:

MODULE: POLLING STATION EMPLOYEES

- Authentication of employees using standard login credentials (username/password)
- Associate an ID document with the name on the electoral list for a given district
- Print a unique QR-style code valid for 120 minutes. The code content is digitally signed. It contains a generated code and a creation date. You cannot reprint a code for a voter if one has already been generated

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MODULE: VOTING MACHINES (BALLOT BOXES)

- Verify the integrity of the code and the time limit
- Record the vote and the code to prevent reuse

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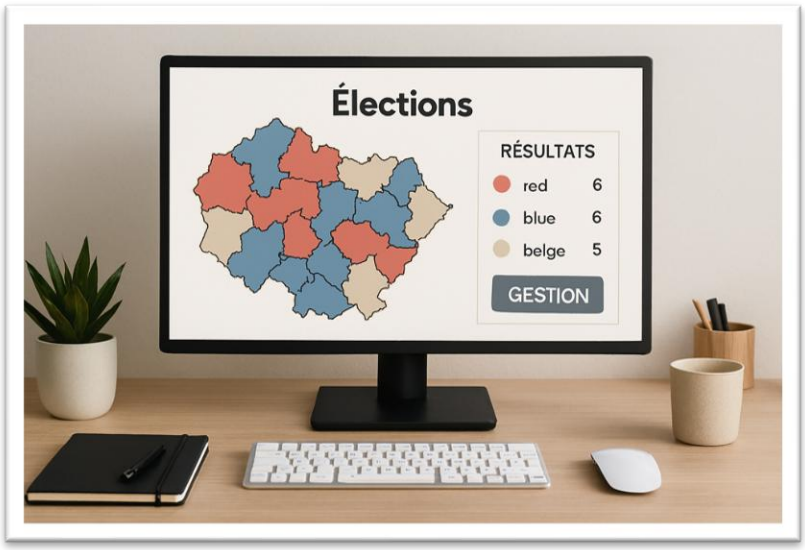
MODULE: ELECTORAL LIST MANAGER

- Management of voters in the database
- Vote counting



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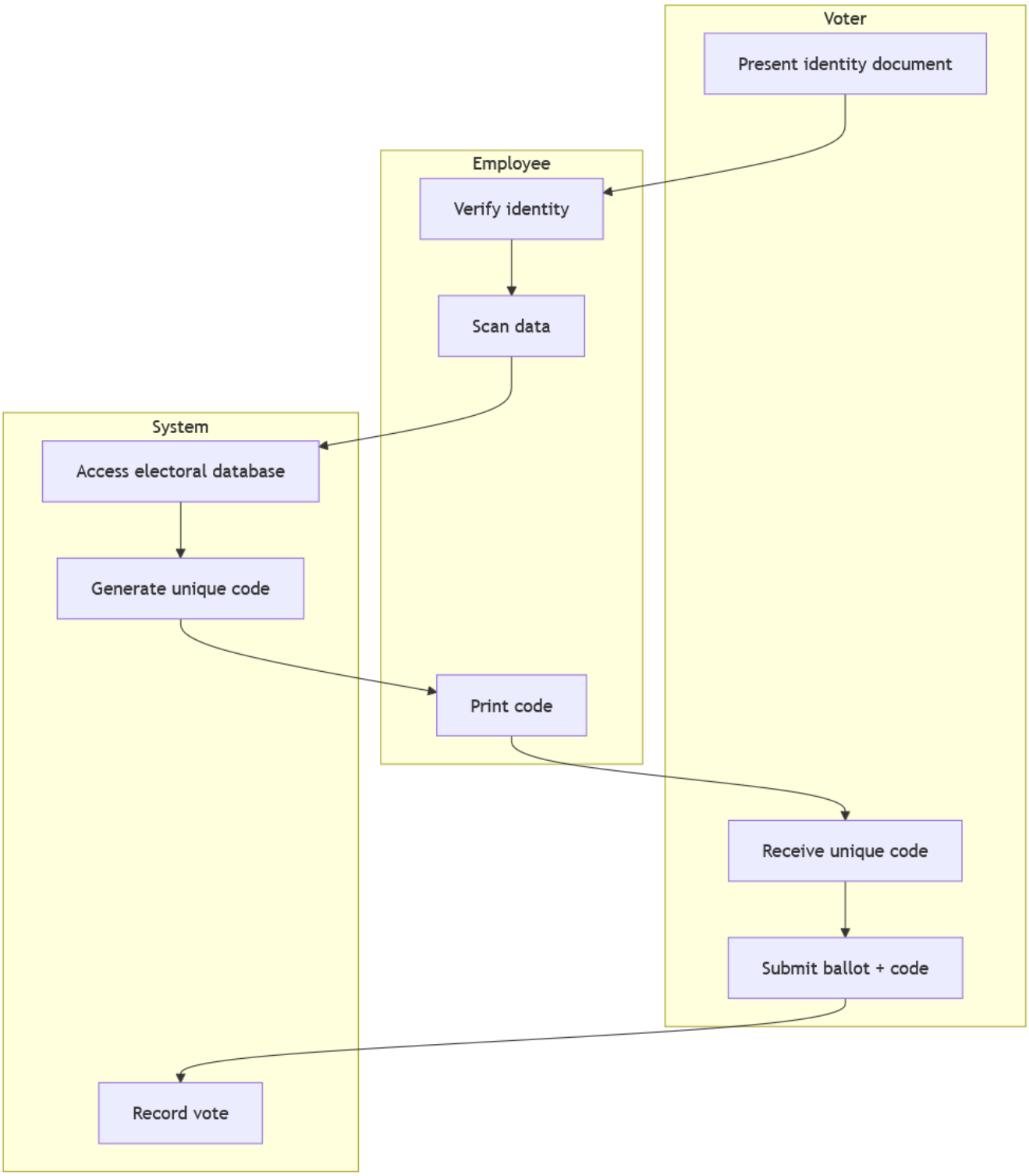
Modules omitted to simplify the case: Candidates management, Parties management, District management, Polling station management

Here is the standard process (see BPMN diagram below) for the voter:



INSTRUCTIONS

PART 1: Complete The Diagram – Polling Station Employee Module (20 Points)

Objective: Place components in their trust zones, connect the data flows, and correctly add missing elements.

Instructions:

- Some elements are already placed in the diagram—use them. Do not delete or rename them.
- Clearly name each data flow.
- Complete the diagram by adding missing components (hint: where do you get the list of voters?)

PART 2: Correct The Diagram – Voting Machine Module (20 Points)

Objective: Be critical when reviewing a diagram.

Instructions:

- Correct the diagram errors (at least 5 errors).
- Remove/adjust elements in the diagram as needed.

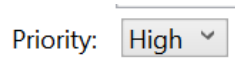
PART 3: Threat Evaluation And Prioritization – Electoral List Manager Module (20 Points)

Objective: Understand threats.

The provided diagram is correct. Do not modify it.

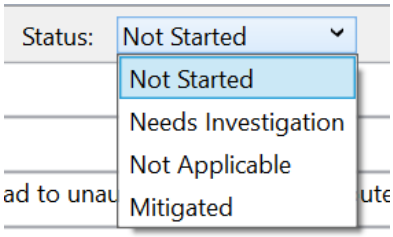
In the threat list for this module (View > Analysis View):

1. Filter the grid to only show threats for the “Electoral List Manager” diagram
2. Prioritize the generated threats (they are all high by default)



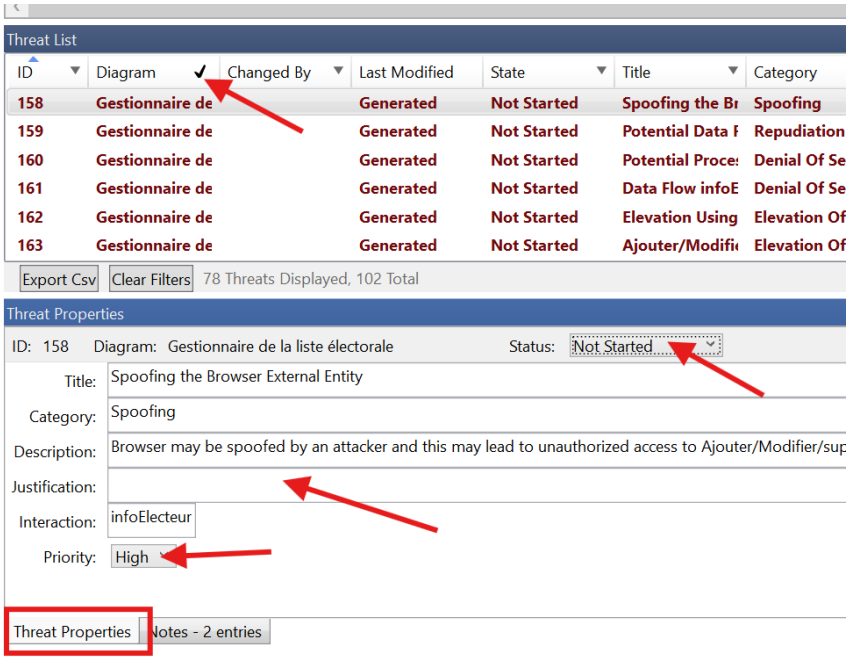
3. Justify why you lowered the priority in the justification box

4. Change each analyzed threat status to Needs Investigation (instead of Not Started)



5. Only the threats for this specific diagram must be analyzed and will be graded

An example of the interface and where to find the required visual elements is provided in the original document.



PART 4: Individual Moodle Quiz (40 POINTS)

5 graded questions to answer individually.

Insert your notes and issues in question 6 of the quiz.

You may submit multiple attempts.

Quiz link: https://moodle.polymtl.ca/mod/quiz/view.php?id=879861

Un aperçu de l'interface et où trouver les éléments visuels pour cette partie.

GRADING SCALE

Part	Points
Part 1	20
Part 2	20
Part 3	20
Part 4	40

ADDITIONAL INFORMATION

A Word document is not required for submission. Only one .tm7 file per team plus quiz answers.

CORRECTION NOTES:

Parts 1 to 3 are graded by a semi-automated tool.

Part 4 is graded by your instructor.

LATE PENALTIES:

10% per day.

The individual quiz will remain open up to 10 days after the assignment deadline.

Your personal submission date is the latest date between your .tm7 submission and your quiz completion.

GOOD LUCK

Remember to keep your .tm7 file safe and respect deadlines.Note de fin

**** The starred images were generated by Microsoft Copilot***