Project MESIM — Quadratic Equation Trainer

ENSIIE · Simulation Methods · 2026

This project consists on using the simulation method to randomly generate the coefficient of the quadratic equation to match each case. The random coefficient is generated by using the **Inversion Method** by taking the set and each assigned value of probability correspond to each number.

This project has been built inside the python, and the javascript app.

In python, we need to run **pip install -r requirements.txt** to setup the package dependencies and then we can just run the **python main.py** to startup the application. On the other hand, we have deployed it as app online Project MESIM

Structure

```
projet/
   generators.py      # Sampling logic (inversion method, exercise generators)
   gui.py             # Desktop GUI (CustomTkinter)
   main.py            # Entry point
   requirements.txt   # Python dependencies
```

Setup & Run

```
pip install -r requirements.txt
python main.py
```

macOS — `cairosvg` requires Cairo: `brew install cairo`

Exercise Types

Type	Condition	Probability
1	$\Delta < 0$ — no real solution	1/5
2	$\Delta = 0$ — one repeated root	2/5
3	$\Delta > 0$ — two distinct roots	2/5