Project post-mortem

Small-scale roleplay game

Material translated from polish equivalent through OpenAI ChatGPT

You are going to play a short role-playing game about problems related to project management. The game is based on so-called project post-mortem analysis, that is, looking back at a completed project and reflecting on the causes of its failures and successes. The goal of the analysis is not to find the "guilty parties," but rather to identify structural problems and gaps in procedures that led to the final outcome. During the game, we will move back and forth in time and try to simulate various events related to the project by observing their consequences. For this task, you may use your own project or use the random project table provided below. This is an improvisational game — the point is to simulate one possible situation and explore how you might react under such conditions. The analysis is conducted backwards: you begin knowing the outcome and then search for its causes.

Stage 1 (optional)

If you already feel confident about your master's project topic (that is, you feel you understand what is supposed to be done and how), skip this part and use your own project in the rest of the game. If you prefer to use the pool of provided projects, roll a D20 and read the objective of your project from the table below:

D20	Project topic
1–2	Design of an automatic gate lock that recognizes the owner and unlocks the gate without the need to insert a key. The project involves creating a vision system, a decision-making algorithm, and dedicated electronics and housing.
3–4	A crawling mobile robot for inspection of narrow pipelines. The project involves developing the robot's kinematic structure, performing numerical simulation, and building a prototype capable of remote-controlled movement.
5–6	An intelligent plant monitoring system for a greenhouse or vertical farming setup. The project involves developing a set of environmental sensors, a local control system for irrigation and lighting, and an algorithm supporting the maintenance of target growth conditions.
7–8	A modular exoskeleton supporting elbow joint movement in rehabilitation applications. The project involves designing the mechanical structure of the system, selecting the drive and sensors, developing a simple support-control algorithm, and building a laboratory demonstrator.
9–10	An active mobile camera stabilization system for field applications. The project involves developing the mechanical gimbal system, integrating inertial sensors, implementing a stabilization algorithm, and building a prototype suitable for testing in motion.
11–12	An autonomous transport cart for moving light loads in a warehouse environment. The project involves developing a mobile platform, an obstacle detection system, a navigation algorithm for a defined area, and integrating the control system with a safety system.
13–14	An intelligent diagnostic workstation for detecting bearing damage in rotating machinery. The project involves building a measurement system based on vibration sensors, developing a signal analysis algorithm, and preparing a user interface for presenting diagnostic results.
15–16	An adaptive control system for lighting and ventilation in a classroom or office. The project involves integrating presence sensors and environmental sensors, developing a decision-making algorithm that optimizes comfort and energy consumption, and building a demonstrator of a building automation system.
17–18	A semi-automatic workstation for sorting small production components using vision-based quality inspection. The project involves developing a part feeding mechanism, a vision system for component classification, an actuator system for rejecting defective parts, and synchronization of the whole workstation.
19–20	An unmanned measurement buoy for monitoring basic water quality parameters in a reservoir or canal. The project involves designing a floating platform, integrating environmental sensors, a data acquisition and transmission system, and developing a basic autonomous power supply system.

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Stage 2 – project result

How did your project end? As a group, roll a D20 on the table below and read the project outcome.

D20	Project outcome
1–2	Good individual components were created, but in the end it was impossible to integrate them into a complete system; the individual results turned out to be incompatible.
3–4	One element of the project stood out badly from the others, as if it belonged to a completely different project. The problem was that this particular element was supposed to be a core component for the remaining tasks, which caused major problems that ultimately could not be fixed.
5–6	The project was essentially never completed. Everyone was waiting for the others, and delays in the subtasks caused a domino effect. Time for the project ran out, the thesis defenses are approaching, and in practice there is barely any material to write the master's theses from.
7–8	The project ended in success — or at least that is what you thought. But some of the supervisors are not satisfied with the results; apparently, the completed work does not meet the standards of master's theses and cannot be defended. A strange situation. There are also accusations of excessive use of Generative AI.
9–10	The project kept expanding as it progressed: new tasks appeared, new requirements emerged, and what was supposed to be easy turned out to be difficult. You reached the deadline while only halfway through the work. The project has to be wrapped up, and each of you must individually salvage what remains.
11–12	Major unforeseen problems appeared during the project (random life events, nothing could really be done about them). Perhaps someone got seriously ill? Perhaps someone was unable to work for nearly half a year? In the end, everything fell apart, and you were left with partially completed individual pieces of work.
13–14	During the project, conflicting expectations emerged: what was good for the project was not the same as what was needed to complete one or several master's theses. In short, you failed to manage this conflict of interests.
15–16	During the project, it turned out that some tasks simply could not be solved. Just no, period. Perhaps physics did not allow it; perhaps the planned scope of work ultimately turned out to be absurd. The project had been unfeasible from the very beginning — you just did not know it when you started.
17–18	The project suffered from major and increasingly accumulating delays. The scope had to be cut back, and more than once. In the end, you completed only a fraction of the original plan.
19–20	Uh... were we even doing a project? Well, there was a course in the first semester, we passed it, but then somehow we more or less forgot about it... (there were plans, but in the end everyone simply completed an individual master's thesis).

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Stage 3 – individual context (performed one by one by the group members)

Make a secret D20 roll on the table below without showing the result to the other members of your group. Read the result and, in Stage 4, adopt the perspective defined by that context.

D20	Individual context
1–2	You do not really feel that the project ended in failure. Well, yes, it ended, but you learned a lot along the way, many interesting things were created, and all of this still probably seems defendable. It is not that bad at all.
3–4	You feel that it may have been a little bit your fault. It is not that the tasks were carried out badly. You put a lot of energy into this task, and in principle everything should have worked out. Maybe there was a lack of communication and proper coordination somewhere?
5–6	You were not trained to carry out tasks like these. It is obvious: none of you really knows how to manage projects yet. The instructors did mention possible problems, but you had never practiced any of this before. It could not really have worked. It is strange that you got this far at all.
7–8	It was an interesting project, and you liked it. It is a pity that not everything went according to plan. There was a real chance to create something genuinely cool.
9–10	Of course, you can agree on a plan, but no plan survives contact with reality... What you thought would need to be done turned out to look completely different in practice, and it is hard to smoothly switch to a completely different scope of work halfway through a project. That is probably normal — projects often look exactly like this.
11–12	You had to optimize. It was not as if you could devote as much time to this project as others might have expected. The individual result was more important: delivering the part on which your own thesis defense depended. Additional matters, communication, repositories, or project-related overhead were just noise. When your time is limited, you focus on what is truly important and what actually determines your grade.
13–14	You believe that the attitude of one person in the team was the problem (come up with what exactly, in the context of the failure and the behavior of the others). You are convinced that you definitely completed your own part exactly as agreed and have nothing to blame yourself for.
15–16	From the very beginning, you were saying what had to be done and what the risks were, but nobody listened. If only the others had done what you said needed to be done, there would have been no problems at all. That was the main issue: lack of sensible management — in other words, the fact that no one listened to you, even though you happened to understand the situation best.
17–18	In truth, you did not care all that much about the project. You now have another activity in which you place much higher hopes. It is a pity that things did not work out, but you were not planning to devote much of your time to the project anyway.
19–20	From the very beginning, you did not want to take part in this project, and you were convinced that something would eventually go wrong anyway. You prefer individual work rather than teamwork, and you would rather just do your own part. Dealing and coordinating with other people is tiring and does not really achieve anything.

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Stage 4 – post-mortem analysis

Take turns speaking, describing how the causes of the failure looked from your perspective. You may improvise events and facts beyond the values you rolled. You may invent fictional stories from the duration of the project to illustrate the problems. Try, however, to stay consistent with the context you rolled. Reveal information gradually, allowing room for others to add complementary perspectives (do not try to impose a complete narrative from the very beginning). Remember that each person may perceive the project and its causes somewhat differently. The goal is to gradually build, as a team, a coherent and concrete story explaining what happened in the project and why.

Stage 5 – lessons for future projects

Set aside your individual context and look at the situation you have played through from the perspective of outside observers. Prepare a list of important observations and recommendations for future students carrying out master's projects in Mechatronic Engineering. What should they pay attention to first, and what safeguards should be built into the project structure so that problems like yours either do not appear at all or can be resolved safely if they do?