1. Business Goals

"High school" is a secondary school that aims to prepare students for their final exams and further education or work. Students learn various subjects, such as mathematics, English, history, physics, chemistry, biology, and many others. The goal of the high school is to provide the highest level of education possible and ensure that students gain the necessary qualifications to succeed in their future careers.

The principal of the high school, monitors two key indicators: student grades and attendance. She assumes that the high school is effective if students achieve grades at or above the national average and average attendance does not fall below 85% per semester per student. One of the principal's main challenges is to continuously improve teaching and motivate students to achieve better grades.

In high school, important issues include organizing classes and selecting appropriate teaching materials. Each subject has its own curriculum and textbooks, and teachers strive to make classes as interesting and effective as possible. Many teachers specializing in different fields work in high school, which allows students to gain a wide range of knowledge and skills.

Principal would like to examine the impact of weather, seasons or holidays on student attendance and identify the teachers and subjects on which attendance is the lowest. The high school principal also wonders which subjects are characterized by the highest grades among students and on which one's improvement is required.

2. Business Processes

Students' performance analysis – Grade obtaining

   a) A general description of the business process and a description of the performance metrics generated by this process, possible current analytical problems.

The grading process at the high school is as follows: At the end of each term, teachers submit grades for their students. The grades are submitted through an online system, where they are stored and processed. Each student has a unique identifier in the system, and their grades are linked to this identifier.

Once all the grades have been submitted, the system automatically calculates the average grade for each student, as well as the overall average grade for each class. The grades are then reviewed by the school administration to ensure accuracy and fairness.

If any discrepancies or missing grades are found, the teacher responsible is notified and given the opportunity to make corrections. Once all grades have been finalized, they are sent to the school's registrar for permanent storage.

At any time, students or parents can access their grades through the online system using their unique identifier. The system also provides additional information, such as the grading scale used and any comments or feedback provided by the teacher.

   b) Typical questions

Compare the average grade score between classes on specific semester.

What are the best students (with the highest grade) among specific semester?

How many students obtained average grade lower than the average grade of school?

Give school average grade for the previous scholar year.

How does the average grade for this semester compare to the average grade for the same semester last year?

What is the distribution of grades for the class in each subject?

Which subjects have the highest and lowest average grades this semester?

Which students have shown the most improvement in their grades this semester with respect to previous one?

c) Data

All data are extracted from the electronic grade book system – "EGradeIt". The system stores information about each student's grades and assignments, including the subject, the assignment type, and the grade earned. It also registers average grade per semester per student, whole class and school.

Students' frequency analysis – Frequency check-up

a) A general description of the business process and a description of the performance metrics generated by this process, possible current analytical problems.

The attendance tracking process for a high school is as follows. At the beginning of each semester, the attendance officer for the school is assigned to handle the tracking process. Attendance data is collected no less frequently than once a week. As part of this process, a list of attendance records is prepared for each class in the school. Each attendance record is assigned a unique identifier in addition to the general record number. These attendance records are then updated with the students' attendance information, including the date, period, subjects and teachers conducting classes during which the student was absent and reason for any absence. Any missing attendance information is also recorded. Once the attendance information is collected, it is validated against the class schedule and attendance policies and stored for future reference. Any discrepancies or issues with the attendance information are also documented.

b) Typical questions

What is the overall attendance rate for the school this month?

Which classes have the highest and lowest attendance rates this week?

What students have missed more than three classes this semester?

How does the attendance rate for this month compare to the attendance rate for the same month last year?

Which students have the highest and lowest attendance rates for this semester?

What are the most common reasons for student absences this month?

On which subject the attendance for each class is the lowest?

Which teacher conducts the class with the highest attendance?

How does the attendance rate for this school compare to other schools in the district?

c) Data

All data are extracted from the electronic grade book system – "EGradeIt". The system stores information about each student's attendance record, including the date of each absence or tardy and the reasons for the absence or tardy. Information about students' absences on school events are extracted from specially created EXCEL file.