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Section: BSCS 3A Activity 1

The mini expert system developed for this activity serves as a simple demonstration of how rule-based systems can be applied in an academic environment. Expert systems are computer programs that use rules and logic to mimic decision-making, and in this case, the system evaluates students based on specific conditions. The goal of this project is to test several rules, log the outcomes for different students, and expand the program with a new rule relevant to school operations.

The system initially covers four rules. The first is the **Attendance Rule**, which checks whether a student's attendance meets the minimum requirement of 75%. This reflects a standard academic policy where sufficient attendance is necessary to qualify for passing. Students who meet the threshold are marked as satisfying the rule, while those who fall below it do not.

The second rule is the **Grading Rule**, which evaluates student performance. A grade of 75 or above is deemed satisfactory, aligning with the passing mark in most educational institutions. This ensures that academic achievement is properly monitored, and the rule provides clear outcomes for students depending on their grades.

The third is the **Login System Rule**, which simulates the requirement for students to successfully log in to an online portal or system. If login credentials are valid, access is granted; otherwise, it is denied. This represents a digital security and accessibility aspect of academic systems, reflecting real-world login processes.

The fourth rule is the **Bonus Points Rule**, which provides students with additional points if they complete extra work or tasks beyond their regular requirements. If a student has done extra work, they are awarded +5 points; if not, they receive none. This mirrors incentive systems that motivate students to go beyond the minimum requirements.

To extend the system, one additional rule was added: the **Library Borrowing Rule**. This rule checks whether a student has a valid identification card. If the ID is valid, the student is allowed to borrow books from the library. If not, borrowing privileges are denied. This new rule integrates administrative and support services into the expert system, making it more comprehensive. It demonstrates how rule-based decision-making can expand beyond classroom performance into campus facilities management.

During testing, the system was run with three different students, each having varying conditions in attendance, grades, login success, extra work, and valid ID status. The outcomes for each rule were displayed in the console and saved into a CSV file called *logic_results.csv*. This ensured that results were documented and could be reviewed or analyzed later. Screenshots of the program runs and the CSV output confirm that the rules are functioning correctly.

In conclusion, this mini expert system illustrates how a rule-based approach can manage different aspects of academic life. From monitoring attendance and grades to verifying login access and administrative requirements like library borrowing, the system highlights the potential of expert systems in school settings. While simple in design, it provides a practical example of how logical conditions can be applied to automate decision-making. With further development, more rules could be added, creating a

broader system capable of assisting schools in managing both academic and administrative operations efficiently.