THESIS SUPERVISOR'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Application of Servers and Unix-like Systems forSensor Control in Smart Homes**
Author's name:	**Weize Yuan**
Type of thesis:	bachelor
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Electrical Power Engineering
Bachelor's thesis supervisor:	Miroslav Husak
Bachelor's thesis department:	Department of the Microelectronics

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	**ordinarily challenging**

How demanding was the assigned project?

This thesis investigates the use of server-based architectures and Unix-like operating systems for sensor monitoring and control in smart home environments. The proposed system integrates physical sensor nodes based on ESP32 and ESP32-S3 microcontrollers. Communication between IoT components is primarily realized using the MQTT protocol with mutual Transport Layer Security (mTLS), complemented by native API integrations within the Home Assistant platform for device management and automation. Security is implemented using elliptic curve cryptography (ECC).

Fulfilment of assignment	**fulfilled**

How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.

The student has fulfilled all the points of the bachelor's thesis assignment. The student used a standard procedure to solve the thesis, i.e. analysis of existing options and applied systems and components, system design and practical implementation of a functional model. The author designed and implemented a simple security model of a smart home based on ESP32 and ESP32-S3 and the MQTT protocol.

Activity and independence when creating final thesis	**A - excellent.**

Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.

The student worked on the thesis completely independently and actively. He worked systematically. He used the knowledge gained through study and his own practice. The student managed to independently solve professional problems in the bachelor's thesis. He continuously consulted with me on proposals and approaches to the solution, was able to implement the work and present it in the final fully functional version. The student is able to work independently when solving a given technical task.

Technical and professional level	**A - excellent.**

Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?

The work is technically well organized. The main information is presented in the text, other information is included in the appendices. The technical processing of the images and the entire work can be considered adequate. The student used the knowledge gained by studying professional literature or Internet, he worked with the given documents, he oriented himself in the solved problem, he actively obtained new information from other sources, including company documents. His active approach was reflected in a good level of work.

Formal level and language level, scope of thesis	B - very good.
Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?	
The thesis is written in a clear and concise manner, with logical numbering of chapters, figures and tables. The graphic design is good. The scope of the thesis meets the requirements for a final thesis. References to literature are continuously reported according to custom. The thesis has appendices. The list of references is unusually placed after the appendices at the end of the thesis. Minor formal shortcomings occur in the thesis. Formal shortcomings do not reduce the professional level of the thesis. I do not judge the language aspect of the work.	

Selection of sources, citation correctness	A - excellent.
Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?	
The student worked well with the materials for the work that were available to him. He actively searched for new sources of information, from which he selected and effectively applied them in solving the work. The 54 references mentioned testify to the author's activities in developing the work. I consider the number of references to be adequate. He fully applied the information obtained from the references in solving the work. References to all sources of information are continuously given in the text in square brackets according to custom. The student fully utilized the information obtained to solve the work, which was reflected in its overall level.	

Additional commentary and evaluation (optional)
Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.
The student worked systematically on the thesis. The work is carefully prepared both professionally and formally. Minor professional and formal errors do not reduce the professional level of the work. The result of the work testifies to the ability of the graduate to work independently and to solve assigned technical tasks. The student is able to independently solve assigned technical tasks at the bachelor's level.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

The student fulfilled all the points of the assignment in his work. He prepared a general analysis of the assigned professional topic to be solved, as well as a proposal for a solution concept. I positively evaluate the achieved results of the work, the chosen methods for solving the assigned task, and the discussion conducted. I recommend the submitted work for defense.

The grade that I award for the thesis is **A - excellent.**

Date: **26.1.2026**   Signature: Miroslav Husak (own hand)