BACHELOR‘S THESIS ASSIGNMENT

I. Personal and study details

Student's name: **Yuan Weize** Personal ID number: **485402**

Faculty / Institute: **Faculty of Electrical Engineering**

Department / Institute: **Department of Electrical Power Engineering**

Study program: **Electrical Engineering and Computer Science**

II. Bachelor’s thesis details

Bachelor’s thesis title in English:

Application of Servers and Unix-like Systems for Sensor Control in Smart Homes

Bachelor’s thesis title in Czech:

Využití serverů a unixových systémů pro řízení senzorů v chytrých domácnostech

Name and workplace of bachelor’s thesis supervisor:

prof. Ing. Miroslav Husák, CSc. Department of Microelectronics FEE

Name and workplace of second bachelor’s thesis supervisor or consultant:

Date of bachelor’s thesis assignment: **01.10.2025** Deadline for bachelor thesis submission: **06.01.2026**

Assignment valid until: **19.09.2027**

Zdeněk Müller
Digitálně podepsal(a) Zdeněk Müller
Datum: 06.01.2026 12:02:02
ID: 307983

Head of department’s signature

Veronika Sobotíková
Digitálně podepsal(a) Veronika Sobotíková
Datum: 06.01.2026 12:07:12
ID: 31854

Vice-dean´s signature on behalf of the Dean

III. Assignment receipt

The student acknowledges that the bachelor’s thesis is an individual work.
The student must produce his thesis without the assistance of others, with the exception of provided consultations.
Within the bachelor’s thesis, the author must state the names of consultants and include a list of references.

06.01.2026
Date of assignment receipt

Yuan Weize
Student’s signature

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Guidelines:

1. Analyze the role and advantages of using servers and Unix-like systems in a smart home. Focus the analysis on applications for monitoring and controlling sensor systems, e.g. for Home Assistant needs.
2. Design a specific model using a server to manage basic smart home functions and explore possibilities for intergrating IoT devices solutions. Use a very simple sensor system setup to demonstrate the model's function.
3. Evaluate the parameters of the proposed system and compare it with typical commercial solutions.

Bibliography / sources:

1. Bhatnagar, H. et al, Implementation model of Wi-Fi based Smart Home System. 2018 ICACCE.
2. Khan, A. et al, Design of an IoT smart home system. 2018 L&T.
3. Xiao, Z. et al, Design of Home Appliance Control System in Smart Home based on WiFi IoT. 2018 IAEAC.
4. Zeus Integrated. Smart Home Automation. 2021, https: //zeusintegrated.com/solutions/smart-home-automation.