



## Development of a digital NFC-based point of service system

Many communal facilities have small cash register systems for recording and billing the consumption of drinks and snacks. These are often kept as paper lists and evaluated manually, which is prone to sources of error. It also makes it difficult to analyze consumption, as this can only be done manually.

The aim of this thesis is therefore to develop and implement a digital cash register system that simplifies the billing process. To this end, user requirements are to be identified and system concepts developed. The hardware can be based on microcontrollers or Raspberry Pi. The necessary software packages for user management and billing are to be implemented using an OOP programming language, paying particular attention to data security and expandability.

The user interface should be operable via a touchscreen.



This picture was generated with Dall-E

### Student profile:

- Structured, independent and thorough way of working
- Interest in OOP with Python, C or C++
- Interest/experience with Linux distributions
- Interest/experience in system architecture and software development
- Optional: Experience with 3D printing

### Task and schedule:

- Familiarization with billing systems and requirement lists
- Development of a system architecture
- Development and construction of the hardware
- Implementation of the software packages
- Testing the system for requirements
- Detailed documentation and code preparation
- Optional: CAD design and 3D printing of a housing

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