CSIT Finland Oy

Secure Identity Manager

CS-C2130 Course Project Proposal

1. Introduction

CSIT Finland Oy (CSIT) is a privately held company specialized in software and solutions for identity and access management. We offer both our in house developed IAM software, partner's solutions along with consultation services. IAM is a framework of policies and technologies for ensuring that the proper people in an institute have the appropriate access to technology resources. IAM is part of IT security and data management. Identity and access management systems not only identify, authenticate, and authorize individuals who will be utilizing IT resources, but also the hardware and applications employees need to access. IdM is a subset of IAM, it covers only the identity management aspect of the IAM, leaving out authorization and access management. Purpose of IdM is to keep Identity data valid and up to date.

The identity data often comes from various sources as several information systems are used in large enterprises. In this essence the identity data can conflict or even make duplicate entries in the information systems that can create errors or change (name, social security number, job periods etc). The IdM compares the newly imported data with the existing data to recognize any conflicts and import new changes safely. Identity data is vital for business processes, therefore it needs to be highly secure but also available for business continuity. An IdM provides these functionality by offering rigorous monitoring and logging mechanisms.

2. Project goals

The goal of this project is to develop a (prototype) IdM software with basic IAM features. Such features can include:
- Import identity data from multiple sources
- Synchronize identity data
- Identify conflicting and overlapping identity data
- Comprehensively secure the Identity data
- Provide an interface to interact with identity data
  - View stored identity information
  - manually create identity
- Comprehensive monitoring and logging of all changes occurred in the system.

This is a full stack project that aims to develop a functional prototype that envisions a highly secure system. Furthermore, the project aims to develop a modular prototype based on micro service architecture. The team will also have access to code of an existing IdM prototype.

2.1. Optional goals

We are flexible with scaling the project goal based on team's interest and competencies, the optionally desired functionally can include:
- Neural network that can monitor and detect anomalies in the system.
- Data clustering based identity data analysis and autofill suggestions
- Prolog logic programming based validation for Identity data
- Or any cool ideas Team invents

3. Technologies

The team has a freedom to choose fitting technologies, but we recommend any of the following technologies.

- Programming language (any of these):
  - Back-end: Python, Kotlin, Java, Rust
  - Front-end: JavaScript (preferably Reactjs)
- Database: Postgresql (any relational database)

4. Requirements for the students

The difficulty of this project is moderate and requires high motivation and programming skills in some programming language. We at CSIT understand the complexity of the project and we believe this project can be enjoyable and challenging. Therefore, CSIT is willing to support all the learning of motivated programmers. Furthermore any basic knowledge of the following fields is beneficial but NOT required: Automated testing and DevOps, git version control, software architecture design, UI/UX design.

5. Legal Issues

Aalto contract template template will be used.
Intellectual property rights (IPR): Client gets all IPRs to the results.
Non-disclosure agreement (NDA): Signing the NDA is required.

6. Client

Client is CSIT Finland Oy. CSIT Finland Oy is located in Helsinki and has offices in Maria01 in Helsinki, and in Olari in Epoo. CSIT will dedicate senior people from technology and business to support the project team. CSIT can provide all necessary tools for the success of the project and we have the opportunity to allocate project room for the team in our Helsinki or Espoor office, however Covid-19 limitations may affect the availability.

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7. Additional information

All necessary documentation is desired in English.