14.03.2024

**CMPE-455 Term Project “Online Tax Payment System” (20 points)**

**Task**

Develop an **on-line** application on at **least two host computer systems** providing concurrent (parallel) work of a server and a client of the Online Tax Payment System (OTPS) having three actors as Sysadmin, Staff, User. Sysadmin is responsible for introducing users to the system. Staff is responsible for entering/updating users’ tax records, calculating taxes, and sending users invoices for payment. **Use search to find realistic information on taxes.** User receives invoices, and pays. Users’ records are stored encrypted by DES. DES secret key is created/updated periodically by Staff. Server has public/private RSA key pair. RSA digital signature is used when sending DES-encrypted invoices. RSA key pair is created/updated by Staff. Hash function (48 bits) used for the digital signature is obtained by XOR of plaintext blocks. Payments while travelling DES-encrypted are protected from tampering with by message authentication code (MAC).

**It is a team work (3-4 people a team). Reports on the Term Project shall be submitted 27.05.2025, via Teams and handed to in hard copy before 12.00 to the Lab Coordinator** [**NADA IBRAHIM S. M. S. KOLLAH**](https://cmpe.emu.edu.tr/tr/hakkimizda/personel/personel-detayi?sid=268&n=nada-ibrahim-s-m-s-kollah)**. Later submission will be penalized 3 points a day.**

Report shall have

* 1. Cover page (University, Department, Course, Semester, Year, City, Country, Term Project subject, Team members, Lecturer, Lab assistants)
  2. Outline
  3. Problem definition (see **Task** above)
  4. OTPS description (including description of the taxes used)
  5. Description of the tools used for the OTPS implementation (programming tools, distributed system organization tools, communication tools, synchronization tools, database management system tools, web-server tools, etc.)
  6. Description of OTPS implementation in your programming language/operating system
  7. Description of the system architecture including at least two host computers
  8. Description of the database structure used for OTPS
  9. Description of the implementation of actors: Sysadmin, Staff, User
  10. Description of the data structures used for implementation of Sysadmin, Staff, User
  11. Description of the algorithms used for implementation of Sysadmin, Staff, User
  12. Description of the codes developed
  13. Description of the tests conducted and their results, **screenshots** of them
  14. Conclusion
  15. References
  16. Appendices with the code developed (shall be referred when giving explanations required in item 6.6 above. Appendices shall be structured, e.g., Appendix 1. Source code of the Sysadmin process)

**Hard copies of the reports shall have attached CD’s with all related to the project information (report, design materials, sources, executables, etc.). Soft copies submitted via Teams shall be archived and also contain all related to the project information (report, design materials, sources, executables, etc.).**