

# BLG459E: Computer Security, Fall 2024, Term Project

## Read CAREFULLY All the Text!

- i. Deadlines will **not be postponed**! Any email or request regarding postponing a deadline will not be answered!
- ii. Any material (your project report or any other...) sent **via email** will not be considered during grading!
- iii. This Term Project is a **GROUP PROJECT**. Therefore, you are responsible from the work of your groupmates! Do not send any email to me or do not come to my office about any excuse related to your groupmates, such as she drops the course in the last week of the semester.... The project is **NOT** a last-minute homework!
- iv. Do **NOT** use **Generative AI** models to prepare your project. If we detect that some parts or all the project is prepared with Generative AI, you (all members of the group) will get 0 point from the project.

## Assignment 1: Determine Project Groups

Due: 10.10.2024 (NO EXTENSIONS!)

You are expected to prepare a research paper about Phishing Attacks/Detection, such as :

- A new phishing attack on financial systems
- Phishing detection with Artificial Intelligence for IoT
- Phishing detection with Machine Learning for e-health
- Phishing email detection with LLM
- Phishing detection on social networks (select one, such as facebook, linkedin,...)
- Rule based phishing detection for ....
- Hybrid phishing detection
- ...

Use your creativity and propose new innovative projects!

### IMPORTANT NOTES

1. You may need to learn and use some algorithms with programming languages.
2. Select a specific topic for your project!
3. Determine your project groups carefully! Select your group members to whom you trust. If some of groupmates leave or simply drop the course at any time during the semester, you still **HAVE TO COMPLETE ALL THE PROJECT!**

**Determine your research topic as soon as possible!**

Expected and recommended stages of the term project for a group are as follows:

1. Determine your specific research topic
2. Literature review and analysis
3. Learn or refresh your programming skill
4. Understand concepts and selected area (application domain)
5. Specify the problem (you intend to solve)
6. Find a dataset about phishing

7. Propose a solution related to the selected problem. The solution may be
  - a. Design and Implementation
  - b. Formal Analysis
  - c. ... simply new ideas! DO NOT LIMIT YOUR IMAGINATION!
8. Prove your solution
9. Present your term project

Each group will consist of **4 students**. Determine your group members (students) and submit group information with your research area to Ninova before the deadline. **Otherwise, you will be assigned to a group randomly!**  
**YOU WILL NOT BE ALLOWED TO COMPLETE THE PROJECT ALONE!**

**What to submit?** You should submit your group information to **Ninova** only. One member of each group is enough to submit their group information to Ninova. The group information should consist of **İTÜ IDs** and **Names** of each group member. **Do not send email to me regarding the project. I will NOT respond!**

## Assignment 2: Prepare your research paper (30 pts)

**Due: 30.11.2024 (NO EXTENSIONS!)**

You are expected to prepare your research paper in **IEEE journal paper format (not a conference paper nor RFC nor a technical report format)**. You must read sources including **journal papers** that have been published **since 2022**. You should carefully explain your understanding of papers you read **by using your own words/sentences (Use your own English even it is broken!)**. **DO NOT copy – paste from papers you read!**

**Your paper must have at least the following sections:**

- 1) Title, authors, address of the author, email address (Authors are you..!)
- 2) Abstract (max 150 words)
  - I. Topic of your work
  - II. What is the problem?
  - III. Solution: explain your solution briefly
  - IV. Results, contribution(s) of the work
- 3) Introduction (what is the subject, the importance of the subject, what has been done in your paper)
  - I. What is the subject (Detailed explanation of the topic and problem)?
  - II. The importance of the subject?
  - III. What has been done in your paper? (Research, experiments,...)
  - IV. Contribution(s). (Your paper should have one to three contributions.)
- 4) Related Work (Find a specific name for this section, such as “Phishing detection in Medical Systems”)
  - I. Who has done work in this area?
  - II. Areas that inspired this work.
  - III. Motivate the current work (your work).
  - IV. Differentiate your work from past works.
- 5) Proposed solution: (*Write a specific name for your solution, which will be closely related to the topic of your paper*)
  - I. You may explain the solution mathematically (for this project not preferred)
  - II. Algorithmically,

- III. Implementation, or
- IV. In any other way.

6) Analysis of your proposed solution

- I. Empirically that means implementation (analyze dataset(s) with your solution) - **Recommended**
- II. Analytically (I do **not recommend** since it requires advanced mathematics knowledge!)
- III. Observational
- IV. Or simply by comparisons. (**Not recommended** for this project)

7) Conclusion and Future Work (Problem, Solution, Contributions)

Briefly explain the topic and the problem. Give short information about your solution. Clearly write your achievement(s) (contribution(s)) of the paper. List potential future works related to your research topic.

8) References: Your paper should contain at least 32 references (journal, conference, book, ..).

- You have to cite at least 10 journal papers that have published since 2022.
- Each student should read and analyze **at least 8** papers.
- **Clearly specify** which paper is analyzed by which student in the group, such as [5] XYZ, "Paper", other info (**Student Name**).

You must obey following rules when preparing your paper:

**Format:** Download from the course page on Ninova. You can find both word and latex templates!

Your paper should be **between 10 and 12 pages (at least 10 full pages!)**

**What to submit?** You should submit your research paper in (in "\*.pdf" format, not any other) a file to **Ninova** only. One member of each group is enough to submit their research paper to Ninova.

**Do not send any material including your research paper to me by email!**

## Assignment 3: Prepare a presentation as a group (10 pts)

**Due to your presentation slot!**

Prepare a presentation about your term project. Presentations should contain the following information:

- Give general information about your topic
- Emphasize main problems
- Explain and defend your solution (design)
- Provide potential challenges
- The presentation should be **no more than 10 pages** (max 10 minutes for oral presentation)

**Note that you can update your presentation until the time slot you will receive!**

**What to submit?** Do not submit anything about your presentation!

**Do not send any material to me regarding the presentation!**

There may be some **extra points** for students who submit their project results to a journal or a conference after my revision before the final exam!