

CS411
SOFTWARE ARCHITECTURE DESIGN
2022-2023 FALL
PROJECT # 2

You are asked to do the following staff as a team work:

- You are assigned to create a new Instant Messaging (IM) platform, similar to the ones in the market:
 - Meta WhatsApp
 - Telegram
 - Viber
 - Signal
 - Examine them and summarize the problem definition and domain.
 - List major technical problems and proposed solutions. The problems are the ones that are related to the above products.
 - List stakeholders and their expectations & contributions.
 - List pros and cons of each product.
- Prepare your own IM product software architecture
 - Customers are asking for quality attributes as security and data privacy as well as high performance and reliability.
 - Customers need:
 - Real-time text transmission (Messaging with push technology)
 - Emojis (Graphical smileys)
 - File transfer
 - Voice over IP
 - Video Chat
 - Write down main requirements for each of the above needs and quality attributes.
 - Prepare the high level architecture for your own IM product. Within your architecture, do not forget to include different views that were discussed during the lectures. In your views, mention Model Styles, Component & Connector, and Allocation Styles.
 - Write the rationale behind this architecture.
 - Write the architectural pattern(s) in your architecture.
- Implement your IM Product
 - Find a name and logo for your IM product.

- Implement real-time text transmission (Messaging with push technology).
 - No need to implement VoIP, Emojis, Video chat etc.
 - You can use any language in that you feel comfortable.
 - Implementation should be based on the requirements of real-time text transmission from part 2.a.
 - The implementation should be based on your architecture.
 - The implementation should work on web. No need to implement in mobile.
 - No need to use a database, if you prefer it is welcome.
- Test your software based on your requirements.
- Compare your product with the examples in part 1.
- Prepare a report covering all of the above tasks and following the instructions below.
- Prepare a presentation covering all of the above tasks.

Instructions

A-Report preparation:

The report should have the following properties:

- It should contain screenshots as well as diagrams of the actual application.
- It **should not exceed 25 pages** including the cover page.
- The report should be self-contained. That is, the reader shouldn't feel the need to refer to any code/web site for understanding what you have done, s/he only needs to refer to the reference if s/he feels curious about some implementation detail.
- It should contain screenshots of the implementation.
- It should contain important excerpts of the implementation code, explaining how those excerpts correspond to the requirements and architecture.
- Cheating is prohibited.
- Your own ideas and your own words are expected.
- Creativity is appreciated.

B-Report Submission details:

- Deadline: **15nd of December, 24:00 PM.**
- Email subject: CS411 p#2 submission - [Name][Surname] (of the sender)
- Email body should contain: [Name] [Surname] - [Email address]-[Student ID] of all group members.
- Attach the report in (**pdf format only**) and send to altunel@bilkent.edu.tr and Section TA.

C-Code submission:

- Deadline: **15nd of December, 24:00 PM.**
- The code can be submitted either as a separate zipped file (attached or a link to online storage) or as a link to an online code repository. The code directory ***must*** contain a README file with information about where to find the source as well as the

test codes (or in case you send the whole project, the README file explains how the project is structured and instruction on how to run the code).

D-Presentation details:

Presentations should be prepared:

- Presentations **should not exceed 12 minutes**. All group members should present the project.
- The question & answer session **should not exceed 3 minutes, total of 15 minutes per group**. All group members should answer the questions.
- Following items are important:
 - Obeying the time limitation
 - Well organized presentation & slides
 - Demo of your IM Product
 - Answering the questions with proper details
 - Contribution of all team members
- Presentation date will be announced later.

Good luck