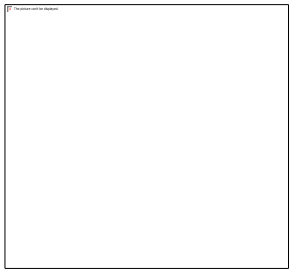
Cairo University
Faculty of Computers and Artificial Intelligence



Project Description 2023/2024

Version 1.0

Introduction

- In this project you will design and implement a non-trivial software system. You will practice the concepts you learned during the course.
- Project will be at least 2 phases
- In each phase we will focus on designing and implementing some requirements.
- In each phase you are required to deliver the following deliverables **through Google classroom as one zip file**, named with your student IDs as follows: **Phase1_StudentID1_StudentID2_StudentID3_StudentID4**. **Following such naming is a MUST. If you don't follow that naming convention, your submission will NOT be graded.**
- The project must be developed **in the Java programming language using "IntelliJ IDE for Java" specifically.**
- The following deliverables as ONE zip file:
    1. An SDS (Software Design Document) using the attached template, where such document would contain the following items:
        - Proposed class diagram
        - sequence diagrams for the **most complex** scenarios. The submitted sequence diagrams should be **1 x the size of the team**, where each team member would be responsible **for submitting one sequence diagram**.
        - **Git repository link** for the developed source code project. Your Git repository should be **private** and it is your responsibility to add your TA to your project Git repository to be able to assess your proper usage of Git within your project development.
    2. **Zipped copy of the source code project**. Note that your submitted source code project should work properly on any TA's machine that has IntelliJ IDE version ideaIU-2023.2.4 and Java JDK version 11.0.16.1.
        - **The zipped code needs to contain a documented main method that calls/covers all the requirements of the phase.**

Project Logistics

1 Students will be divided into groups; each group consists of 3-4 members. Groups can be from the same lab or from different labs.

2 If a team is formed out of more than 4 members, their submission will be rejected, and they would get a zero for the phase.

3 Y**ou CANNOT change teams** across the phases. You made the choice, hence you bear its consequences.

4 Questions about the project should only be asked through the following form link to ensure consistent answers to all students:

https://docs.google.com/forms/d/e/1FAIpQLScGvQiP7hLfwNij0p27tBg0sXnxd5RxGuiPlc6tcN1t2eeJ4A/viewform

5 Academic honesty is assumed. All work submitted must be original and written by your team (Not copied from students, the net, outside sources). Plagiarism will be penalized.
- Soon, you will be our colleague and we will be proud of you.
- Professional conduct and practice are essential in your career.

Project Phases:

Phase	Deliverables	Deadline	Mark
Phase 1 submission on **the course's Google classroom**	**Design and implement Phase 1 requirements (mentioned below)** Submit all the required deliverables (mentioned above)	Wednesday November 15th, 2023, at 11:59 pm	4 marks

Project overview

Description

In this project you will work on building something like **Instapay** system. This system should be user by users to money transfers or pay their bills. The services are:

a. Transfer to another Instapay account
b. Transfer to Bank Account
c. Transfer To a Mobile Wallet through a wallet providers: Wallet providers can be telecommunication companies that provide wallets (e.g., Vodafone Cash), banks that provide wallets (e.g., CIB), or electronic payment companies (e.g., Fawry).
d. Paying utilities' bills, where such bills can be for Gas, Electricity, or Water.

Wallet
data...

Wallet Services
transfer()
balance Inquire()
verify()

user services
Register ()
changePassword()

Requirements

User

1. The user should be able to signup to the app in two ways
   - Register using his/her bank account and the registered mobile number on the bank so the app can verify it though the bank API
   - Register using his mobile number with a wallet provided from a wallet provider as mentioned earlier, also the mobile number should be verified first with the wallet provider

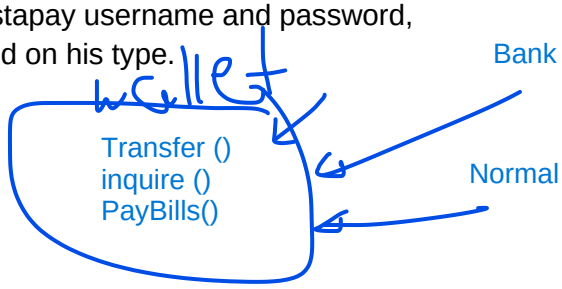
Bill
billName
pay
Inquire

Account Manager
Login ()
logout()
verifyOTP()

For both users, after verifying the bank account/ wallet, the system should verify that the user owns the mobile number by sending OTP and then verifying it.
Then he/she has to enter a username (unique through the system) and a complex password

user
data
wallet

2. User will be able to sign in to the system using his instapay username and password, after logging in you have to load the user profile based on his type.



3. Both users have the option to
   a. Transfer to Wallet using the mobile number
   b. Transfer to Another instapay account
   c. Inquire about his balance
   d. Pay bills

   Transferring to bank account is only valid for users registered using their bank account.

4. Utility bill payment involves creating and deducting the bill from the user's account. You need to make your own assumption about the bill contents and to support the creation and payment of the three bill types: Gas, Electricity, and Water. Bill contents vary based on the bill types.

Evaluation Criteria

1. Properly working functionality as per the phase requirements.
2. Quality of project configuration (i.e. actual realistic usage of Git throughout the phase development by all team members. Such usage should reflect that team members actually used Github throughout the phase)
3. Consistency between the various submitted system models.
4. Consistency between the submitted system models, and the working product.
5. Quality of the design in terms of its usage of appropriate design patterns, and SOLID principles as needed.

Policy Regarding Plagiarism:

Students have collective ownership and responsibility of their project. Any violation of academic honesty will have severe consequences and punishment for ALL team members.

١ تشجع الكلية على مناقشة الأفكار و تبادل المعلومات و مناقشات الطلاب حيث يعتبر هذا جوهريا لعملية تعليمية سليمة
٢ ساعد زملاءك على قدر ما تستطيع و حل لهم مشاكلهم فى الكود و لكن تبادل الحلول غير مقبول و يعتبر غشا.
٣ أى حل يتشابه مع أى حل آخر بدرجة تقطع بأنهما منقولان من نفس المصدر سيعتبر أن صاحبيهما قد قاما بالغش.
٤ قد توجد على النت برامج مشابهة لما نكتبه هنا أى نسخ من على النت يعتبر غشا يحاسب عليه صاحبه.
٥ إذا لم تكن متأكدا أن فعلا ما يعد غشا فلتسأل المعيد أو أستاذ المادة.
٦ فى حالة ثبوت الغش سيأخذ الطالب سالب درجة المسألة ، و فى حالة تكرار الغش سيرسب الطالب فى المقرر.