

CSE201 Advanced Programming
End-Semester Examination
Indraprastha Institute of Information Technology, Delhi
3rd December, 2023
Duration: 2:00 pm - 3:30 pm

Marks: 35

Exam Requirements

- Phones and other network sources are strictly prohibited. Invigilators will monitor available networks, and cheating will result in removal from the examination hall and award of F grade in the course.
- Keep your screen focused on the IDE during the exam. Any deviation will be regarded as misconduct and an appropriate action will be taken immediately.
- Your code must compile to receive any marks.

Submission Guidelines

- Name your final folder as **<RollNo>_<Name>.zip**. Failure to follow this naming convention will result in a score of zero.
- Create **separate sub-folders** inside the main folder **for each question**, naming them as Question_1, Question_2, etc.
- Please submit your **.java files** inside the sub-folder corresponding to the question.

Note: No need to submit pom.xml files.

Please follow the good programming practices given below.

- All the fields in the class should be private unless there is a good reason to have otherwise.
- A field should have a getter and a setter in general.
- All the methods of a class should be public unless there is a good reason to have otherwise (for example, helper methods need not be public).
- Follow the naming conventions for classes, fields, methods and objects. Classes and interfaces should follow the upper camel case (eg., RotateAndFly). Fields, methods and objects should follow the lower camel case (eg., fullName).

Please make sure your code compiles. Zero marks will be given in case of compilation error.

We will be testing the submissions on ChatGPT specific plagiarism detectors also. In case any plagiarism case is detected, it will be dealt with as per IIITD plagiarism policy and without any relaxations.

Submission link: <https://forms.gle/Eztu3vPwAL5KwwFZ9>

Q1) In a mailing app, a unique username can be had by only one user. When a new user attempts to sign up with an already existing username, an exception is thrown, and the user is prompted to enter another username. Write a program that simulates this signing up process. Note that the program should save both the username and the password, as done in any signing up process. Also, use an appropriate design pattern for this problem and provide its name and the reason for using it in the comments right at the beginning. **NOTE:** In your driver class, ensure that some user instances are already created before asking the user to sign up.

Q2) Write the Java code for the UML diagram given below. Demonstrate the relationship between Dog and PetOwner classes by creating appropriate instances and calling the methods using those instances. Ensure the multiplicities/cardinalities that are defined in the diagram are reflected/validated in the code.

