DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Indian Institute of Technology Jodhpur

Software Engineering(Code: CSL2060)

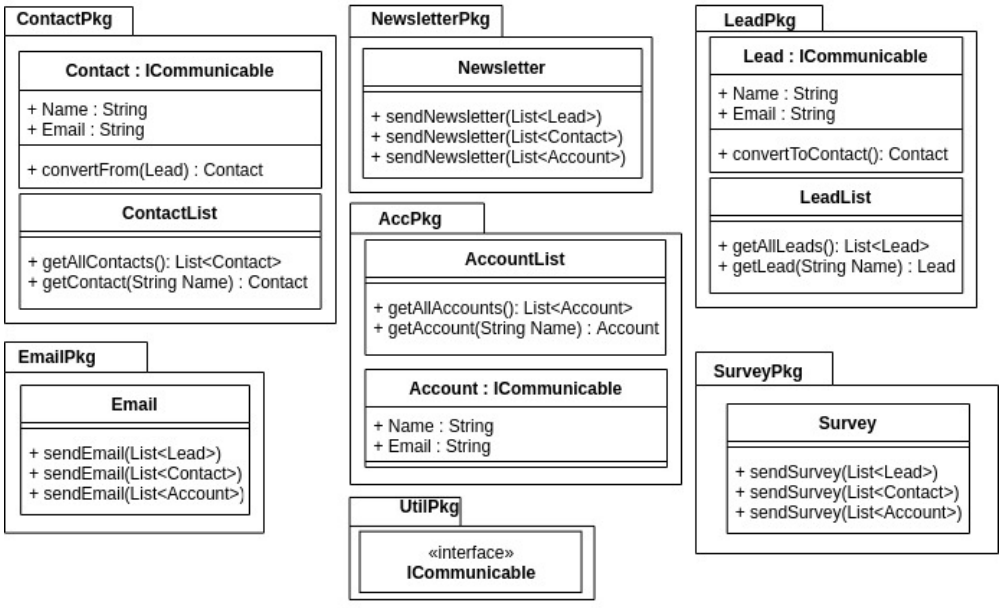
Instructor: Dr. Suman Kundu

April 29, 2022

Time: 1 hour 45 min | *Major Exam Paper* | Maximum Marks: 40

- The exam is closed book, use of notes, digital content and internet is strictly prohibited. If identified, paper will be canceled. Use pen and paper to write the exam and upload the scan copy in front of the proctor.
- Finish your paper by one hour and 45 min and submit by 2 hrs from the starting. Upload in Moodle Classroom Assignment only. Any upload after 12:00 PM will be scrutinized and may lead to no marks.
- Write clearly and mention all the assumptions (if any) in your answer. Please be precise in your answers. Verbosity may be penalized!

1. Look into the figure and answer the following questions.



(a) What is the Afferent Coupling value of LeadPkg? [3]

(b) What is the Stability value of LeadPkg? [3]

(c) Name any unstable Package from the image. [1]

(d) Suggest one change to the function to reduce its Efferent Coupling value. [3]

2. Briefly essentialize water fall model. It should not be very detailed, but should include all the kernel components. Avoid too much text and present main matters with diagrams. [10]

3. The code at the end of the question is a simple implementation to check whether few list of items can be accommodated within a floor area. Based on the code, answer the followings. [5]

   (a) Which design pattern the code is using? [2]

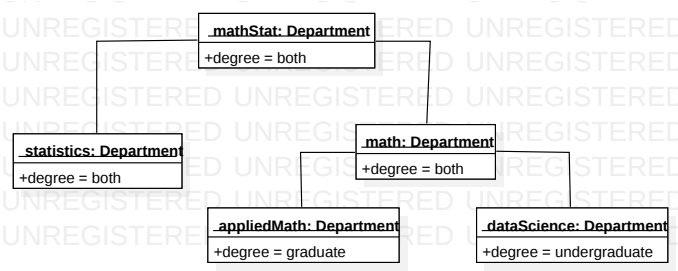
   (b) What design principle it is following? [2]

   (c) Provide test requirements for the function `isFeasible()`. [3]

   (d) Provide at least 3 different test cases to test the boundary values for the function `isFeasible()`. [3]

```
public interface IGeometry {
    public float area();
    public float perimeter();
}

public class FloorPlan {

    private float totalArea;
    private List<IGeometry> listOfObjectsToAccomodate;

    FloorPlan(float totalArea,
        List<IGeometry> objectsToBeAccomodate){
            this.totalArea = totalArea;
            this.listOfObjectsToAccomodate = objectsToBeAccomodate;
    }

    public bool isFeasible(){
        float temp = 0.0;
        foreach(var x in listOfObjectsToAccomodate){
            temp += x.area();
        }

        return temp <= this.totalArea;
    }
}
```

4. (a) Which type of diagram the following figure shows? [1]



(b) Draw a class diagram with class and relationship(s) corresponding to the above figure. [4]

(c) Look into the following figure and draw a Sequence diagram for the problem. [5]