Mobile Computing - Winter 2024

Midterm Practice Questions

Student's Details

Name of the Student:

Roll Number:

Stream:

Question Structure and Instructions

This paper consists of two sections:

1. The 1st section consists of 2 programming questions each carrying 15 points each.
2. The 2nd section consists of 10 short conceptual questions each carrying 2 points.

You need to submit everything via the Google Form. The code needs to be submitted as an attachment.

1 Programming Questions (15x2=30 points)

A1 Assume that you want to create two apps for our institute – (A1) for the administrative staff to keep track of the obtained documents for students to check the eligibility for placements, and (A2) for the students to upload the required data and documents. App A1 has the following functionalities:

(a) A list of eligible companies along with the number of eligible students

(b) On clicking a company name, roll number and data submitted by each student who is eligible, and data not received yet for the students who are not yet eligible.

(c) Allows the staff to add a company name and a deadline by when the documents are needed.

App A2 has the following functionalities:

(a) A background job that updates the list of jobs.

(b) The students would receive notifications about 1 hour before the deadline to submit each request.

You may assume that the API sends the data in the form of JSON files.

Roll Number:

2 Short Conceptual Questions (2x10=20 points)

There are 10 questions in this section each worth 3 points. You may write the answers to these questions succinctly.

B1 Consider an app similar to Google Lens that identifies the object captured by the camera. Assuming that a user frequently uses it, which hardware unit would you prefer to be used to identify the objects? Justify.

B2 Consider a smartphone messaging app that syncs with its server once every 100 ms. The advantage of this app is that it receives the message very quickly. Is there any disadvantage of using it?

B3 Assume that we want to retreive and display a list with around 1000 elements in an app. The developer decides to show them using a listview. Is this the right approach? Justify.

B4 Suppose you have a large number of UI elements. How would you navigate its semantic tree?

B5 Suppose you have designed that sends a heart patient's data using a service. Is this a good approach, and why or why not?

B6 Suppose I write an SQL query to create schemas and retrieve data whenever an entry in the schema is updated. Is this a good approach and why/why not?

B7 Suppose I utilize threads instead of co-routines to run a background task. Is this a feasible idea, and is there any disadvantage of this approach.