National University of Computer and Emerging Sciences, Lahore Campus

	Course Name:	Software for Mobile Devices	Course Code:	CS-4039
	Degree Program:	BS(CS)	Semester:	Fall 2022
	Exam Duration:	60 Minutes	Total Marks:	25
	Paper Date:	11 – Nov - 2022	Weight:	12.5
	Section:	ALL	Page(s):	4
	Exam Type:	Midterm-II		

Student Name:_____ Roll No._____Section:_____
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Instruction/Notes: This exam is open book and open notes. While writing code, make best effort to write correct and relevant code only. Minor syntactic errors are acceptable and will be ignored during marking but overall concept and approach must be correct.
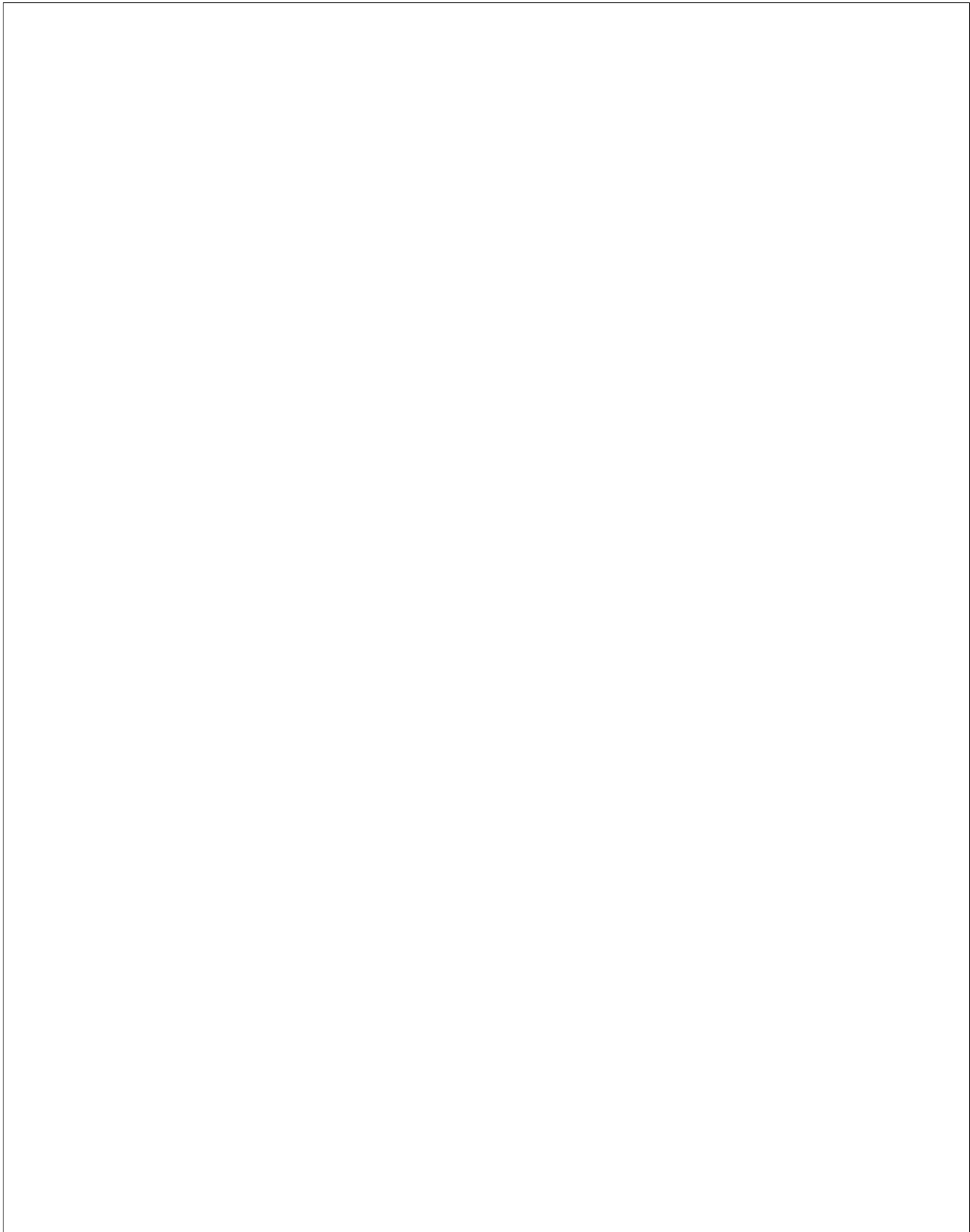_____

Question 1   **20 points**

Suppose we want to implement a simple Download Manager. A list of URLs is entered by the user and the download manager **downloads** the files and **stores** them on the **File System**. Once all files are downloaded a prompt "Download completed" is shown. Assuming that the UI related code of an Activity is already written, provide necessary code for a button event handler to complete this task with proper usage of **Thread** and **Handler**. List of URLs can be obtained in the form of an ArrayList of Strings. For simplicity you may also assume that all files are **text-based**. Moreover, there is **NO** requirement to implement a layered architecture.

```
// Write necessary event handling code here. You may divide the task into functions
```

(a) What are the benefits of using a Layered Architecture for developing an Android Application?

(b) What is the benefit of using Fragments for implementing Responsive Design? How multiple Fragments communicate with each other?