


# National University of Computer and Emerging Sciences, Lahore Campus

	Course Name:	Software for Mobile Devices	Course Code:	CS-4039
	Degree Program:	BS(CS)	Semester:	Spring 2022
	Exam Duration:	180 Minutes	Total Marks:	60
	Paper Date:	20 - Jun - 2022	Weight:	40
	Section:	ALL	Page(s):	8
	Exam Type:	Final		

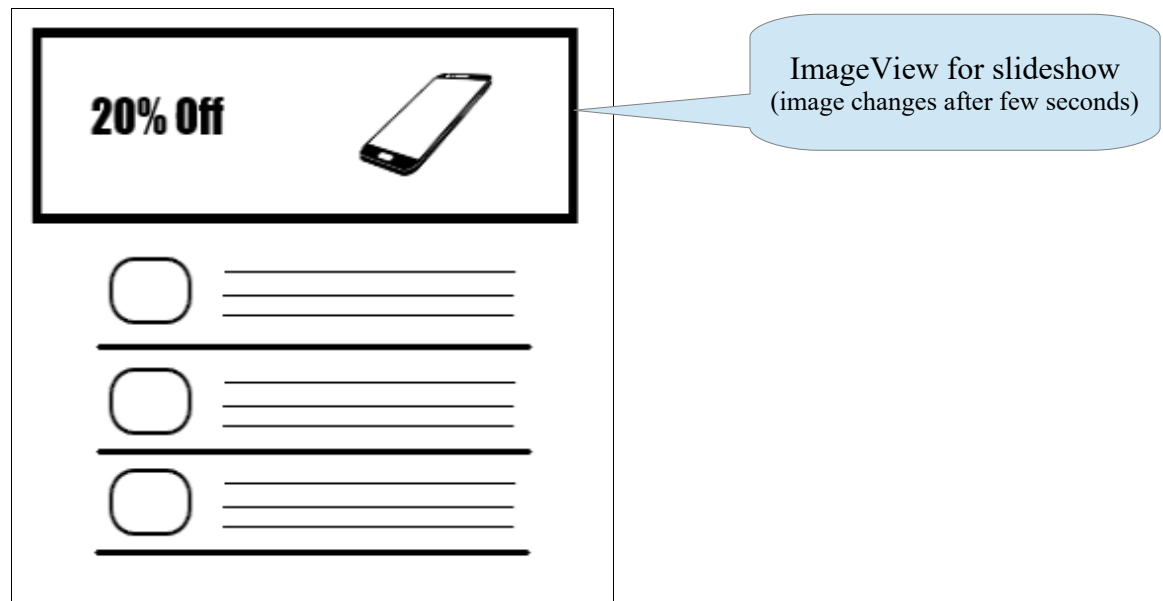
Student Name: \_\_\_\_\_ Roll No. \_\_\_\_\_ Section: \_\_\_\_\_

**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

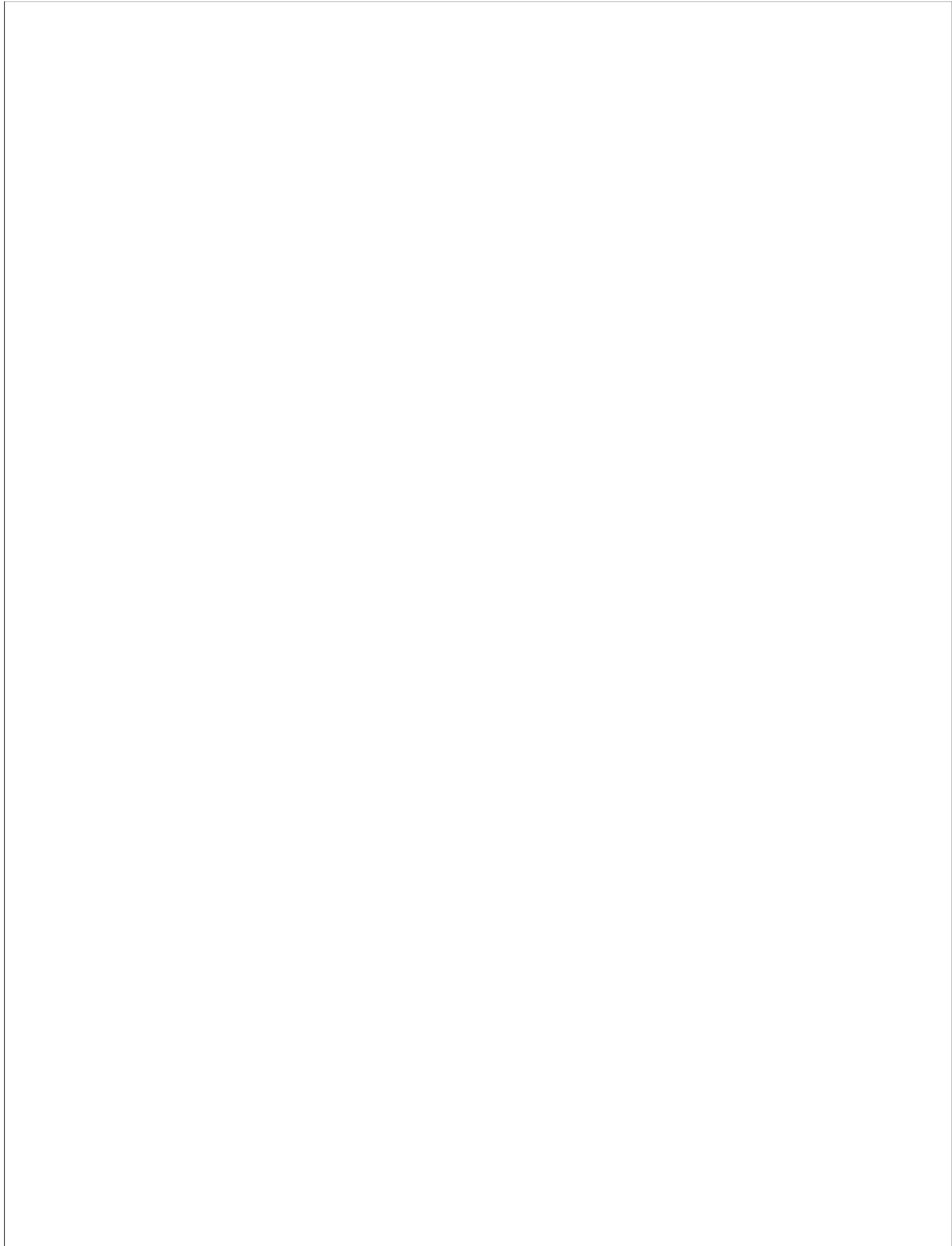
20 points

Consider an M-Commerce application that needs to show certain promotional images in form of a slideshow on its main screen/activity.



Images are **downloaded from the internet**, using known URLs, in form of a byte array that can be converted to a **bitmap** and then shown on the activity using an **ImageView**. An image will be shown for a **specific time interval**, after which it will be changed to the next image in the sequence automatically. Write necessary programmatic code (Java / Kotlin), considering all good programming practices, to implement this functionality. There is no need to give XML code for layout. Also, you may assume that an array of URLs is already given and internet connectivity is always available.





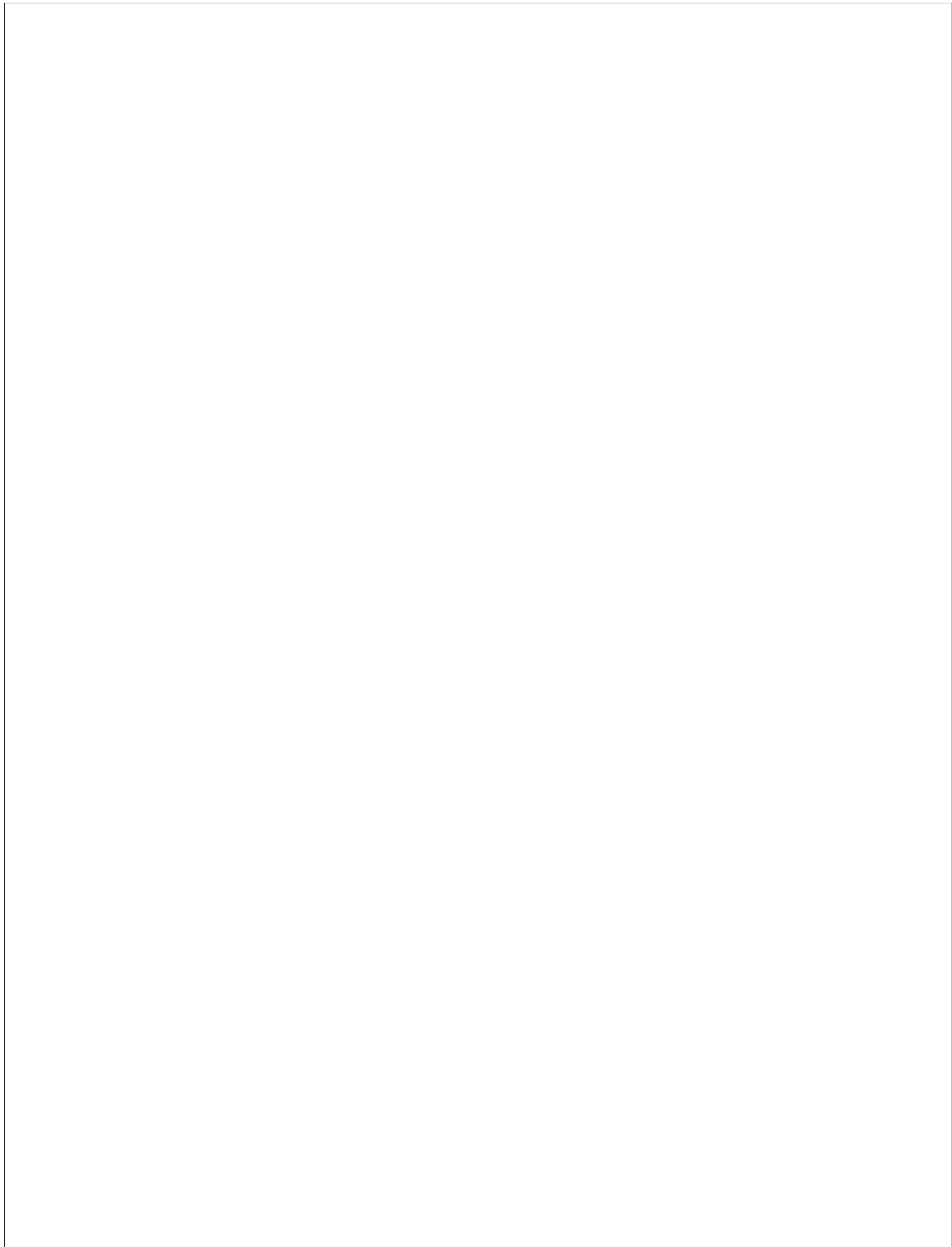
**Question 2****20 points**

Write code for a remote bound service that takes two inputs: a text and a url; and it returns corresponding HTML. For instance, given “Google” and “<http://www.google.com>” as inputs, the output shall be:

```
<a href='http://www.google.com'>Google</a>
```

Also, write code for an activity that binds to this remote bound service and show the output returned by the service call.





**Question 3****20 points**

Answer the following questions, in the space provided:

1. What are the benefits and drawbacks of using an Advertisement based strategy for monetization purpose?

2. Suppose you intend to implement a hybrid application that you may later extend to other platforms also. What strategy will you use to design and implement such application?

3. What are the benefits of using an analytics platform like Firebase?

4. How fragments help in implementation of responsive UI design ideas?

5. What is the concept of View-Model?