

MOBILE APPLICATION DEVELOPMENT
(Effective from the academic year 2018 -2019)
SEMESTER – VI

Course Code	18CSMP68	IA Marks	40
Number of Contact Hours/Week	0:0:2	Exam Marks	60
Total Number of Contact Hours	3 Hours/Week	Exam Hours	03

CREDITS – 02

Laboratory Objectives: This laboratory (18CSMP68) will enable students to


- Learn and acquire the art of Android Programming.
- Configure Android studio to run the applications.
- Understand and implement Android's User interface functions.
- Create, modify and query on SQLite database.
- Inspect different methods of sharing data using services.

Descriptions (if any):

1. The installation procedure of the Android Studio/Java software must be demonstrated and carried out in groups.
2. Students should use the latest version of Android Studio/Java/ Kotlin to execute these programs. Diagrams given are for representational purposes only, students are expected to improvise on them.
3. **Part B programs should be developed as an application and are to be demonstrated as a mini project in a group by adding extra features or the students can also develop their application and demonstrate it as a mini-project. (Projects/programs are not limited to the list given in Part B).**

Programs List:

PART – A

- | | |
|----------|---|
| 1 | <p>Create an application to design a Visiting Card. The Visiting card should have a company logo at the top right corner. The company name should be displayed in Capital letters, aligned to the center. Information like the name of the employee, job title, phone number, address, email, fax and the website address is to be displayed. Insert a horizontal line between the job title and the phone number.</p> <div style="text-align: center; margin-top: 20px;"> <p>COMPANY NAME </p> <hr style="width: 20%; margin: 5px auto;"/> <p>Name
Job Title
Phone Number
Address
Email, website, fax details</p> </div> |
| 2 | <p>Develop an Android application using controls like Button, TextView, EditText for designing a calculator having basic functionality like Addition, Subtraction, Multiplication, and Division.</p> |

	<p style="text-align: center;">SIMPLE CALCULATOR</p> <p style="text-align: center;">Result</p> <div style="text-align: center;"> <input type="text" value="Input <Edit Text>"/> </div> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; padding: 2px 5px;">7</div> <div style="border: 1px solid black; padding: 2px 5px;">8</div> <div style="border: 1px solid black; padding: 2px 5px;">9</div> <div style="border: 1px solid black; padding: 2px 5px;">/</div> </div> <div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; padding: 2px 5px;">4</div> <div style="border: 1px solid black; padding: 2px 5px;">5</div> <div style="border: 1px solid black; padding: 2px 5px;">6</div> <div style="border: 1px solid black; padding: 2px 5px;">*</div> </div> <div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; padding: 2px 5px;">1</div> <div style="border: 1px solid black; padding: 2px 5px;">2</div> <div style="border: 1px solid black; padding: 2px 5px;">3</div> <div style="border: 1px solid black; padding: 2px 5px;">-</div> </div> <div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; padding: 2px 5px;"> </div> <div style="border: 1px solid black; padding: 2px 5px;">0</div> <div style="border: 1px solid black; padding: 2px 5px;">=</div> <div style="border: 1px solid black; padding: 2px 5px;">+</div> </div> <div style="margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px 5px;">C</div> </div> </div>
3	<p>Create a SIGN Up activity with Username and Password. Validation of password should happen based on the following rules:</p> <ul style="list-style-type: none"> • Password should contain uppercase and lowercase letters. • Password should contain letters and numbers. • Password should contain special characters. • Minimum length of the password (the default value is 8). <p>On successful SIGN UP proceed to the next Login activity. Here the user should SIGN IN using the Username and Password created during signup activity. If the Username and Password are matched then navigate to the next activity which displays a message saying "Successful Login" or else display a toast message saying "Login Failed". The user is given only two attempts and after that display a toast message saying "Failed Login Attempts" and disable the SIGN IN button. Use Bundle to transfer information from one activity to another.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>SIGNUP ACTIVITY</p> <p>Username: <input style="width: 100px;" type="text"/></p> <p>Password: <input style="width: 100px;" type="password"/></p> <p><input style="border: 1px solid black; padding: 2px 10px;" type="button" value="SIGN UP"/></p> </div> <div style="text-align: center;"> <p>LOGIN ACTIVITY</p> <p>Username: <input style="width: 100px;" type="text"/></p> <p>Password: <input style="width: 100px;" type="password"/></p> <p><input style="border: 1px solid black; padding: 2px 10px;" type="button" value="SIGN IN"/></p> </div> </div>
4	<p>Develop an application to set an image as wallpaper. On click of a button, the wallpaper image should start to change randomly every 30 seconds.</p> <p style="text-align: center;">CHANGING WALLPAPER APPLICATION</p> <div style="text-align: center; margin-top: 20px;"> <input style="border: 1px solid black; padding: 5px 20px;" type="button" value="CLICK HERE TO CHANGE WALLPAPER"/> </div>
5	<p>Write a program to create an activity with two buttons START and STOP. On pressing of the START button, the activity must start the counter by displaying the numbers from One and the counter must keep on counting until the STOP button is pressed. Display the counter</p>

value in a TextViewcontrol.

COUNTER APPLICATION

Counter Value

START

STOP

- 6 Create two files of XML and JSON type with values for City_Name, Latitude, Longitude, Temperature, and Humidity. Develop an application to create an activity with two buttons to parse the XML and JSON files which when clicked should display the data in their respective layouts side by side.

PARSING XML AND JSON DATA

PARSING XML AND JSON DATA

XML DATA

JSON Data

Parse XML Data

Parse JSON Data

City_Name: Mysore

Latitude: 12.295

Longitude: 76.639

Temperature: 22

Humidity: 90%

City_Name: Mysore

Latitude: 12.295

Longitude: 76.639

Temperature: 22

Humidity: 90%

- 7 Develop a simple application with one EditText so that the user can write some text in it. Create a button called "Convert Text to Speech" that converts the user input text into voice.

TEXT TO SPEECH APPLICATION

Convert Text to Speech

- 8 Create an activity like a phone dialer with CALL and SAVE buttons. On pressing the CALL button, it must call the phone number and on pressing the SAVE button it must save the number to the phone contacts.

CALL AND SAVE APPLICATION

PART - B

- 1 Write a program to enter Medicine Name, Date and Time of the Day as input from the user and store it in the SQLite database. Input for Time of the Day should be either Morning or Afternoon or Evening or Night. Trigger an alarm based on the Date and Time of the Day and display the Medicine Name.


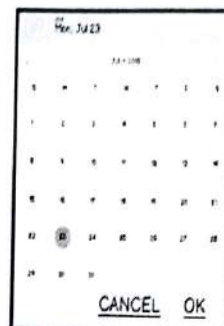
MEDICINE DATABASE


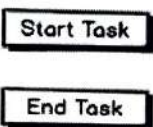
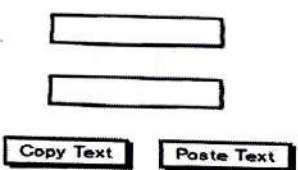
Medicine Name:

Date:

Time of the Day:

- 2 Develop a content provider application with an activity called "Meeting Schedule" which takes Date, Time and Meeting Agenda as input from the user and store this information into the SQLite database. Create another application with an activity called "Meeting Info" having DatePicker control, which on the selection of a date should display the Meeting Agenda information for that particular date, else it should display a toast message saying "No Meeting on this Date".

	<div data-bbox="835 216 982 247" data-label="Section-Header"> <h3>MEETING INFO</h3> </div> <div data-bbox="735 281 951 310" data-label="Text"> <p>Pick a date to get meeting info</p> </div> <div data-bbox="961 279 1065 321" data-label="Form"> <input type="text"/> / <input type="text"/>  </div> <div data-bbox="298 357 629 396" data-label="Section-Header"> <h3>MEETING SCHEDULE</h3> </div> <div data-bbox="289 434 629 483" data-label="Text"> <p>Date: <input type="text"/></p> </div> <div data-bbox="289 508 629 556" data-label="Text"> <p>Time: <input type="text"/></p> </div> <div data-bbox="288 575 629 625" data-label="Text"> <p>Meeting Agenda: <input type="text"/></p> </div> <div data-bbox="341 653 572 688" data-label="Text"> <p>Add Meeting Agenda</p> </div> <div data-bbox="942 342 1165 665" data-label="Form">  </div> <div data-bbox="861 669 922 699" data-label="Text"> <p>Search</p> </div>
3	<p>Create an application to receive an incoming SMS which is notified to the user. On clicking this SMS notification, the message content and the number should be displayed on the screen. Use appropriate emulator control to send the SMS message to your application.</p> <div data-bbox="595 873 883 913" data-label="Section-Header"> <h3>SMS APPLICATION</h3> </div> <div data-bbox="614 963 841 997" data-label="Text"> <p>Display SMS Number</p> </div> <div data-bbox="614 1012 852 1050" data-label="Text"> <p>Display SMS Message</p> </div>
4	<p>Write a program to create an activity having a Text box, and also Save, Open and Create buttons. The user has to write some text in the Text box. On pressing the Create button the text should be saved as a text file in MkSDcard. On subsequent changes to the text, the Save button should be pressed to store the latest content to the same file. On pressing the Open button, it should display the contents from the previously stored files in the Text box. If the user tries to save the contents in the Textbox to a file without creating it, then a toast message has to be displayed saying "First Create a File".</p> <div data-bbox="604 1299 841 1333" data-label="Section-Header"> <h3>FILE APPLICATION</h3> </div> <div data-bbox="604 1365 681 1392" data-label="Text"> <p>Create</p> </div> <div data-bbox="752 1371 809 1396" data-label="Text"> <p>Open</p> </div> <div data-bbox="592 1421 826 1533" data-label="Form"> <input type="text"/> </div> <div data-bbox="681 1562 732 1587" data-label="Text"> <p>Save</p> </div>
5	<p>Create an application to demonstrate a basic media player that allows the user to Forward, Backward, Play and Pause an audio. Also, make use of the indicator in the seek bar to move the audio forward or backward as required.</p>

	<p style="text-align: center;">MEDIA PLAYER APPLICATION</p> <p style="text-align: center;">Audio Name</p> <p style="text-align: center;">  </p>
6	<p>Develop an application to demonstrate the use of Asynchronous tasks in android. The asynchronous task should implement the functionality of a simple moving banner. On pressing the Start Task button, the banner message should scroll from right to left. On pressing the Stop Task button, the banner message should stop. Let the banner message be "Demonstration of Asynchronous Task".</p> <p style="text-align: center;">ASYNCHRONOUS TASK</p> <p style="text-align: center;">  </p>
7	<p>Develop an application that makes use of the clipboard framework for copying and pasting of the text. The activity consists of two EditText controls and two Buttons to trigger the copy and paste functionality.</p> <p style="text-align: center;">CLIPBOARD ACTIVITY</p> <p style="text-align: center;">  </p>
8	<p>Create an AIDL service that calculates Car Loan EMI. The formula to calculate EMI is</p> $E = P * (r(1+r)^n)/((1+r)^n-1)$ <p>where</p> <ul style="list-style-type: none"> E = The EMI payable on the car loan amount P = The Car loan Principal Amount r = The interest rate value computed on a monthly basis n = The loan tenure in the form of months <p>The down payment amount has to be deducted from the principal amount paid towards buying the Car. Develop an application that makes use of this AIDL service to calculate the EMI. This application should have four EditText to read the PrincipalAmount, Down Payment, Interest Rate, Loan Term (in months) and a button named as "Calculate Monthly EMI". On click of this button, the result should be shown in a TextView. Also, calculate the EMI by varying the Loan Term and Interest Rate values.</p>

CAR EMI CALCULATOR

Principal Amount

Down Payment

Interest Rate

Loan Term (in months):

EMI: Result

Calculate Monthly EMI

Laboratory Outcomes: After studying these laboratory programs, students will be able to

- Create, test and debug Android application by setting up Android development environment.
- Implement adaptive, responsive user interfaces that work across a wide range of devices.
- Infer long running tasks and background work in Android applications.
- Demonstrate methods in storing, sharing and retrieving data in Android applications.
- Infer the role of permissions and security for Android applications.

Procedure to Conduct Practical Examination

- Experiment distribution
 - For laboratories having only one part: Students are allowed to pick one experiment from the lot with equal opportunity.
 - For laboratories having PART A and PART B: Students are allowed to pick one experiment from PART A and one experiment from PART B, with equal opportunity.
- Change of experiment is allowed only once and marks allotted for procedure to be made zero of the changed part only.
- Marks Distribution (Course to change in accordance with university regulations)
 - For laboratories having only one part – Procedure + Execution + Viva-Voce: $15+70+15=100$ Marks
 - For laboratories having PART A and PART B
 - i. Part A – Procedure + Execution + Viva = $6+28+6=40$ Marks
 - ii. Part B – Procedure + Execution + Viva = $9+42+9=60$ Marks

Text Books:

1. Google Developer Training, "Android Developer Fundamentals Course – Concept Reference", Google Developer Training Team, 2017.
<https://www.gitbook.com/book/google-developer-training/android-developer-fundamentals-course-concepts/details>
 (Download pdf file from the above link)

Reference Books:

1. Erik Hellman, "Android Programming – Pushing the Limits", 1st Edition, Wiley India Pvt Ltd, 2014. ISBN-13: 978-8126547197
2. Dawn Griffiths and David Griffiths, "Head First Android Development", 1st Edition, O'Reilly SPD Publishers, 2015. ISBN-13: 978-9352131341
3. Bill Phillips, Chris Stewart and Kristin Marsicano, "Android Programming: The Big Nerd Ranch Guide", 3rd Edition, Big Nerd Ranch Guides, 2017. ISBN-13: 978-0134706054

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