

Software for Mobile Devices (CS-4039)

Date: Nov 5th 2025

Course Instructor(s):

Mr. Saad Salman

BS-CS(23&22) Sec: A&B

Sessional-II Exam

Total Time (Hrs): 1

Total Marks: 60

Total Questions: 4

Invigilator's Signature

Student Signature

Roll No

Section

Students are allowed to bring 1 sided A-4 handwritten sheet as cheat sheet. For 5 bonus marks, submit the cheat sheet.

Attempt all the questions. t5

Question	Q1	Q2	Q3	Q4	Q5	Total
Marks Obt.	04	05	06	10	18	42
Max Marks	10	10	10	10	20	60

[CLO 1: Describe the architecture, platforms, and core components of mobile operating systems and development frameworks] t3

Q1: Describe what is the use of google-services.json file?

[10 marks]

The google-services.json file enables the app to use online services through google. E.g. connecting to a cloud based database for authentication or realtime db. It contains the info of the corresponding cloud service e.g. details of your firebase project realtime db, Project id, Service

[CLO 1: Describe the architecture, platforms, and core components of mobile operating systems and development frameworks]

Q2: Read the code given below *build.gradle.kts(Module:app)* file, please state the differences of the following terms [10 marks]

```
plugins {
    id("com.android.application")
    id("org.jetbrains.kotlin.android")
    id("com.google.gms.google-services")
}

android {
    namespace = "com.fast.firebaseio5b"
    compileSdk = ?

    defaultConfig {
```

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```

    applicationId = "com.fast.firebaseioex5b"
    minSdk = ?
    targetSdk = ?
    versionCode = ?
    versionName = ?

    testInstrumentationRunner =
    "androidx.test.runner.AndroidJUnitRunner"
}

buildTypes {
    release {
        isMinifyEnabled = false
        proguardFiles(
            getDefaultProguardFile("proguard-android-optimize.txt"),
            "proguard-rules.pro"
        )
    }
}
}

```

minSdk vs compileSdk	versionCode vs versionName
<p>minSDK is the min compatible version of SDK for the application.</p> <p>compileSDK is the SDK version at which the app is currently running.</p>	<p>versionCode is the current installed version of the Gradle.</p> <p>versionName is the name of that version e.g. Narwhal, Kitkat, Raspberry</p>

[CLO 2: Apply Android components (Activities, Intents, Layouts, RecyclerView, SQLite, Firebase) to build functional apps]

Q3: Consider the SQLite table below, implement a code to change the Department of Alex S to Marketing [10 marks]

Emp No	Name	Age	Department	Salary
001	Alex S	26	Store	5000
002	Golith K	32	Marketing	5600
003	Rabin R	31	Marketing	5600
004	Jons	26	Security	5100

```

$query = "UPDATE TABLE employees
SET `department` = 'Marketing'
WHERE 'name' = 'Alex S'
$res = mysqli_query($conn, $query);
if($res){
    $response['success'] = 1;
} else {
    $response['failure'] = 1;
}

```

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[CLO 2: Apply Android components (Activities, Intents, Layouts, RecyclerView, SQLite, Firebase) to build functional apps]

[10 marks]

Q4: Write a function that converts image Uri to Base64 String.

```
var ins = contentResolver.openInputStream(Uri.parse(uri))
var b = ByteArray(ins.available())
ins.read(b)
img.Base64.encodeToString(b, Base64.DEFAULT)
```

[CLO 4: Design and implement mobile applications integrating APIs, maps, notifications, and background services]

Q5: For the given table and develop a Web API in PHP to POST data into the Table below [20 marks]

Assuming EmpNo as autoIncrement



Emp No	Name	Age	Department	Salary
001	Alex S	26	Store	5000
002	Golith K	32	Marketing	5600
003	Rabin R	31	Marketing	5600
004	Jons	26	Security	5100

```
<?php
include 'conn.php';
$response = array();
if( !isset( $_POST['name'], $_POST['age'], $_POST['department'], $_POST['salary']) ){
    $name = $_POST["name"],
    $age = $_POST["age"],
    $department = $_POST["department"],
    $salary = $_POST["salary"]
    $query = "INSERT INTO employees(`name`, `age`, `department`, `salary`)
              VALUES ('$name', '$age', '$department', '$salary')";
    $res = mysqli_query($conn, $query)
}
else {
    $response["id"] = "NA";
    $response["msg"] = "Incomplete Request";
    $response["response"] = "0";
}
```

For example?