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## Course Description - ANDROID PROGRAMMING

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## **1. INTRODUCTION**

The document provides a description of Android programming training course

## **2. OVERVIEW**

The course covers practice of Android application programming. This course introduces the Android platform, including its architecture and setting up the development environment. It covers all the basic functionality as well as exploring the advanced features through concise and useful examples.

## **3. COURSE OBJECTIVES**

Students will know about:

- Architecture of Android OS
- Concepts for building an application in Android SDK
- Methods of debugging applications using the Android emulator and real device
- Main components of Android applications
- Basics of Android GUI design
- Strategies for storing and retrieving data
- Android's support for multimedia

## **4. COURSE DURATION**

60 hours:

Lectures – 16 hours

Practical classes – 32 hours

Independent work – 12 hours

## **5. PREREQUISITES**

Basic knowledge of object-oriented concepts and Java language basics is required. Prior Eclipse experience is helpful, but not required

## **6. HANDS-ON TRAINING**

Students gain experience creating their own Android applications. Hands-on exercises include:

- Building a basic Android application
- Launching and debugging applications using the Android emulator and real device
- Designing GU interfaces
- Working with Android components: Activity, ContentProvider, BroadcastReceiver, Service
- Using Intents for launching applications
- Retrieving data from SQLite databases, accessing external resources
- Working with multimedia

## **7. COURSE CONTENT**

### ***Lecture №1 Introducing Android***

The Android platform. Android components. Understanding the AndroidManifest.xml file. Resource file R.java. Introduction to the Android SDK. Creating a skeleton Android application. Building and Debugging application in Eclipse. Using the Android emulator.

### ***Practice №1***

## **Application Basics**

### ***Lecture №2 User interfaces***

Creating an Activity class. Fundamental Android GUI design. Working with views (TextView, ImageView, AdapterView etc.). Understanding basic layouts: FrameLayout, LinearLayout, TableLayout, RelativeLayout. Using resources.

### ***Practice №2***

### ***Lecture №3 Activities and Intents***

Creating Android activities. Exploring the Activity lifecycle. Multiple Activities. Using Intents to Launch Activities. Implicit Intents for launch native applications. Creating Intent Filters.

### ***Practice №3***

### ***Lecture №4 Broadcast Receivers and Services***

Types of Broadcast messages. Requesting and Requiring Permissions. Working with threads. Types of services (bind, unbind).

### ***Practice №4***

## **Data Storage Methods**

### ***Lecture №5, 6 Storing and retrieving data***

Android Techniques for saving data. Using preferences. Using the file system. Managing and Accessing Local Databases. SQLite3 tools.

Data Storage and ContentProvider: using an existing ContentProvider, creating a ContentProvider.

### ***Practice №5, №6***

## **Other Android Capabilities**

### ***Lecture №7 Telephony. Notifications and alarms.***

Accessing telephony information. Interacting with the phone. Working with messaging: SMS. Introducing Toast and Notifications. Alerting Users via Notifications. Introducing alarms.

### ***Practice №7***

***Lecture №8 Multimedia Techniques. Location.***

Playing and recording audio & video. Controlling the camera. Accessing Location-Based Services. Using Google Maps.

***Practice №8***

**8. METHOD OF EVALUATION**

<b>Evaluation Item</b>	<b>The number of times</b>	<b>Evaluation Proportion</b>	<b>Remarks</b>
attendance		20%	80% of the classes
midterm exam			
final exam			
final report			
test	4	30%	
presentation			
discussion			
homework		20%	
practice task	8	30%	All the practice tasks should be completed
etc			