

# Android: Developing mobile apps

Hands-on course of 4 days - 28h

Ref.: AMA - Price 2024: €2 390 (excl. taxes)

## EDUCATIONAL OBJECTIVES

At the end of the training, the trainee will be able to:

Discover the Android platform and its development tools

Discover the Android component model

Develop user interfaces

Manage the persistence of data

Manage the network and data transfers

Use the features of an Android Smartphone

A Smartphone will be provided to the attendees so that they can test their work.

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## TRAINING PROGRAM

## THE PROGRAMME

last updated: 01/2018

### 1) Discovering the Android platform

- Using the Android platform.
- The Android model and its architecture.
- Overview of the operating system (features, version, tools, etc.).
- Key applications for using a terminal.
- The development tools, the development environment: Android Studio, Android SDK.
- Implementing the Android SDK.
- Target terminals (smartphones, tablets, personal navigation assistants, virtual terminals, etc).
- Internationalizing Android apps.
- Android and Linux.
- Hands-on works «Setting up a development environment with Android Studio and the Android SDK.

*Setting up a development environment with Android Studio and the Android SDK.*

### 2) Android development

- Basic concepts of an Android application.
- The application's lifecycle (from publishing the program to testing).
- Overview of the development framework, libraries.
- Overview of basic classes and utilities.
- Creating your first project: Code, resource, ownership, and details of the project.
- Running your application on the SDK simulator and testing it.
- The SDK Manager and the configuration of Android virtual devices (AVDs): Target, SDCard, etc.
- Using a debugger to check how the programs are running.
- How to access the application's logs
- Identifying the application and the manifest file (version, minSDK, name of the application, etc.).
- Making your application available.

### TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

### ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more. Participants also complete a placement test before and after the course to measure the skills they've developed.

### TEACHING AIDS AND TECHNICAL RESOURCES

- The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
- At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
- A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

### TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

### ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at [psh-accueil@ORSYS.fr](mailto:psh-accueil@ORSYS.fr) to review your request and its feasibility.

- Hands-on work → Developing a first application based on the development cycle studied.  
*Developing a first application based on the development cycle studied.*

### 3) User interfaces with Android

- Overview of the layout and place of the component.
- Unique features of mobile devices in terms of display and user interaction.
- Graphical components: Layouts, menus, lists, etc.
- Creating a graphical user interface with views.
- Setting up menus (main, icon, sub-menu, etc.).
- Setting up layout containers (Gallery, GridView, ScrollView, etc.).
- Event management (set-up, reaction, listeners).
- Styles and themes applied to widgets.
- User notification (notification bar, toast, dialog boxes).
- Alternative resources: Multi-device testing, location.
- Hands-on work → Creating an application with a graphical user interface.  
*Creating an application with a graphical user interface.*

### 4) The component model

- Basic concept: Activity and life cycle.
- Fundamental components: Activity, Service, BroadcastReceiver, ContentProvider, Intents.
- Stopping components (finish, stopSelf, etc.).
- Activities (life cycle, navigating between activities, inter-activity communication, etc.).
- Services (life cycle, background tasks, etc.). Service types (local and remote).
- Differences between an activity and a service.
- Launching an activity, its main states.
- AIDL (Android Interface Description Language). Message bus and Intents.
- Hands-on work → Transmitting information from one Activity to another by means of Intents.  
*Transmitting information from one Activity to another by means of Intents.*

### 5) The persistence of data

- How can you share data between applications?
- Basic data backups.
- Using preferences (SharedPreferences, read mode). Retrieving a set of preferences.
- Using the file system (including for XML files).
- Locations of files containing data (internal/external zone).
- Using the embedded database (SQLite), data insertion.
- Using the Android API.
- Hands-on work → Implementing storage features on a device with a database.  
*Implementing storage features on a device with a database.*

### 6) Network management

- Reminders about network programming.
- Communication with a Socket server.
- Using HTTP with Android APIs.
- Introduction to the consumption of Web services.
- Parsing JSON with the Gson library for Android.
- Hands-on work → Data exchange.  
*Exchanging data.*

### 7) Add-ons

- Telephone service management. Calls. Text message management. Interactions with the SIM card.
- Multimedia. Drawing and animation. Playing audio and video.
- Multimedia capture (sound, image, video, etc.).
- Geolocation APIs with Google Maps.

- Configuring the emulator to test geolocation.
- Hands-on work  $\approx$ Creating a geolocation app presented using Google Maps.  
*Creating a geolocation app presented using Google Maps.*

## DATES

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### REMOTE CLASS

2024 : 25 Jun, 24 Sep, 17 Dec