

# Mobile Applications Development

## Course 2

# Operating platforms & Programming platforms – short presentations –

1. Apple's iOS
2. Google's Android
3. Microsoft's Windows Mobile
4. Nokia's Symbian OS
5. BlackBerry

# **Mobile Applications Development**

## **Course 2**

# **Operating platforms – short presentation –**

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- 4. Nokia's Symbian OS**
- 5. BlackBerry**

**At the foundation of any smartphone  
an operating system is.**

## C2-Operating platforms – short presentation- 1. **Apple's iOS**

- **iOS 1.0** - 06/2007- iPhone 2G- Core iOS UI, Multi-touch gestures, Mobile Safari, iPod ,Visual Voicemail, Maps, iTunes Sync
- iOS 1.1 - 09 / 2007- iPhone 2G, iPod Touch 1st Gen- iTunes Wi-Fi Music Store, iPod Touch compatibility
- iOS 1.1.1 - 01 / 2008- iPhone 2G, iPod Touch 1st Gen- Better location, Web clips on home screen, Re-arrange icons, Multi-touch keyboard
- **iOS 2.0** - 07 / 2008- iPhone 3G, iPhone 2G, iPod Touch 1st Gen - Native 3rd-party apps, App Store, Microsoft Exchange support, MobileMe, Contact Search
- iOS 2.1 - 09 / 2008- iPhone 3G,iPhone 2G,iPod Touch 2nd Gen, iPod Touch 1st Gen - Battery life and speed fixes, iTunes ,Genius playlists, Dropped call fixes
- iOS 2.2 - 11 / 2008- iPhone 3G,iPhone 2G,iPod Touch 2nd Gen, iPod Touch 1st Gen - Google street view, Podcast downloads
- **iOS 3.0**- 06 / 2009- iPhone 3GS,iPhone 3G,iPhone 2G\*,iPod Touch 2nd Gen, iPod Touch 1st Gen\*Cut, copy, paste, Voice Control, MMS, Spotlight search, Push notifications, USB & Bluetooth tethering, Landscape keyboard, Find my iPhone
- iOS 3.1 - 09 / 2009- iPhone 3GS,iPhone 3G,iPhone 2G\*,iPod Touch 3rd Gen, iPod Touch 2nd Gen, iPod Touch 1st Gen\*- Genius features, Ringtone downloads, Remote lock, Voice Control over Bluetooth
- iOs 3.2 si inca iOS 3.2 update-uri - iPad only

## C2-Operating platforms – short presentation- 1. **Apple's iOS**

- **iOS 4.0** - 06 / 2010- iPhone 4, iPhone 3GS, iPhone 3G\*, iPod Touch 3rd Gen, iPod Touch 2nd Gen\*- Multitasking, Home screen folders, FaceTime video chat, Unified email inbox, Threaded email messages, Retina Display support, iAd support
- **iOS 5.0** - 10 / 2011- iPhone 4S, iPhone 4, iPhone 3GS, iPad, iPad 2, iPod Touch 4th Gen, iPod Touch 3rd Gen- Siri- Notification Center, PC-free, iTunes Wi-Fi Sync, iMessage, iCloud
- **iOS 6** – toamna 2012 - iPhone 5, iPhone 4S, iPhone 4, iPhone 3GS, iPad mini, iPad 4th Gen, iPad 3rd Gen, iPad 2, iPod Touch 4th Gen, iPod Touch 5th Gen- Homegrown Maps and turn-by-turn navigation, Siri enhancements, Facebook integration, Passbook, iCloud Tabs, Mail enhancements, FaceTime over cellular
- **iOS 7** - toamna 2013- la fel - Visual overhaul, Control Center, AirDrop, Refreshed core apps, iTunes Radios, FaceTime Audio
- **iOS 8** – toamna 2014 - + iPhone 5c, iPhone 5s, iPhone 6, iPhone 6+ - Continuity, Widgets, Extensibility, QuickType, iCloud Drive, HealthKit, HomeKit, Family Sharing
- **iOS 9- toamna 2015 -.....-** Intelligent Search and Siri, Install size optimizations, Performance improvements, Transit directions

## C2-Operating platforms -short presentation- **Android**

- **Android 0.9** - 2008 Aug 22
- **Android 1.0 (Apple pie)**- 2008 Sep 23- Download and updates via Android Market, Web Browser, Camera support, Gmail, Contacts and Google Agenda synchronization, Google Maps, YouTube application

**Android 1.1 (Banana bread)** - 2009 Feb 9 - "Show" & "Hide" numeric keyboard, in caller application, Ability to save MMS attachments

**Android 1.5 (Cupcake)** - 2009 Apr 30- Bluetooth A2DP, AVRCP support, Soft-keyboard with text-prediction, Record/watch videos

**Android 1.6 (Donut)**-2009 Sep 15- Gesture framework, Turn-by-turn navigation

## C2-Operating platforms -short presentation- **Android**

- **Android 2.0(Eclair)** -2009 Oct 26- HTML,Digital zoom, Microsoft Exchange support, Bluetooth 2.1, Live Wallpapers,Updated UI

**Android 2.0.1 (Eclair)** - 2009 Dec 3

**Android 2.1 (Eclair)** - 2010 Jan 12- Updated UI

**Android 2.2 (Froyo)** - 2010 May 20 - Speed improvements, JIT implementation, USB Tethering, Applications installation to the expandable memory, Upload file support in the browser, Animated GIFs

**Android 2.3 (Gingerbread)**- 2010 Dec 6- Updated UI, Improved keyboard ease of use, Improved copy/paste, Improved power management, Social networking features, Near Field Communication support, Native VoIP/SIP support, Video call support

**Android 2.3.4 (Gingerbread)**- 2011 May 10 - Voice or video chat using Google Talk

**Android 2.3.5 (Gingerbread)**- 2011 Jul 25- Improved network performance for the Nexus S 4G, Fixed Bluetooth issues on the Samsung Galaxy S, Gmail app. Improvements

**Android 2.3.6 (Gingerbread)**- 2011 Sep 2- Voice search issue fixed

**Android 2.3.7 (Gingerbread)**- 2011 Sep 21- Google Wallet support for the Nexus S 4G

## C2-Operating platforms -short presentation- **Android**

- **Android 3.0 (Honeycomb)**- 2011 Feb 22- Multi core support, Better tablet support, Updated 3D UI, customizable homescreens, recent applications viewing, redone keyboard layout, Media/Picture transport protocol, Google Talk video chat, Google eBooks,"Private browsing", System-wide Clipboard, HTTP Live streaming

**Android 3.1 (Honeycomb)**- 2011 May 10- UI improvements. Open Accessory API,USB host API, Mice, joysticks, gamepads... Support, Resizable Home screen widgets, MTP notifications, RTP API for audio

**Android 3.2 (Honeycomb)** - 2011 Jul 15- Optimizations for a wider range of tablets, Compatibility display mode (zoom for fixed-sized apps),Media sync from SD card

**Android 3.2.1 (Honeycomb)** - 2011 Sep 20- Android Market updates including easier automatic updates. Google Books updates, Wi-Fi improvements, Chinese handwriting prediction improved

**Android 3.2.2 (Honeycomb)** - 2011 Sep 30- Minor fixes

**Android 3.2.6 (Honeycomb)** - 2012 Feb 15-Minor fixes



## C2-Operating platforms -short presentation- **Android**

- **Android 4.0(Ice Cream Sandwich)**-2011 Oct 18- New lock screen actions, Improved text input and spell-checking, Control over network data, Email app supports EAS v14,WI-Fi direct,Bluetooth Health Device Profile
- **Android 4.0.1(Ice Cream Sandwich)**- 2011 Oct 19- Facial recognition (Face Unlock),UI use Hardware acceleration, Better voice recognition (dictating/Voice typing),Web browser, allows up to 16 tabs, Updated launcher (customizable),Android Beam app to exchange data through NFC
- **Android 4.0.2Ice Cream Sandwich**- 2011 Nov 28- Minor fixes
- **Android 4.0.3Ice Cream Sandwich** -2011 Dec 16- Social stream API in Contacts provider to show updates associated to your contacts, Video stabilization and QVGA video resolution API access,Accessibility API refinements for screen readers, Calendar provider updates
- **Android 4.0.4 Ice Cream Sandwich** - 2012 Mar 28 - stability improvements, better camera performance,smoother screen rotation

## C2-Operating platforms -short presentation- **Android**

**Android 4.1** Jelly Bean- 2012 Jul 9- Google Now, Voice Search, Speed enhancements, Camera app improvements, Accessibility: gesture mode, enable braille external keyboards...

**Android 4.1.1**Jelly Bean- 2012 Jul 23- Fix a bug on screen orientation

**Android 4.1.2**Jelly Bean- 2012 Oct 9- Home screen rotation, Fix bugs & enhance performances

**Android 4.2**Jelly Bean 2012 Nov 13- Lockscreen widgets,360 degree images with Photo Sphere, Gesture Typing, for faster typing, Wireless display with Miracast, Daydream to display information when idle or docked, Multi-user for tablets

**Android 4.2.1**Jelly Bean -2012 Nov 27-Fix missing december bug in the People app, support for Bluetooth gamepads and joysticks HID devices

**Android 4.2.2**Jelly Bean- 2013 Feb 11-Allow toggling Wi-Fi and Bluetooth state in Quick Settings using long-press, Shows the percentage and estimated time remaining in the active download notifications, Wireless charging and low battery sounds changed, Gallery app updated for faster loading with new image transition, Performance enhancements and bug fixes (Bluetooth A2DP audio streaming fix...)

## C2-Operating platforms -short presentation- **Android**

**Android 4.3 Jelly Bean** - 2013 Jul 24- Dial pad auto-complete, Photo Sphere enhancements, Camera app UI updated, 4K resolution support, Ability to create restricted profiles for tablets, Hebrew and Arabic right-to-left (RTL) support, Bluetooth Low Energy (BLE) support, Bluetooth Audio/Video Remote Control Profile (AVRCP) 1.3 support, Security and performance enhancements

**Android 4.4 KitKat**- 2013 Oct 31 - Screen recording, New Translucent system UI, Enhanced notification access, System-wide settings for closed captioning, Performance improvements

**Android 4.4.1 KitKat**- 2013 Dec 5- Bug fixes, Enhance the camera on the Nexus 5

**Android 4.4.2 KitKat**- 2013 Dec 9 - Bug fixes, Security enhancements

**Android 4.4.3 KitKat** -2014 Apr 14- Bug fixes, Enable Sprint Spark band 26 and band 41

**Android 4.4.4 KitKat** - 2014 Jun 23- Fix Heartbleed / OpenSSL vulnerability

## C2-Operating platforms -short presentation- **Android**

- **Android 5.0** Lollipop - 2014 Oct 17- New design (Material design), Speed improvement, Battery consumption improvement

**Android 5.0.1** Lollipop - 2014 Dec 2- bug fixes, fix issues with video playback and password failures

**Android 5.0.2** Lollipop - 2014 Dec 19- Performance improvements and bug fixes

**Android 5.1** Lollipop- 2015 Mar 9- Multiple SIM cards support, Quick settings shortcuts to join Wi-Fi networks or control Bluetooth devices, Lock protection if lost or stolen, High Definition voice call, Stability and performance enhancements

**Android 5.1.1** Lollipop -2015 Apr 21- Speed improvement ,Bug fixes

- **Android 6 M - 2015 ?** - USB Type-C support, Fingerprint Authentication support, Better battery life with "deep sleep", Permissions dashboard, Android Pay, Google Now improvements

## C2-Operating platforms -short presentation- **Windows Phone**

- **Windows Phone 7**- October 2010

**Windows Phone 7.5 *Mango***- 2011- Internet Explorer 9 , multi-tasking of third-party apps,<sup>1</sup>Twitter integration for the People Hub, Windows Live SkyDrive access

- **Windows Phone 8**- October 29, 2012- HD displays, multi-core system-on-chips, microSD card readers, enhanced background multi-tasking, , support for NFC, 128-bit Bitlocker encryption, VoIP and voice chat integration, native Skydrive integration and Nokia Maps Technology

**Windows phone 8.1**- April 10, 2014- Cortana, notification center, Internet Explorer 11 with tab syncing among Windows 8.1 devices and WP devices, separate volume controls, the option to skin and add a third column of live tiles to the Start Screen

- **Windows 10 Mobile**-- primary focus is unification with Windows 10, its PC counterpart, in software and services, face tracking for the front-facing camera

## C2-Operating platforms -short presentation- **BlackBerry OS**

- **BlackBerry OS 1.0** – 01/1999 - Pager BlackBerry 850(telefon) -
- **BlackBerry OS 2.0** - 2000- PDA format, email, web browser, agenda, calendar, notes , games
- **BlackBerry OS 3.0** - 2002- BlackBerry 5810 smartphone- **Java support**
- **BlackBerry OS 4.0** -2004 - an improved **HTML browser**, a **Gallery** application for viewing photos ,enhanced **two-way chat** capabilities.
- new versions were being released (4.1 (above), 4.2, 4.3, 4.3, 4.5, 4.6 and 4.7 (below)) until 2008.
- **BlackBerry OS 5.0** - 2008- BlackBerry Bold 9000 8520 and came to the other BlackBerry smartphones a short while after its release - improved **mobile internet connectivity**, a much improved **email application**, **file viewer**, **wireless contact syncing**, **Gmail integration**, **BlackBerry Maps**, **touchscreen support**
- **BlackBerry OS 6.0**- April 2010-BlackBerry Bold 9650/9700/9780, BlackBerry Curve 9300/9330, BlackBerry Pearl 9100/9105, BlackBerry Style 9670, and BlackBerry Torch 9800- **WebKit-based browser** , a **native YouTube app**.

## C2-Operating platforms -short presentation- **BlackBerry OS**

- **BlackBerry OS 7.0**-August 2011-BlackBerry Bold (9900/9930), BlackBerry Torch (9810/9850/9860), and the BlackBerry Curve (9350/9360/9370/9380). -**FM radio**, a tool for**creating WiFi hotspots**, **NFC support** and updates to some native applications

**BlackBerry OS 7.1- 2012-** BlackBerry Bold 9790/9900/9930, BlackBerry Curve 9310/9315/9350/9360/9370/9380/9220/9320, BlackBerry Torch 9810/9850/9860, and BlackBerry 9720.- Ability to create a WiFi hotspot, Calling people over WiFi (if supported by their mobile phone operator),Ability to listen to FM radio (Curve Only), Blackberry Tag (sharing images using NFC)

- **BlackBerry OS 10.2** -2014- access to downloading Android apps, allowing an unprecedented number of previously unavailable applications to be used on BlackBerry 10

**BlackBerry OS 10.3-** Flat Design UI, Permanent Homescreen (detachable),Android 4.3 runtime with multicore support (however Android apps are limited to two cores even on quad-core devices like the Blackberry Passport),Advanced Interactions, Support for BlackBerry Blend, BlackBerry Assistant,, Customizable notification profiles, Integrated LED color manager, Battery Saving Mode, Option to hide pictures and videos, Customizable keyboard shortcuts, Android runtime screen scaling, Amazon Appstore preloaded

## C2-Operating platforms -short presentation- **Minimum hardware**

- **iOS 8** - Iphone 4S (Dual-core 1 GHz Cortex-A9, 512 MB RAM)
- **Android 5.1.1 – Samsung Galaxy S6**(Quad-core 1.5 GHz Cortex-A53 & Quad-core 2.1 GHz Cortex-A57, minimum 3 GB RAM)
- **Windows Phone 8.1**- Qualcomm Snapdragon S4 dual-core processor, Minimum 512MB RAM for WVGA phones; minimum 1GB RAM for 720p / WXGA, Minimum 4GB flash memory, GPS and A-GNSS; GLONASS is supported if OEMs decide to include it, Support for micro-USB 2.0,3.5mm stereo headphone jack with three-button detection support, Rear-facing AF camera with LED or Xenon flash, optional front-facing camera (both need to be VGA or better) and dedicated camera button, Accelerometer, proximity and ambient light sensors, as well as vibration motor (magnetometer and gyroscope are optional),802.11b/g and Bluetooth (802.11n is optional),DirectX graphics hardware support with hardware acceleration for Direct3D using programmable GPU, Multi-touch capacitive touch screen with minimum of four simultaneous points
- **BlackBerry OS 10** : BlackBerry Z3 (Dual-core 1.2 GHz Krait 200, 1.5 GB RAM)



# **Mobile Applications Development**

## **Course 2**

### **Programming platforms**

**– short presentation -**

# IDE for iOS

- Xcode 3.1 - ? - iPhone SDK, GCC 4.2 and [LLVM](#) GCC 4.2 compilers
- Xcode 3.2 - ? - [static program analysis](#) and other features
- Xcode 4.0 on March 9, 2011
- Xcode 4.1 July 20, 2011
- Xcode 4.2- October 12, 2011,
- Xcode 4.3, released on February 16, 2012- distributed as a single application bundle, Xcode.app, installed from the Mac App Store. Xcode 4.3 reorganizes the Xcode menu to include development tools
- Xcode 4.3.1 -March 7, 2012 -support for iOS 5.1
- Xcode 4.3.2 -March 22, 2012- enhancements to the iOS Simulator and a suggested move to the LLDB debugger as opposed to the GDB debugger
- Xcode 4.3.3, -May 2012,-an updated SDK for [Mac OS X 10.7.4 "Lion"](#) and a few bug fixes
- Xcode 4.4 -July 25, 2012- the first version of Xcode to contain the [OS X 10.8 "Mountain Lion"](#) SDK,support for automatic synthesizing of declared properties, new [Objective-C](#) features such as literal syntax and subscripting, improved localization, and more

# IDE for iOS

- **Xcode 4.4.1** - August 7, 2012 -a few bug fixes

**Xcode 4.5** -September 19, 2012(on the same day that iOS 6 was released) -support for iOS 6 and the 4-inch Retina display found on iPhone 5 and iPod touch 5th generation, some new Objective-C features to iOS, simplified localization, auto-layout support for iOS

**Xcode 4.5.1** - October 3, 2012 - bug fixes and stability improvements

**Xcode 4.6** -January 28, 2013( on the same day that iOS 6.1 was released.)

- **Xcode 5.0** -September 18, 2013.-support for iOS 7 SDK, with always support of OS X 10.8 Mountain Lion SDK but not the support of OS X 10.9 Mavericks SDK. , added version of [Clang](#) generating 64-bit ARM code for iOS 7.
- **Xcode 6** -September 17, 2014- "Playgrounds", live debugging tools, as well as an entirely new programming language called Swift
- **Xcode 6.4**- June 30, 2015 -Xcode IDE, LLVM compiler, Instruments, iOS Simulator, the latest OS X and iOS SDKs, WatchKit and the Swift 1.2 programming language.
- **Xcode 7 beta 4 PRE-RELEASE**- July 21, 2015 -Xcode IDE, Swift 2 compiler, Instruments, Simulator, and latest SDKs for OS X, iOS, and watchOS.

# Medii dezvoltare pentru Android- Android Studio

- **Android Studio v0.1.x** (*May 2013*)- Various bug fixes, including a fix for a common Windows installation issue
- **Android Studio v0.2.x**(*July 2013*), *several bug fixes*, Cycle detection in resource references, Save screenshot support for the layout preview and layout editor windows, Basic support for .aar library dependencies, Parallel Builds
- **Android Studio v0.3.2** (*Oct 2013*), **Android Studio v0.4.2** (*Jan 2014*), **Android Studio v0.4.6**(*March 2014*), **Android Studio v0.5.2** (*May 2014*), **Android Studio v0.8.0**(*June 2014*), **Android Studio v0.8.6**(*August 2014*), **Android Studio v0.8.14**(*October 2014*)- *various fixes and updates*
- **Android Studio 1.0** – December 2014- *First-run setup wizard, Sample Importing & templates, Code Editing, Internationalization string editing, User interface design, Memory monitor, Unified build system, Instant access to Google Cloud Services*, migrate & update from Eclipse
- **Android Studio v1.0.1** (*December 2014*), Fixed AVD Manager and **device.xml** file lock issue, Fixed the emulator log on Windows systems, Fixed issue with creating AVDs with Android Studio and Android SDK installed on different drives on Windows systems, Sets the default update channel for new downloads to **Stable**.

# IDE for Android-Android Studio

- **Android Studio v1.1.0** (*February 2015*)-support for the Android Wear watch template, Modified new project and module creation to include res/mipmap folders for density-specific launcher icons, Updated launcher icons to have a Material Design look and added an xxxhdpi launcher icon, Added and enhanced lint, checks for region and language combinations, launcher icons, resource names, and other common code problems, Added support for Best Current Practice (BCP) language tag 47
- **Android Studio v1.2.0** (*April 2015*)- Integrated IntelliJ 14 and 14.1 features for improved code analysis and performance, Added support for high-density displays for Windows and Linux, Updated the Android runtime window to include the Memory Monitor tool and added a tab for CPU performance monitoring, Added a *Captures* tab in the left margin to display the captured memory and CPU performance data files, such as CPU method tracking and memory heap snapshots, Expanded annotation support with additional metadata annotations and inferred nullability, Enhanced the Translations Editor with additional support for Best Current Practice (BCP) 47, which uses 3-letter language and region codes
- **Android Studio v1.2.1** (*May 2015*)-Fixed minor performance and feature issues.
- **Android Studio v1.2.2** (*June 2015*)- Fixed build issues that were blocking builds from completing.
- Android Studio 1.3
- **Android Studio 1.4 (2015)**

# IDE for Android-Hardware

- 1280 x 800 minimum screen resolution
- 2 GB RAM minimum, 4 GB RAM recommended
- 400 MB hard disk space
- At least 1 GB for Android SDK, emulator system images, and caches
- Java Development Kit (JDK) 7
- Optional for accelerated emulator: Intel® processor with support for Intel® VT-x, Intel® EM64T (Intel® 64), and Execute Disable (XD) Bit functionality (Mac OS X si Windows)

Windows: Microsoft® Windows® 8/7/Vista/2003 (32 or 64-bit)

Mac OS X: Java Runtime Environment (JRE) 6

Linux: GNOME or KDE desktop, GNU C Library (glibc) 2.15 or later

# IDE for Windows Phone

- Visual Studio 2010 Express for Windows Phone 7 + updates
- Visual Studio 2012 Express for Windows (Windows Phone 8)
- Visual Studio 2013 Express for Windows(Windows Phone 8.1)
- Visual Studio Express 2015 for Windows 10 (Windows Mobile 10)

# Hardware for IDE

- 1.6 GHz or faster processor
- 1 GB of RAM (1.5 GB if running on a virtual machine)
- 5 GB of available hard disk space
- 5400 RPM hard drive
- DirectX 9-capable video card running at 1024 x 768 or higher display resolution
- For the Windows emulators, an edition of Windows 10 and a processor that supports Client Hyper-V and Second Level Address Translation (SLAT).



# IDE for BlackBerry

- Eclipse + BlackBerry SDK plugin

# Crossover IDE

- **Xamarin**- iOS, Android, Windows Phone- between 25 and 158 \$/ month
- **Unity3d**- iOS, Android, Windows Phone, BlackBerry 75 \$/ month/ platform

Ta-Ta for now!