ANDROID: LEVEL 1

OBJECTIVES

The DWIT Training - ANDROID 1 course is targeted for beginners who want to:

- Learn how to think and write meaningful piece of code in ANDROID.
- Learn how to read ANDROID code that has been written by somebody else.
- Learn how to map literary description of a problem (requirement) to an application/library coded in

ANDROID. In summary, this course teaches how to program using ANDROID programming language.

This is a core basic level course that is essential for anyone who have no prior programming experience but wish to be a Professional ANDROID engineer in future.

TARGET GROUP

- Anyone who has some basic knowledge about programming and wants to learn to write applications in ANDROID for any purpose e.g. curiosity, hobby, to complete an academic project, to work towards a career as ANDROID programmer, to help in project management, etc.
- **Prerequisites**
  o Successfully complete the entrance test with score of at least 40% (pass).
  o Successfully complete the interview.
  o Basic knowledge about programming, bits/bytes, procedures, classes, computer architecture, etc. If you just have a theoretical knowledge that is perfectly okay but you should have strong convictions on what programming is, and what you hope to achieve from this class.
  o Willing and eager to spend at least 10-20 hours (varying from student-to-student) per week outside of the training class to read/write codes in ANDROID (self-study and practice).
  o There are no prior educational level requirement for this course. Anyone from 10+2 student to someone who is doing her PHD in Genetic Engineering is welcome to take this course.
  o If you are only interested in theory and have no interest/patience in spending at least 10 hours every week throughout the duration of the course, then this course is clearly not for you.
  o If you have absolutely no idea about programming or do not see yourself doing programming in the next six -odd months, then this class may not be for you!

TRAINING METHOD

- The course is spread over 40 hours that consists of lecture and lab work. There will be approximately 10 hours of lectures and 30 hours of hands-on lab work.
- Lab exercises are mandatory, have a fixed deadline, and are graded. The course puts heavy emphasis on lab exercises because software programming can only be learnt well by explicitly putting into practice the principles that have been taught (i.e. in simpler terms – by doing lots and lots of coding). Late submission (past the deadline) of exercises incur some penalty from total points.
- Instructors may provide relevant lecture/lab notes to students as (and when) necessary in the form of printed handouts and or via emails.
- Instructors may provide supplementary code snippets to students via email or in lab class to support the theory and or lab material that is being taught.
- At the end of the course, students may have to give an exam (which will be optional), that will test their knowledge on the material covered during the course. This exam may be practical and/or theoretical and is mandatory for any student wishing to join a higher level.
- Students are graded on the basis of attendance, lab exercises and exam in the increasing order of importance.

In summary, the only effective way to learn programming is to write lots of code. So in order to really make this training productive, students are encouraged to spend as much time as necessary to complete the lab exercises on time. As part of the course, students will spend at least 30 hours in the lab but specially if you are new to programming or are coming from a non-computer-science background, it is recommended that you spend at least 10-20 hours per week outside of the class on your own to practice coding in ANDROID.

COURSE DURATION

- 40 hours
- Classes
  - Morning/Evening

- **BASIC JAVA**
  - INTRODUCTION
  - EXAMPLE: LOOPING, DECISION, EXCEPTION HANDLING, LIST, MAP, ARRAYS
  - INSTALLATION OF JDK
- **OVERVIEW OF ANDROID**
  - INTRODUCTION
  - H/W OR S/W REQUIREMENT (I.E. ANDROID SDK)
  - DALVIK VIRTUAL MACHINE & .APK FILE EXTENSION

- **APPLICATION STRUCTURE**
  - ANDROIDMANIFEST.XML
  - USES-PERMISSION & USES-SDK
  - ASSETS, LAYOUTS & DRAWABLE RESOURCES
  - VALUES – STRINGS.XML
  - ACTIVITIES AND ACTIVITY LIFECYCLE

- **EMULATOR-ANDROID VIRTUAL DEVICE**
  - INTRODUCTION & AVAILABLE EMULATOR
  - LAUNCHING EMULATOR
  - EDITING EMULATOR SETTINGS
  - EMULATOR SHORTCUTS
  - LOGCAT USAGE
- **LAYOUT DESIGN**
  - FORM WIDGETS (BUTTON, SPINNER, CHECKBOX, EDITTEXT)
  - TEXT FIELDS
  - LAYOUTS (RELATIVELAYOUT, TABLELAYOUT, FRAMELAYOUT, LINEARLAYOUT)
  - NESTED LAYOUTS
  - [DIP, DP, SIP, SP] VERSUS PX
- **UI DESIGN**
  - TIME AND DATE
  - IMAGES AND MEDIA
  - COMPOSITE
  - ALERT DIALOGS & TOAST
  - POPUP
  - WEBVIEW
- **PREFERENCES**
  - SHAREDPREFERENCES
  - PREFERENCES FROM XML
- **MENU & INTENT**
  - OPTION MENU
  - CONTEXT MENU
  - SUB MENU
  - MENU FROM XML
  - MENU VIA CODE
  - EXPLICIT INTENTS
  - IMPLICIT INTENTS
  - SWITCHING ACTIVITIES
  - PUT EXTRAS

Labs

- Lab assignments will focus on the practice and mastery of contents covered in the lectures; and introduce critical and fundamental problem solving techniques to the students.

DISCLAIMER
Please note that Deerwalk Institute of Technology reserves the right to change the course syllabus of DWIT Training - ANDROID – Level 1 course at any time without prior notification.

ANDROID: LEVEL 2

OBJECTIVES

The DWIT Training - ANDROID – Level 2 course is targeted for trainees:

- who have had some prior beginner level hands-on programming experience in ANDROID programming language
- who have programming experience in some other programming language (e.g. Java, Obj-C, PHP, C, C++, etc.) and want to learn ANDROID

TARGET GROUP

- Few examples of students who may be suitable for this course are:
  - High school and university students (undergraduate, graduate, etc.) who want to do coursework (e.g. project, etc.) in ANDROID .
  - Someone who has experience in some other programming language (e.g. C/C++, PHP, Perl, etc.), but has never done programming in ANDROID.
  - Someone who is already working as a professional VB.NET developer and wants to switch to ANDROID.
  - Someone who did her undergraduate in Economics, has been working in Media sector since graduation, and also working as a professional freelance PHP developer.
  - Electrical/Electronic undergraduates in their 3rd semester who want to beef up their software skills prior to graduation.
- **Prerequisites**
  - Successfully complete the entrance test with score of at least 40% (for trainees directly applying to this level).
  - Successfully complete the DWIT Training - ANDROID – Level 1 course (not applicable to trainees directly applying to this level).
  - Successfully complete the interview.
  - Willing and eager to spend at least 10-20 hours (varying from student-to-student) per week outside of the training class to read/write codes in ANDROID (self-study and practice).

TRAINING METHOD

- The course is spread over 40 hours that consists of approximately 20 hours of lecture and 20 hours of hands-on lab work.
- Lab exercises are mandatory, have a fixed deadline, and are graded. The course puts heavy emphasis on lab exercises because software programming can only be learnt well by explicitly putting into practice the principles that have been taught (i.e. in simpler terms – by doing lots and lots of coding). Late submission (past the deadline) of exercises incur some penalty from total points.
- Instructors may provide relevant lecture/lab notes to students as (and when) necessary in the form of printed handouts and or via emails.
- Instructors may provide supplementary code snippets to students via email or in lab class to support the theory and or lab material that is being taught.
- At the end of the course, students may have to give an exam (which will be optional), that will test their knowledge on the material covered during the course. This exam may be practical and/or theoretical and is mandatory for any student wishing to join a higher level.
- Students are graded on the basis of attendance, lab exercises and exam in the increasing order of importance.

In summary, the only effective way to learn programming is to write lots of code. So in order to really make this training productive, students are encouraged to spend as much time as necessary to complete the lab exercises on time. As part of the course, students will spend at least 30 hours in the lab but specially if you are new to programming or are coming from a non-computer-science background, it is recommended that you spend at least 10-20 hours per week outside of the class on your own to practice coding in ANDROID.

COURSE DURATION

- 40 hours
- Classes
  - Morning/Evening

COURSE BREAKDOWN

- **STYLE & THEMES**
  - STYLES.XML
  - COLORS.XML - DECLARING COLORS AND DRAWABLES
  - DRAWABLE RESOURCES FOR SHAPES, GRADIENTS (SELECTORS)
  - SHAPES DRAWABLES
  - STATE DRAWABLES
  - TRANSITION DRAWABLES
  - RIPPLE
  - 9 PATCH DRAWABLES
  - STYLE ATTRIBUTE IN LAYOUT FILE
  - APPLYNG THEMES VIA CODE AND MANIFEST FILE
- **NOTIFICATIONS**
  - BROADCAST RECEIVERS SERVICES AND NOTIFICATIONS
  - TOAST
  - ALARMS
- **ADAPTERS AND WIDGET**
  - ADAPTERS
  - ARRAY ADAPTERS
  - BASE ADAPTERS
  - EXAMPLE - EFFICIENT ADAPTER
  - LISTVIEW AND LISTACTIVITY
  - CUSTOM LISTVIEW (GET DATA FROM WEBSERVICE AS JSON)
  - GRIDVIEW USING ADAPTERS
  - GALLERY USING ADAPTERS
  - RECYCLERVIEW
  - CARDVIEW
  - CREATING AND UPDATING THE WIDGET
- **THREADS**
  - THREADS RUNNING ON UI THREAD (RUNONUITHREAD)
  - WORKER THREAD
  - HANDLERS & RUNNABLE
  - ASYNTASK (IN DETAIL)
- **FRAGMENT**
  - FRAGMENTS
  - COMMUNICATION BETWEEN FRAGMENTS
  - FRAGMENT PAPER ADAPTER
  - DIALOG FRAGMENT
  - VIEWPAGERINDICATOR
  - CIRCLE VIEW PAGER INDICATOR
  - TAB VIEW PAGER INDICATOR
  - LINE PAGE INDICATOR
  - ACTION BAR TABS AND CUSTOM VIEWS ON ACTION BARS
  - TOOLBARS
  - NAVIGATION DRAWER

- **MULTIMEDIA**
  - PLAYING AUDIO FILE (LOCAL/NETWORK)
  - SIMPLE VIDEO PLAYBACK
- **HARDWARE ACCESS**
  - USING SD-CARDS - READING AND WRITING
  - MAPS VIA INTENT AND MAPACTIVITY
  - ACCESSING PHONE SERVICES (CALL, SMS, MMS)
  - NETWORK CONNECTIVITY SERVICES
  - USING WIFI & BLUETOOTH
  - SENSORS

Labs

- Lab assignments will focus on the practice and mastery of contents covered in the lectures; and introduce critical and fundamental problem solving techniques to the students.

DISCLAIMER

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ANDROID: LEVEL 3

OBJECTIVES

This course builds on the foundation laid by DWIT Training - ANDROID – Level 3 to prepare trainees for a career as ANDROID software engineer.

TARGET GROUP

- **Prerequisites**
  o   Successfully completed the DWIT Training - ANDROID – Level 3 or obtained at least 40% score on the entrance exam.
     The latter case applies for new students that are directly attempting this training.
  o   Successfully complete the interview.
  o   Willing and eager to spend at least 10-20 hours (varying from student-to-student) per week outside of the training class to read/write codes in ANDROID (self-study and practice).
  o   Please note that this is a lab intensive course where the students will be expected to work on lab exercises for approximately half the duration of the session.

TRAINING METHOD

- The course is spread over 50 hours that consists of approximately 20 hours of lecture and 30 hours of lab work.
- Lab exercises are mandatory, have a fixed deadline, and are graded. The course puts heavy emphasis on lab exercises because software programming can only be learnt well by explicitly putting into practice the principles that have been taught (i.e. in simpler terms – by doing lots and lots of coding). Late submission (past the deadline) of exercises incur some penalty from total points.
- Instructors may provide relevant lecture/lab notes to students as (and when) necessary in the form of printed handouts and or via emails.
- Instructors may provide supplementary code snippets to students via email or in lab class to support the theory and or lab material that is being taught.
- At the end of the course, students may have to give an exam (which will be optional), that will test their knowledge on the material covered during the course. This exam may be practical and/or theoretical and is mandatory for any student wishing to join a higher level.
- Students are graded on the basis of attendance, lab exercises and exam in the increasing order of importance.

COURSE DURATION

- 40 hours
- Classes
  - Morning/Evening

COURSE BREAKDOWN

- **SQLITE PROGRAMMING**
  - SQLITE PROGRAMMING
  - SQLITEOPENHELPER
  - SQLITE DATABASE
  - CURSOR
  - CONTENT PROVIDERS
  - 1. DEFINING AND USING CONTENT PROVIDERS
  - PROVIDERS
  - READING AND UPDATING CONTACTS READING BOOKMARKS

  EXAMPLE: 1. DEVELOP AN APP TO DEMONSTRATE DATABASE USAGE. CRUD OPERATIONS MUST BE IMPLEMENTED. FINAL DETAILS SHOULD BE VIEWED IN GRIDVIEW AS WELL AS IN LISTVIEW.
  2. DO THE SAME APPLIATION WITH DATABASE OPERATIONS IN A SINGLE CLASS (AS A MODEL CLASS) AND DO THE CRUD OPERATIONS WITH THIS CLASS OBJECT.

- **OTHERS**
  - CREATING OWN SEPARATE PROJECT MODULE
  - INTEGRATING PROJECT MODULE IN OWN APPS
  - INCLUDING EXTERNAL LIBRARIES IN OUR APPLICATION
  - PUSH NOTIFICATION
  - FACEBOOK API INTEGRATION

- **GAME DEVELOPMENT**
  - INTRODUCTION TO GAME ENGINE IN ANDROID

- **FINAL**
  - UPLOADING APK FILE IN PLAYSTORE (**DEMO**)
  - PROJECT

Labs

- Lab assignments will focus on the practice and mastery of contents covered in the lectures; and introduce critical and fundamental problem solving techniques to the students.

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