iOS programming

- developing iOS applications using Swift for
    - iPhone
    - iPod
    - iPad
    - macOS (M1 chipset)

project hierarchy

- **AppDelegate**
    - has implementation of UIApplicationDelegate protocol
    - the UIApplicationDelegate is a protocol which provides the application lifecycle methods
    - the application calls didFinishLaunchingWithOptions when gets launched
- **SceneDelegate**
    - gives an application a scene (window)
- **ViewController**
    - similar to activity in android
    - represents a screen
- **Main.storyboard**
    - contains the user interface for the entire application
    - application may contain multiple storyboard files
- **Assets.xcassets**
    - contains application assets (images)
- **LaunchScreen.storyboard**
    - represents the loading screen
    - similar to splash screen in android
- **Info.plist**
    - plist: property list
    - contains application configuration
    - similar to AndroidManifest.xml in android
- **.app directory**
    - when application gets compiled, it gets converted to .app directory (bundle)

application startup

- the application is launched
- the application will load Info.plist to find the application configuration
- the Info.plist contains
    - the name of startup storyboard file (Main.storyboard)
    - the name of scene delegate class (SceneDelegate)
- the window gets created
- creates an object of AppDelegate and starts the application (UIApplication)
    - sets the delegate property of application object to the newly created AppDelegate object
- loads the startup view controller by getting the info from Main.storyboard (looks for initial view controller property)

- unarchiving view controller from storyboard
    - load the storyboard file
    - find the view controller object
    - create a new object for ViewController class associated with view controller object

bundle

- the application gets compiled into a bundle
- bundle:
    - is directory with .app extension
    - is directory which contains
        - the actual executable
        - the libraries needed to execute the application
        - configuration files needed to run the application
        - resources (images/audio/video) used in the application
- when bundle gets installed it creates following directories
    - Documents
        - is the only directory where application has write permissions
        - application can use for creating databases
    - Library
        - used to load all the libraries required for the application
    - SystemData
        - used by system
    - tmp
        - used to create temporary resources

iOS and Android mapping

- configuration file
    - android: AndroidManifest.xml (eXtended Markup Language)
    - iOS: info.plist (property list)
- getting ui elements from ui files
    - android: LayoutInflater inflates the xml file
    - iOS: Nib files get unarchived to build the view hierarchy
- view controller
    - android: Activity
    - iOS: UIViewController
- starting new view controller
    - android: startActivity
    - iOS: present(vc, animated: true, completion: nil)
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- **shortcuts in XCode**

    - copy : cmd + c
    - paste : cmd + v
    - duplicate: cmd + d
    - undo: cmd + z
    - select all: cmd + a
    - show library: cmd + shift + l
    -

- **UI elements**

type	android	iOS
readonly text	TextView	UILabel
user input	EditText	UITextView, UITextField
button	Button	UIButton
view base class	View	UIView
alert	AlertDialog	UIAlertController
alert	Toast	-
list of values	RecyclerView, ListView	UITableView
grid	RecyclerView, GridView	UICollectionView
drop down	Spinner	UIPickerView
radio button	RadioButton	-
checkbox	Cheakbox	-
switch control	Switch	UISwitch
slider	Seekbar	UISlider
pregress view	ProgressView	UIProgressView
stepper	-	UIStepper
segmented control	-	UISegmentedControl
linear layout	LinearLayout	UIStackView
image	ImageView	UIImageView
scroll	ScrollView	UIScrollView
date picker	DatePickerDialog	UIDatePicker
time picker	TimePickerDialog	UIDatePicker
search bar	-	UISearchBar
top bar	ActionBar	UIToolBar / UINavigationBar
tab bar	TabLayout	UITabBar

type	android	iOS
web view	WebView	UIWebKitView

- **events**

event name	Android	iOS
button click	Click	Touch up inside

- **others**

name	Android	iOS
in memory collection	SharedPreferences	UserDefaults
database	Sqlite	Sqlite

Xcode

- Interface Builder: screen/subsystem of Xcode which is used to design the GUI of an application
- markers
    - @IBOutlet
        - IB: Interface Builder
        - keyword used to expose the class member to get connected with Storyboard UI element
        - property declared in the class which is used to connect with one of the GUI elements of the view controller (Storyboard)
    - @IBAction
        - method declared in the class which is used to handle required event