

PROGRAMMING HANDHELD SYSTEMS

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THE FRAGMENT CLASS

TABLET UIs

TABLETS HAVE LARGER DISPLAYS THAN
PHONES DO

THEY CAN SUPPORT MULTIPLE UI PANES /
USER BEHAVIORS AT THE SAME TIME

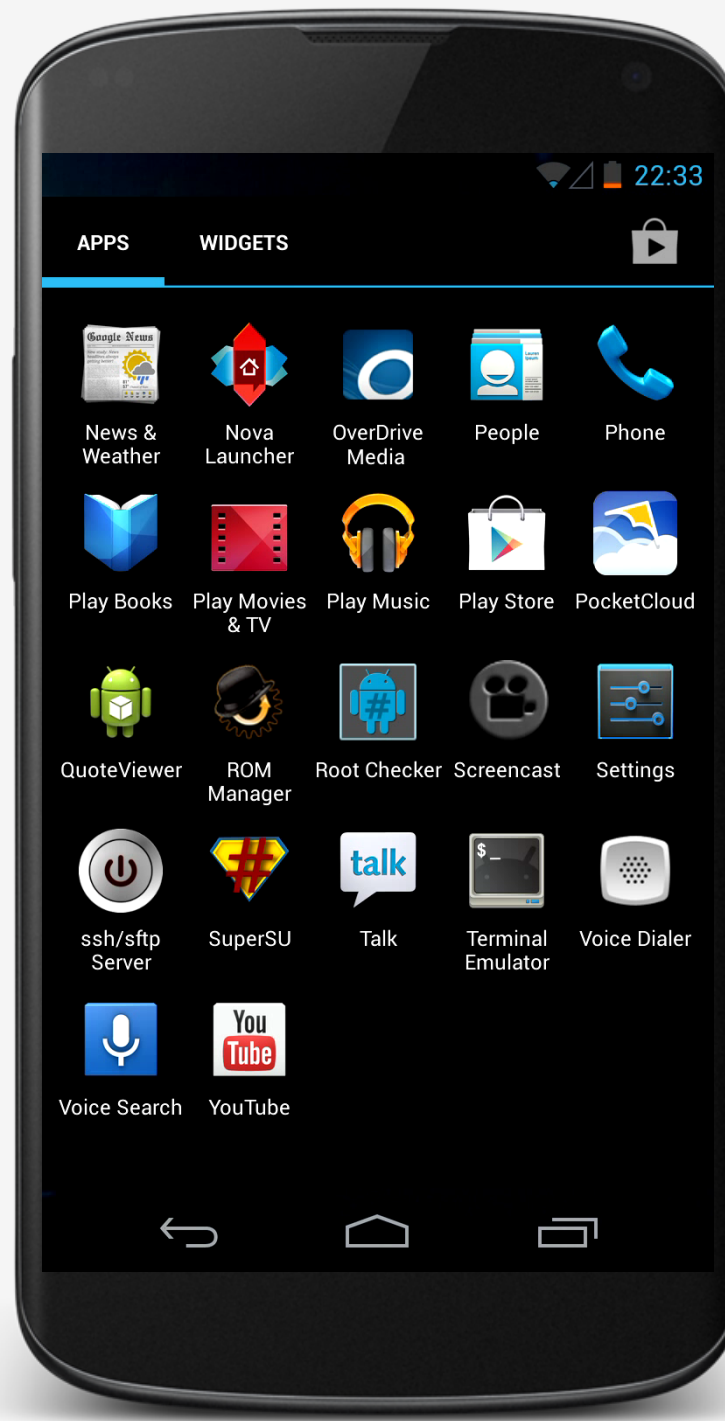
THE 1 ACTIVITY – 1 THING THE USER CAN DO
HEURISTIC MAY NOT WORK FOR LARGER DEVICES

QUOTEVIEWER

APPLICATION USES TWO ACTIVITIES

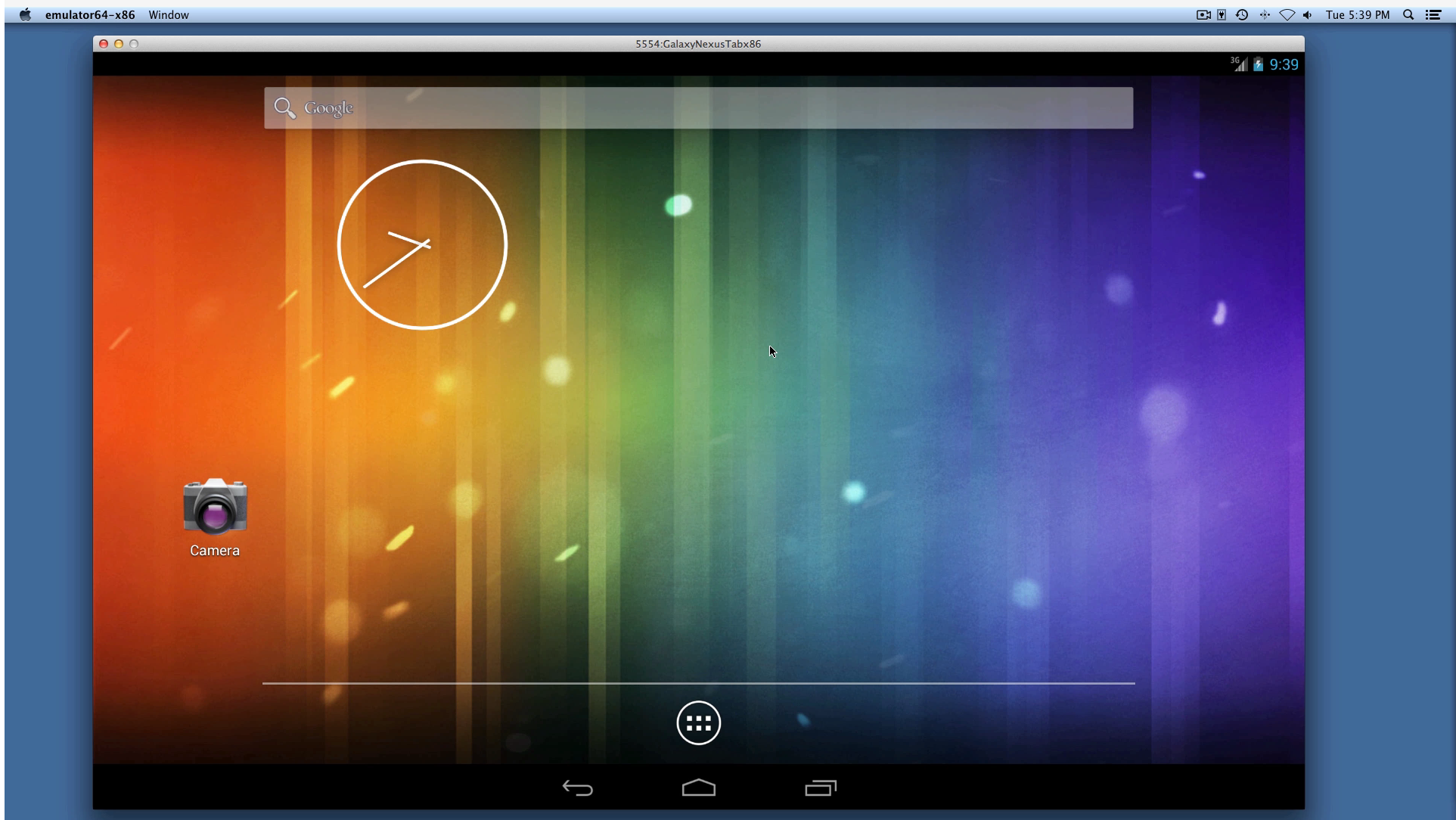
ONES SHOWS TITLES OF SHAKESPEARE PLAYS &
ALLOWS USER TO SELECT ONE TITLE

THE OTHER SHOWS A QUOTE FROM SELECTED PLAY



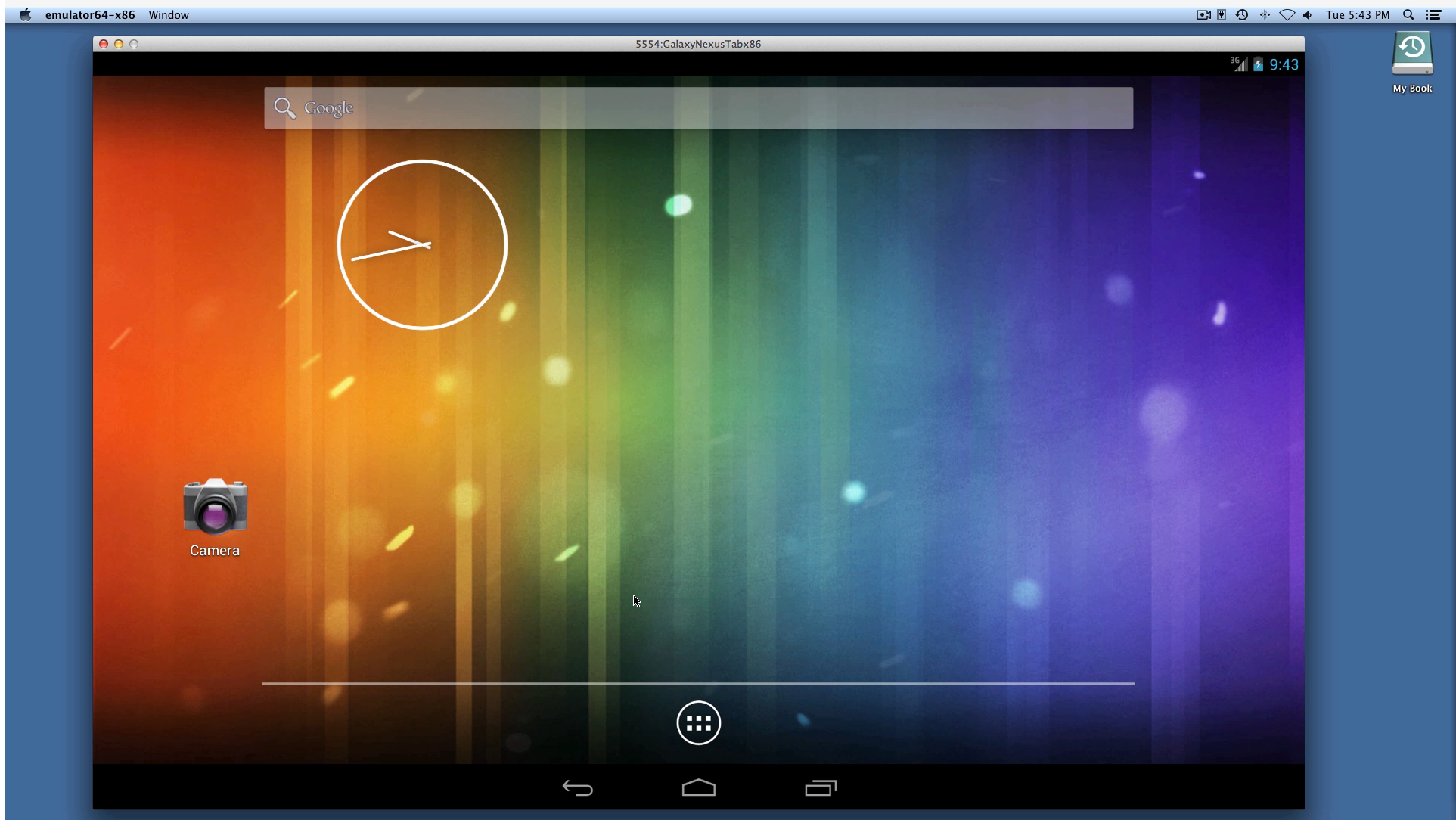
THE QUOTEVIEWER UI

THIS LAYOUT IS REASONABLE ON A PHONE
BUT INEFFICIENT ON A LARGER DEVICE



BETTER LAYOUT

USE TWO COOPERATING LAYOUTS UNITS ON
ONE SCREEN



FRAGMENT

REPRESENTS A BEHAVIOR / PORTION OF UI
WITHIN AN ACTIVITY

MULTIPLE FRAGMENTS CAN BE EMBEDDED IN
AN ACTIVITY TO CREATE A MULTI-PANE UI

A SINGLE FRAGMENT CAN BE REUSED ACROSS
MULTIPLE ACTIVITIES

FRAGMENT LIFECYCLE

FRAGMENT LIFECYCLE IS COORDINATED WITH
THE LIFECYCLE OF ITS CONTAINING ACTIVITY

FRAGMENTS HAVE THEIR OWN LIFECYCLES
AND RECEIVE THEIR OWN CALLBACKS

FRAGMENT LIFECYCLE STATES

RESUMED

FRAGMENT IS VISIBLE IN THE RUNNING ACTIVITY

PAUSED

ANOTHER ACTIVITY IS IN THE FOREGROUND AND HAS FOCUS, CONTAINING ACTIVITY IS VISIBLE

STOPPED

THE FRAGMENT IS NOT VISIBLE

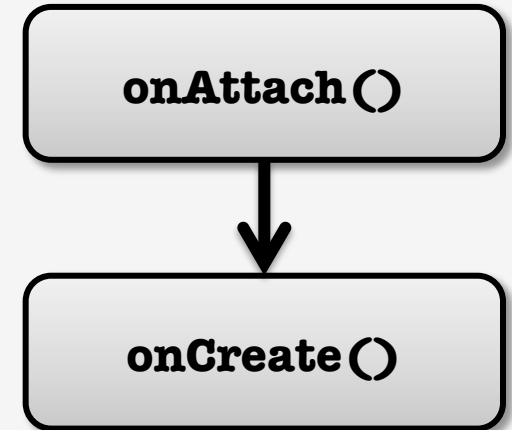
ACTIVITY CREATED: ONATTACH()

FRAGMENT IS FIRST ATTACHED
TO ITS ACTIVITY

onAttach()

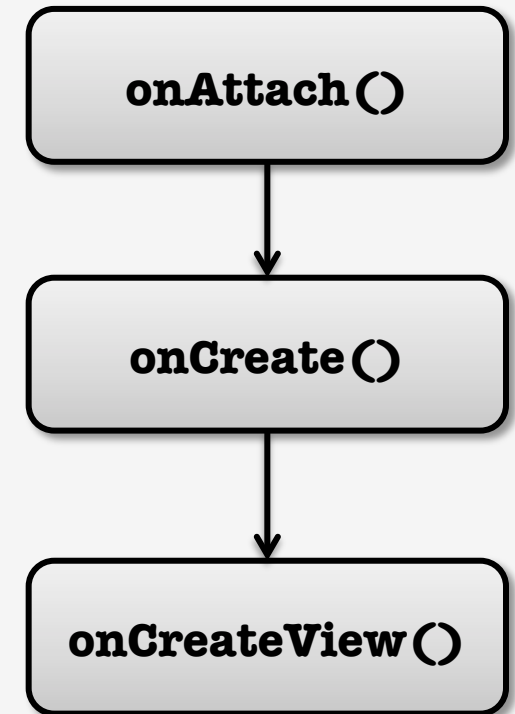
ONCREATE()

INITIALIZE THE FRAGMENT



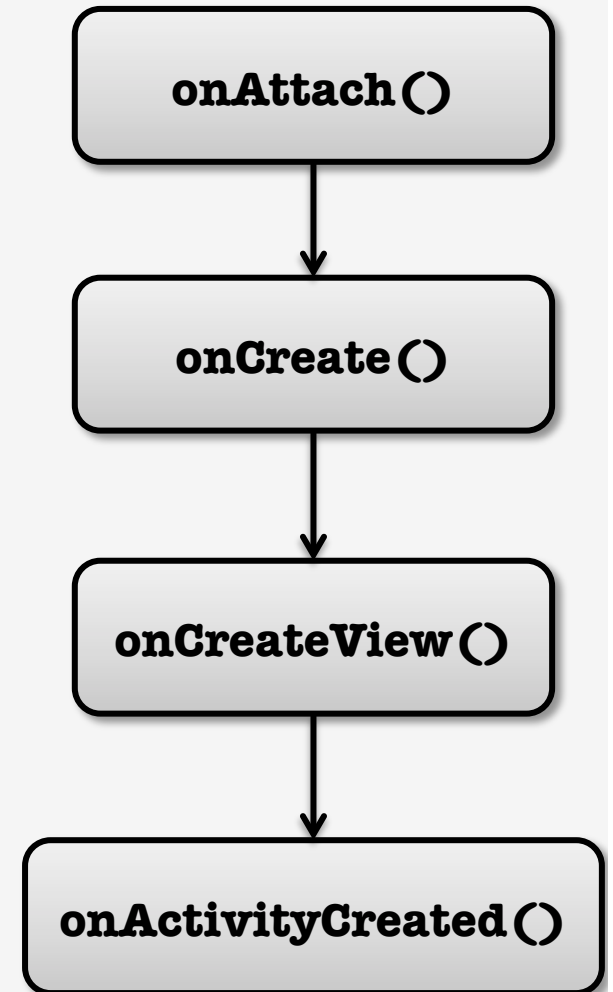
ONCREATEVIEW()

FRAGMENT SETS UP & RETURNS
ITS USER INTERFACE



ONACTIVITYCREATED()

CONTAINING ACTIVITY HAS
COMPLETED ITS onCreate() &
FRAGMENT HAS BEEN
INSTALLED



ACTIVITY STARTED: ONSTART()

HOSTING ACTIVITY ABOUT TO
BECOME VISIBLE

onStart ()

ACTIVITY RESUMED: onResume()

HOSTING ACTIVITY IS ABOUT TO
BECOME VISIBLE AND READY FOR
USER INTERACTION

onResume()

ACTIVITY PAUSED: onPause()

HOSTING ACTIVITY IS VISIBLE, BUT
DOES NOT HAVE FOCUS

onPause()

ACTIVITY STOPPED: ONSTOP()

HOSTING ACTIVITY IS NO LONGER
VISIBLE

onStop ()

ACTIVITY DESTROYED: ONDESTROYVIEW()

VIEW PREVIOUSLY CREATED BY
ONCREATEVIEW() HAS BEEN
DETACHED FROM THE FRAGMENT

onDestroyView()

TYPICAL ACTIONS

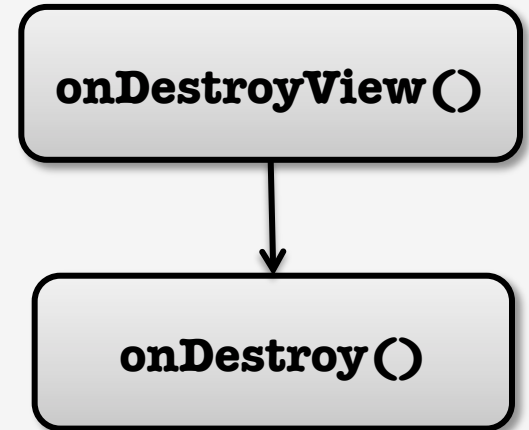
CLEAN UP VIEW RESOURCES

ONDESTROY()

FRAGMENT IS NO LONGER IN USE

TYPICAL ACTIONS

CLEAN UP FRAGMENT RESOURCES

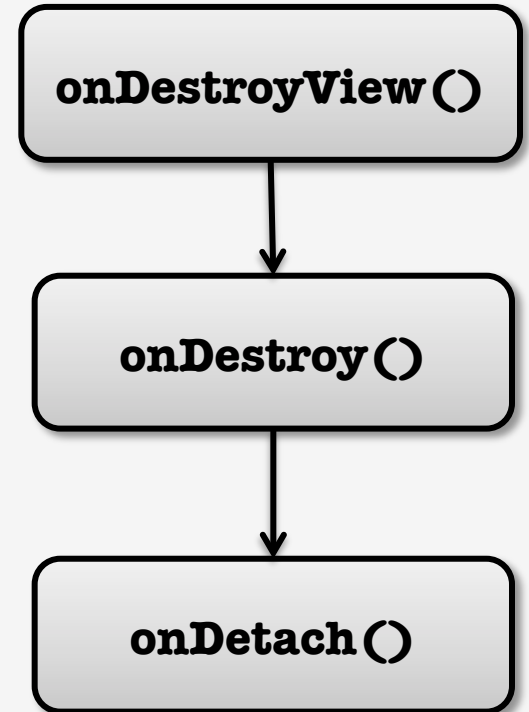


ONDETACH()

FRAGMENT NO LONGER
ATTACHED TO ITS ACTIVITY

TYPICAL ACTIONS

NULL OUT REFERENCES TO HOSTING
ACTIVITY



ADDING FRAGMENTS TO ACTIVITIES

TWO GENERAL WAYS TO ADD FRAGMENTS TO
AN ACTIVITY'S LAYOUT

DECLARE IT STATICALLY IN THE ACTIVITY'S
LAYOUT FILE

ADD IT PROGRAMMATICALLY USING THE
FRAGMENTMANAGER

FRAGMENT LAYOUT

LAYOUT CAN BE INFLATED/IMPLEMENTED IN
ONCREATEVIEW()

ONCREATEVIEW() MUST RETURN THE VIEW AT
THE ROOT OF THE FRAGMENT'S LAYOUT

THIS VIEW IS ADDED TO THE CONTAINING
ACTIVITY



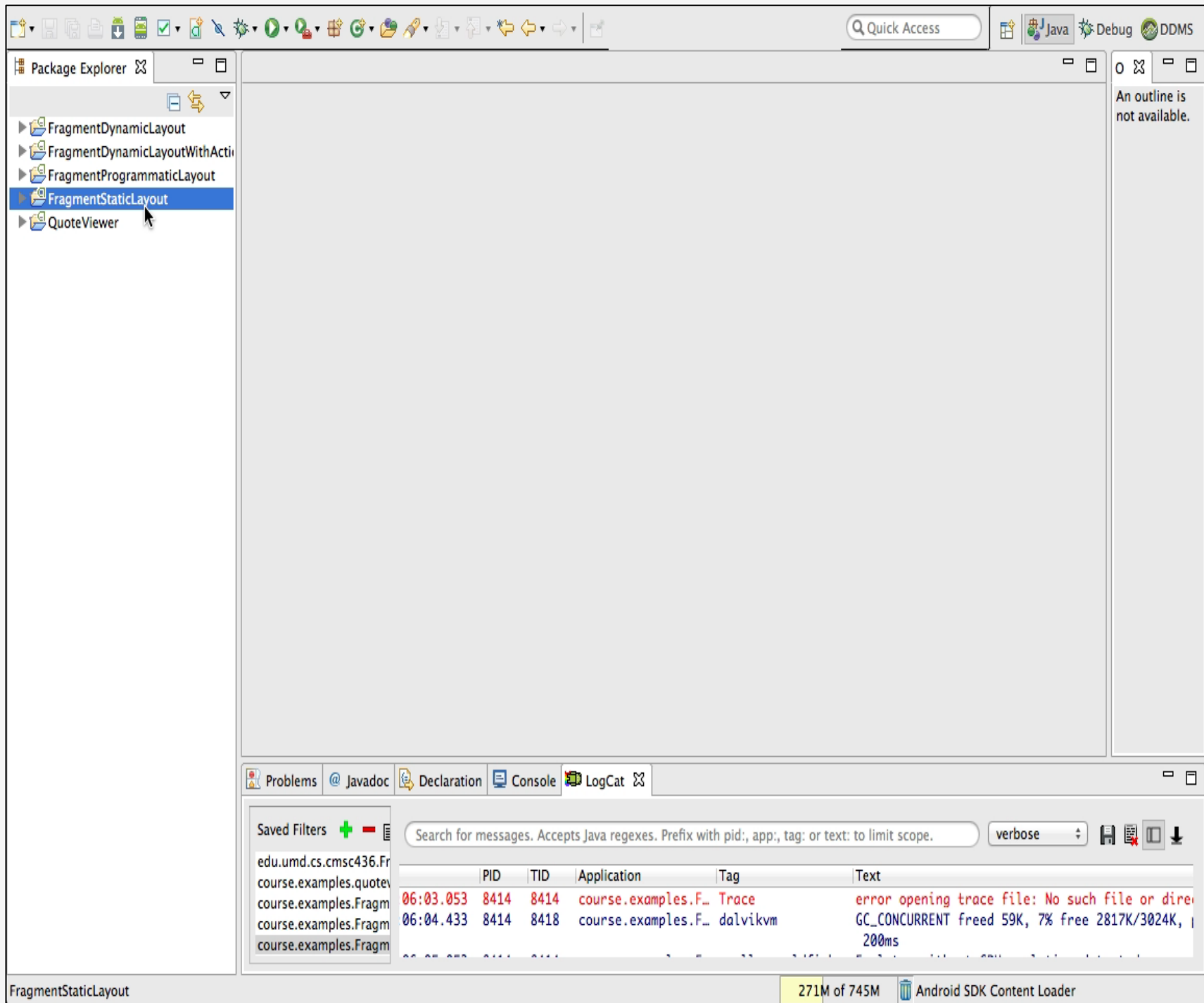
Hamlet

King Lear

Julius Ceasar

Now cracks a noble heart. Good-night, sweet prince; And
flights of angels sing thee to thy rest.





ADDING FRAGMENTS DYNAMICALLY

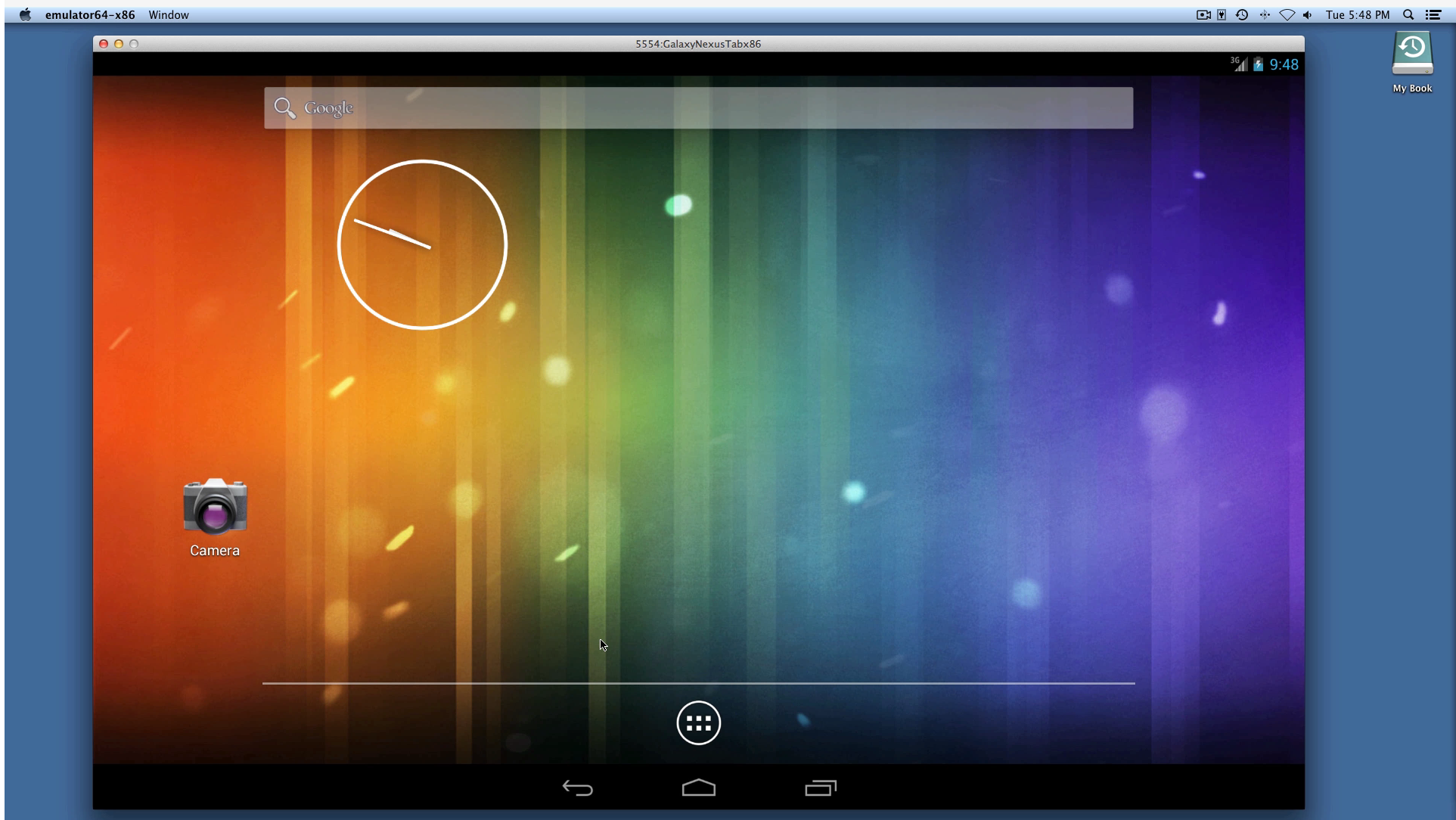
WHILE AN ACTIVITY'S RUNNING YOU CAN ADD A
FRAGMENT TO IT'S LAYOUT

GET REFERENCE TO THE FRAGMENTMANAGER

BEGIN A FRAGMENTTRANSACTION

ADD THE FRAGMENT

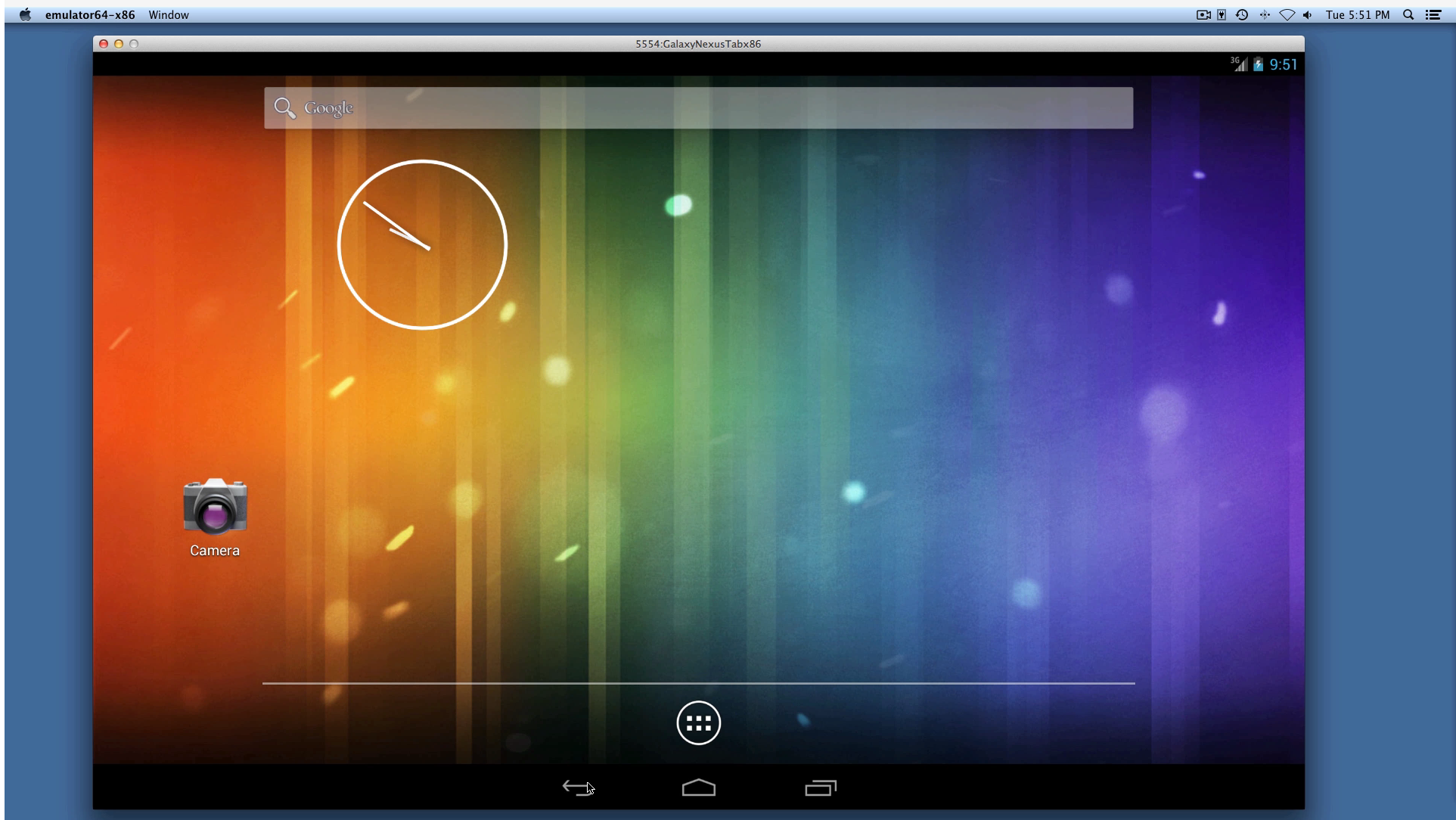
COMMIT THE FRAGMENTTRANSACTION

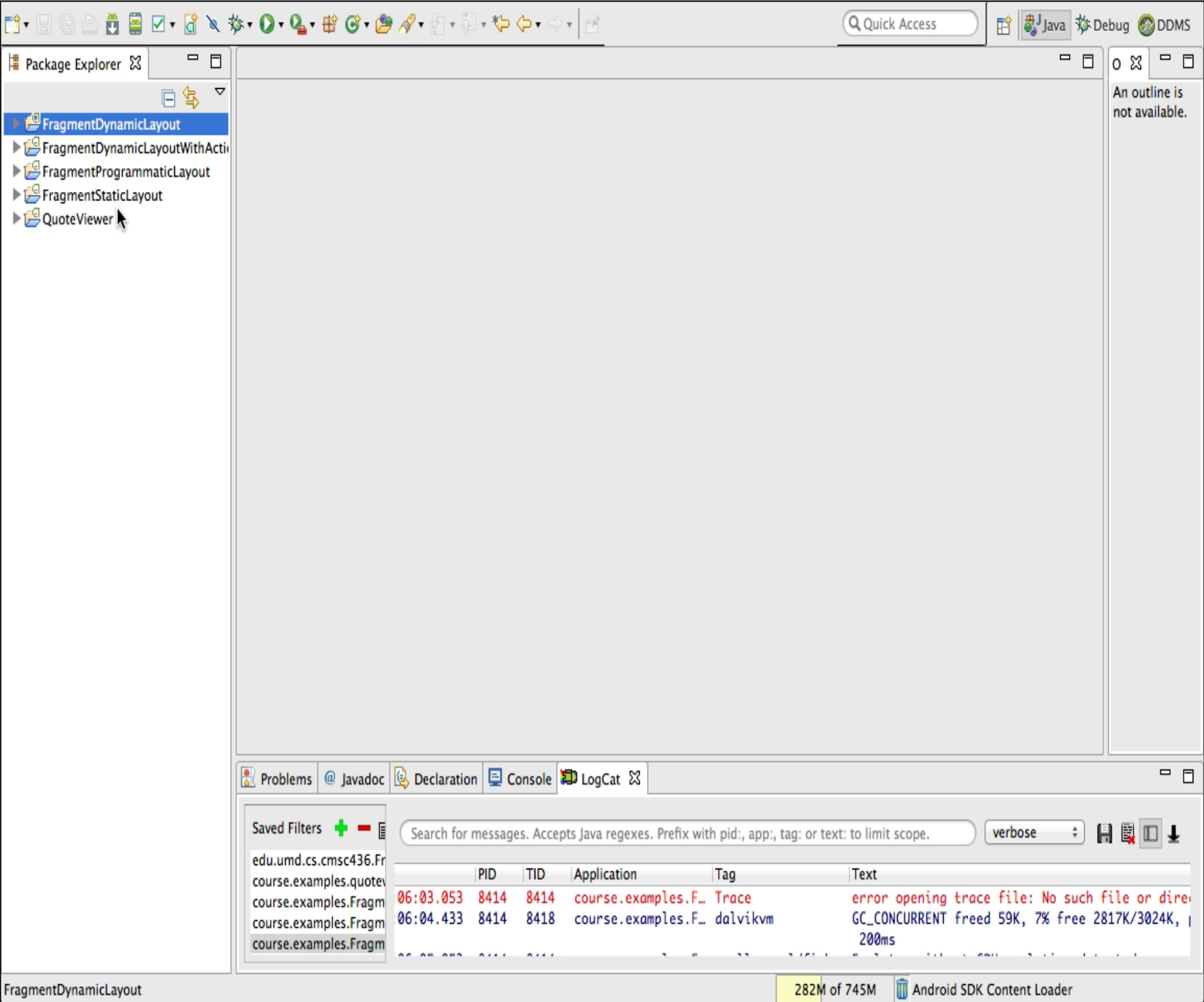


DYNAMIC LAYOUT

FRAGMENT TRANSACTIONS ALLOW YOU TO DYNAMICALLY CHANGE YOUR APP'S USER INTERFACE

CAN MAKE THE INTERFACE MORE FLUID & TAKE BETTER ADVANTAGE OF AVAILABLE SCREEN SPACE





CONFIGURATION CHANGES

IF YOU CALL `setRetainInstance(true)`,
ANDROID WON'T DESTROY THE FRAGMENT ON
CONFIGURATION CHANGES

CONFIGURATION CHANGES

RESULTS IN SOME CHANGES TO LIFECYCLE
CALLBACK SEQUENCE

onDestroy() WILL NOT BE CALLED

onCreate() WILL NOT BE CALLED

FRAGMENTSTATICCONFIGLAYOUT

FUNCTIONALITY IS SIMILAR TO PREVIOUS
EXAMPLES

FRAGMENTSTATICCONFIGLAYOUT

IN LANDSCAPE MODE

BOTH FRAGMENTS USE A LARGE FONT

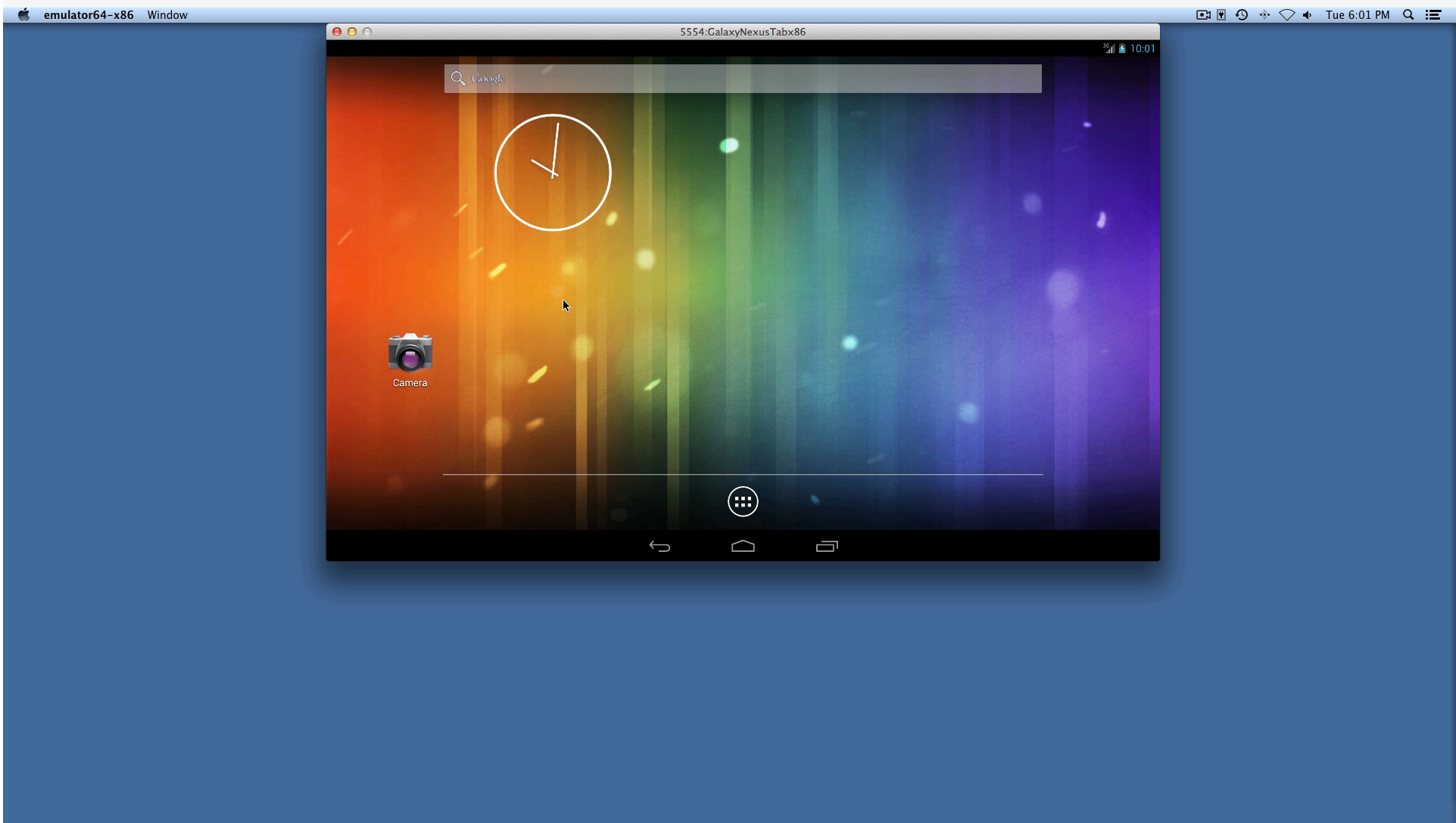
TITLEFRAGMENT TAKES MORE HORIZONTAL
SPACE & ALLOWS LONG TITLES TO SPAN
MULTIPLE LINES

FRAGMENTSTATICCONFIGLAYOUT

IN PORTRAIT MODE

BOTH FRAGMENTS USE A SMALLER FONT

TITLEFRAGMENT WILL USE LESS SPACE AND
WILL ELLIPSIZE LONG TITLES, LIMITING THEM TO
A SINGLE LINE



NEXT TIME

USER INTERFACE CLASSES