

# Summer 2, 2019 - CS 4520/CS5520 – Mobile Application Development

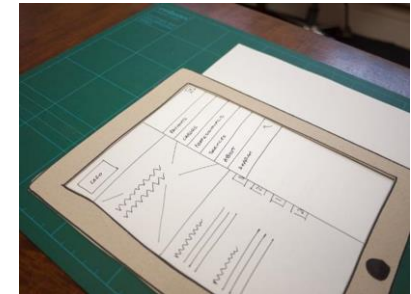
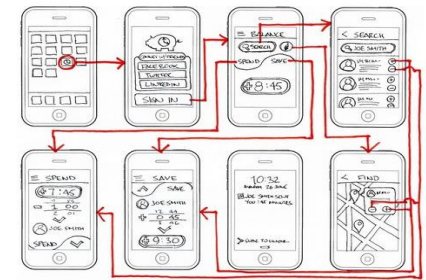
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# Announcements

- Checkpoint 1 – paper prototyping (In-class evaluation) on this Thursday (during class hours) - Thursday
- Assignment 1 is due on 12 July @ 11:59 PM - Friday
- **Checkpoint 1 – project proposal document** – turn in due on 13 July @ 11:59 PM – Saturday
- **Weekly Reading List** – (Book chapters and additional resources)
- Grading for In-class exercises – after the class/project checkpoints/office hours

# Recap

- “Purpose”
- Prioritizing requirements
- Paper prototyping
  - Storyboard that reflects your purpose
  - Interaction diagram
  - Form the device template
  - Include the screens



**How do you conduct paper prototyping session?**  
**Points to consider for user testing**

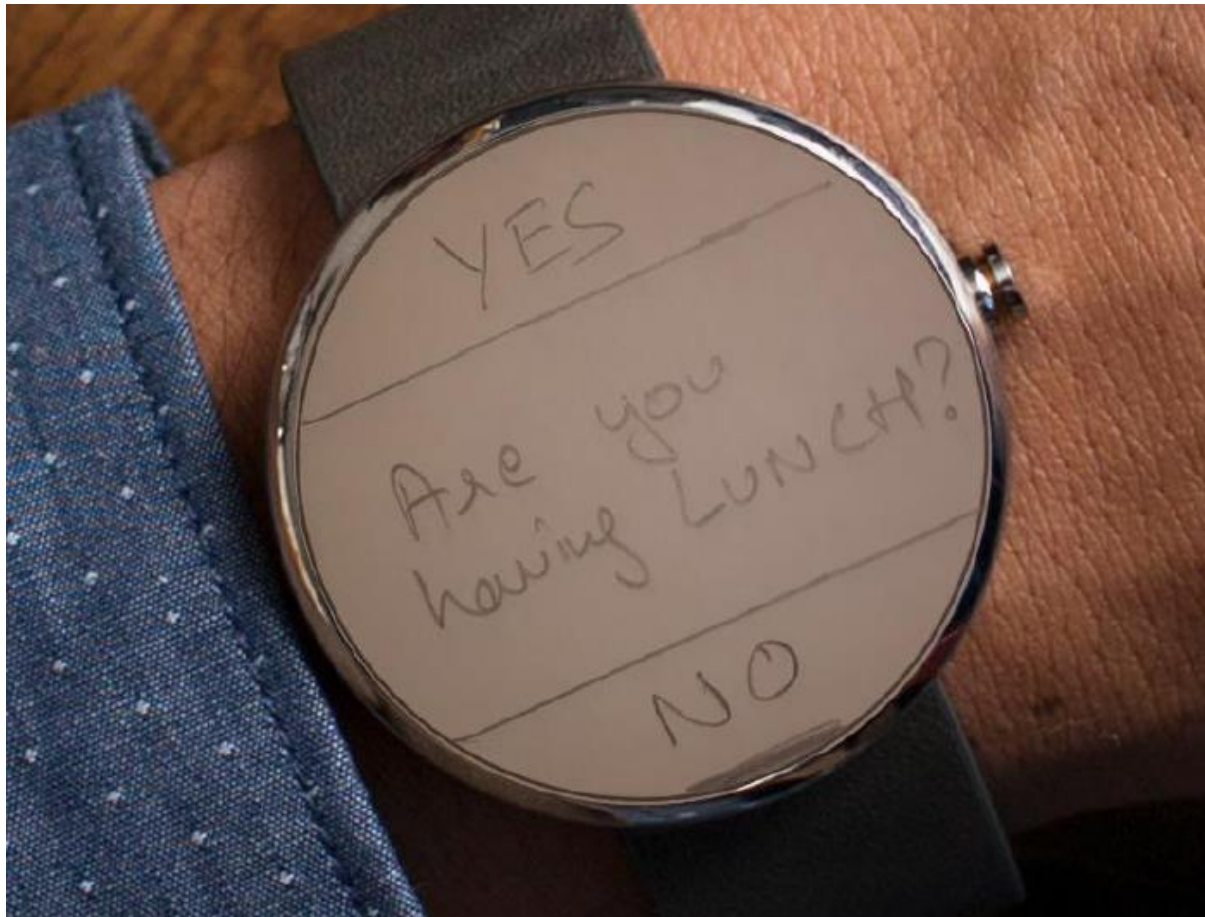
[[clickz.com/getting-to-grips-with-mobile-design-methods-and-lingo-empathy-maps-and-storybo/98439/](http://clickz.com/getting-to-grips-with-mobile-design-methods-and-lingo-empathy-maps-and-storybo/98439/)]

# How to conduct user test with paper Prototyping?

# How to conduct user tests with paper prototyping?

- Focus on narrow goals
- Setup a **specific** scenario
  - For example: booking an air ticket on a travel app
- Assign a **specific** interaction task to the users
  - Purchase an air ticket
    - Enter the travel date
    - Enter inbound and outbound airports
    - Select an airline from the options
    - Select a seat
    - Click on purchase ticket
    - Enter payment details
    - Receive ticket confirmation

# Keep it real!



# Example

[[youtube.com/watch?v=yafaGNFu8Eg](https://youtube.com/watch?v=yafaGNFu8Eg)]

# User Testing

*"**Thinking aloud** may be the single most valuable usability engineering method."*

*- Jacob Neilson*

[nngroup.com/articles/thinking-aloud-the-1-usability-tool/](http://nngroup.com/articles/thinking-aloud-the-1-usability-tool/)



# Think-Aloud

- Protocol for in-person user testing
- Gain insight into thought process
- Can usually uncover major issues with a few people
- Most useful with completely new people!

# How to execute Think-Aloud?

- Find users
- Instruct them on something to do (abstract instructions) and to say what they are thinking
- Observe what they do (take notes) and don't help them
- Repeat for more users
- Look for common patterns across users to prioritize refinements

# Think-Aloud

- Benefits
  - Relatively easy to set up
  - Fast
  - Inexpensive
  - Flexible

# References

- 1 Jacobs, Keith W. and Frank G. Hustmyer Jr. (1974), "Effects of Four Psychological Primary Colors on GSR, Heart Rate and Respiration Rate," Perceptual and Motor Skills, 38, 763-66.
2. "Effects of Office Interior Color on Worker's Mood and Productivity." Nancy K Wallek, Carol M. Lewis, and Ann S. Robbins. Perceptual and Motor Skills, 1988, 66, 123-128.
3. Mahnke, F. (1996). Color, environment and human response. New York: Wiley.
4. Webster, G., Urland, G., & Correll, J. (2011). Can Uniform Color Color Aggression? Quasi-Experimental Evidence From Professional Ice Hockey Social Psychological and Personality Science, 3 (3), 274-281 DOI: 10.1177/1948550611418535

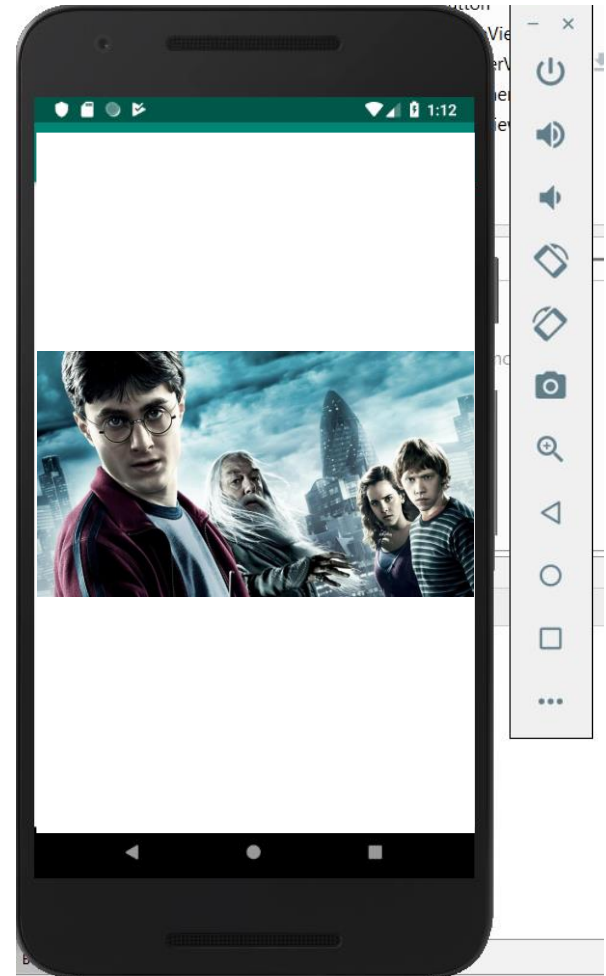




# Let's build an App

# Exercise 3 – Movie Player App

- Movie player app
  - Allows the users to watch movies
- VideoView
  - Create a “**raw**” folder in Andoird Resource directory
  - Import a Video clip
  - Assign the video clip to VideoView
  - Set the imported videoPath  
**videopath:”android.resource:///”+getPack  
ageName+”/”+R.raw.yourVideo**
  - Useful functions
    - Start()
    - Pause()



[denofgeek.com/us/movies/harry-potter/277747/150-things-you-didnt-know-about-the-harry-potter-movies]



# Useful Command

## Access Video file in Raw folder

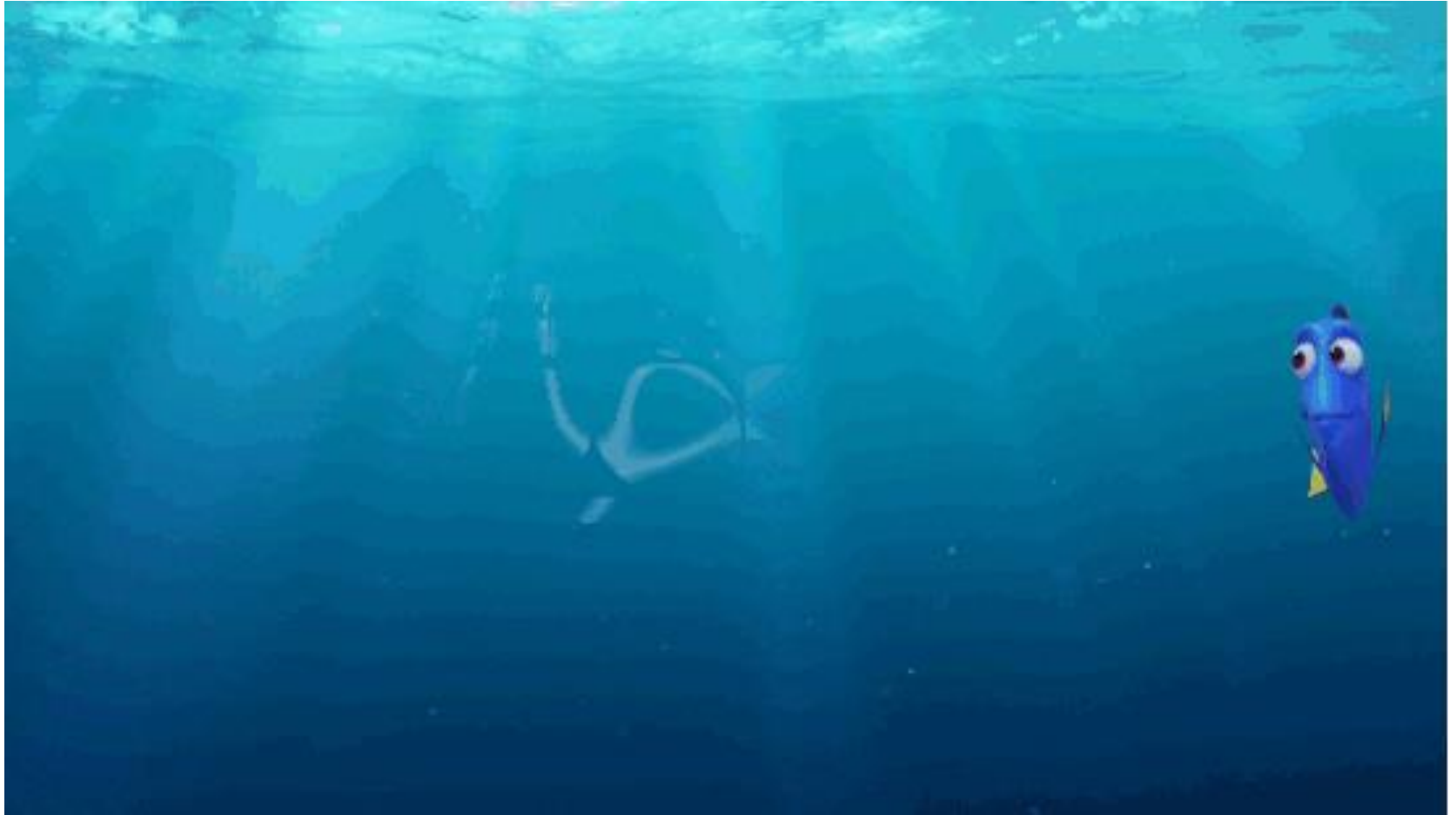
```
"android.resource://" + getPackageName() + "/" + R.raw.harrypotter
```

# USB Debugging – Developer Mode

- Enable developer mode
  - Open the **Settings** app.
  - (Only on Android 8.0 or higher) Select **System**.
  - Scroll to the bottom and select **About phone**.
  - Scroll to the bottom and tap **Build number** 7 times.
  - Return to the previous screen to find **Developer options** near the bottom.
- **Enable USB debugging option**

[[developer.android.com/studio/debug/dev-options](https://developer.android.com/studio/debug/dev-options)]







# Activity Lifecycle

# Activity Lifecycle

- Why is it important to understand the activity lifecycle?
  - You are developing an application software for a low power device.
  - Low resources (processing power and memory) compared to desktops .

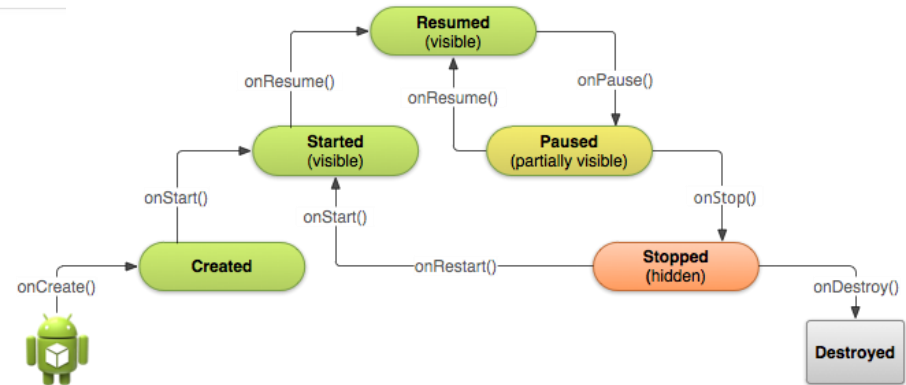
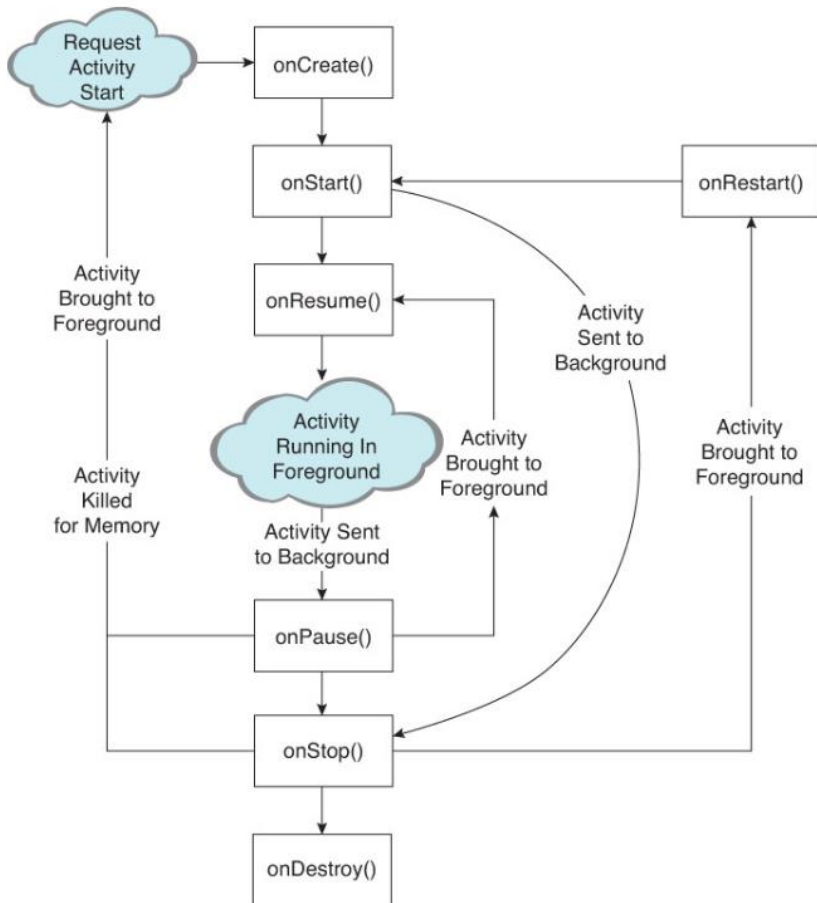
# Activity Lifecycle

- Why is it important to understand the activity lifecycle?
  - Applications can have background behavior, and applications can be interrupted and paused when events such as phone calls occur
  - Only one active application can be visible to users
    - A single application activity at foreground



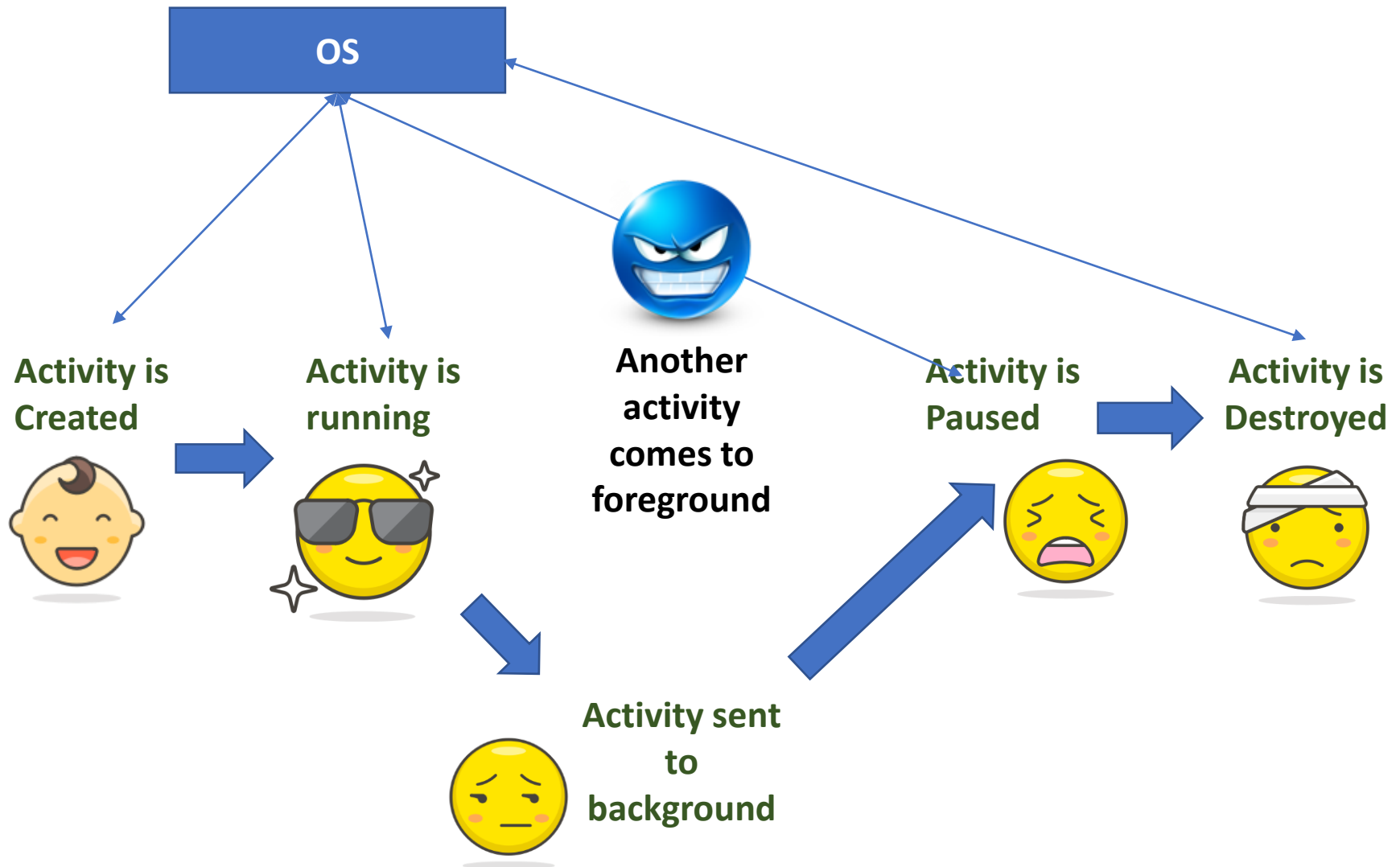
# Activity Lifecycle



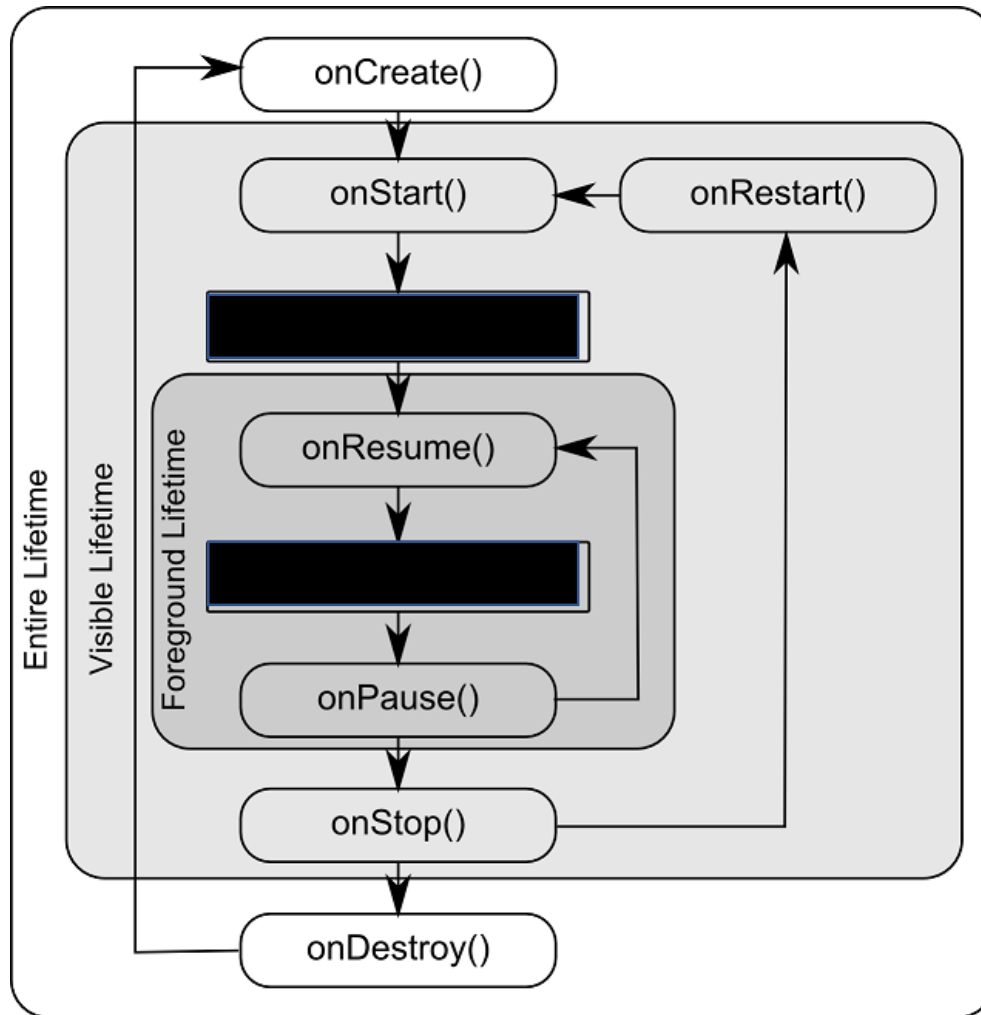


[[codelabs.developers.google.com/codelabs/android-training-activity-lifecycle-and-state/index.html?index=..%2F..%2Fandroid-training#0](https://codelabs.developers.google.com/codelabs/android-training-activity-lifecycle-and-state/index.html?index=..%2F..%2Fandroid-training#0)]

# Activity Lifecycle



# Activity Lifecycle



**onCreate()**— Called when the activity is first created

**onStart()**— Called when the activity becomes visible to the user

**onResume()**— Called when the activity starts interacting with the user

**onPause()**— Called when the current activity is being paused and the new activity is being resumed

**onStop()**— Called when the activity is no longer visible to the user

**onDestroy()**— Called before the activity is destroyed by the system (either manually or by the system to conserve memory)

**onRestart()**— Called when the activity has been stopped and is restarting again

# Activity Lifecycle



# Activity Lifecycle - Demo

# Let's fix the issue with our Movie Player







But wait ...

# What happens when you rotate your device?