

# Pannda

Program Anywhere: Never Need a Desktop Again

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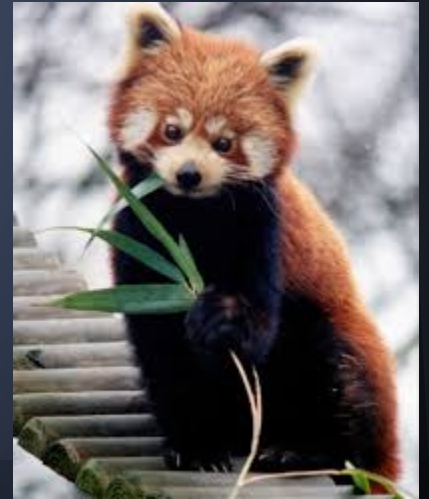
# Problem overview

- No good way to program from a tablet
- Requires a keyboard
- Lots of text on a small screen



# Solution overview

- Focus on small applications
- Few events and actions
- Automating common tasks
- Use touch & common tablet gestures
- Minimize typing



# Procedure

Contextual inquiry

Different design sketches

Selected design

Representative tasks



# Contextual inquiry, participants

- Mobile developers, covering:
  - iOS, Android, Windows Phone, gaming
- Observed them in action at the workplace
  - usually fixing bugs
- Asked to develop an app from scratch



# Contextual inquiry, details



- Desktop
- IDE
- Web search for documentation and samples
- Source control
- Testing on a hardware device
- Tools and processes are platform-specific
- UI design is platform-specific

# Contextual inquiry, results



- Provide IDE-like tools:
  - Accelerators
  - Easy look up of functions and variables
  - Instant warning about any user errors
- Simplify third-party API
- Version control
- Ability to test the program on the device

# Design Sketches

Visual programming language

Existing vs. Control flow vs. Data flow

Application interface



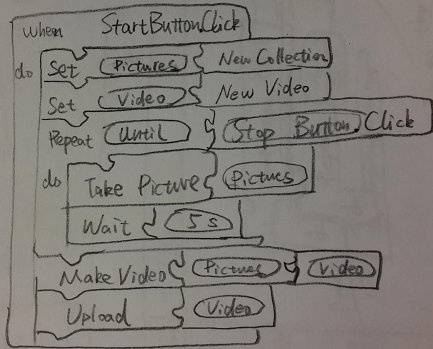


Logic ▾

Logic ▾  
Loop

Logic ▾  
Loop  
Button  
When Button Clicked

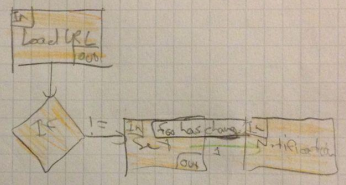
Logic ▾  
Math ▾  
Loops ▾  
Text ▾  
Lists ▾  
Youtube ▾  
Camera ▾  
Take Pic  
Upload

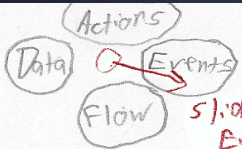


VF  
Bottom  
Local  
a

VF  
B I  
Local  
a

VF  
B I  
Local



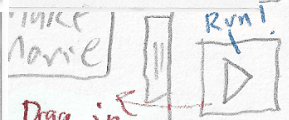


Actions

slide to  
Events  
Bubble  
& Release

Tap  
Time  
event

Select Every 5s  
& tap OK.



Drag in  
Side menu. Tap Run!

File Home View Inset

Timer Periodic Date  
Timers

Get

File Home View Inset Run

cut Copy Paste | In Out Default | Connect Properties  
Clipboard Zoom Tools



File Home View Ins

cut Copy Paste | In Out  
Clipboard Zoom



File Home View Inset Run



Program started.  
:  
Program stopped.

# Selected Design

Custom visual language

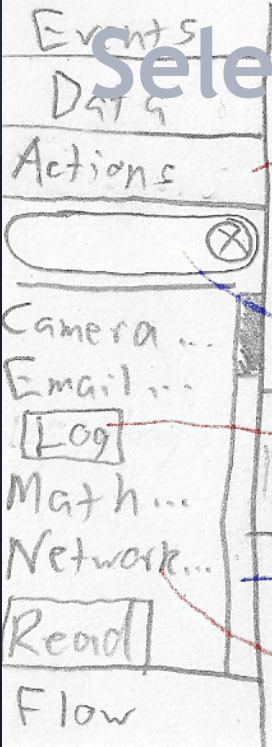
Dataflow model

Side menu

Simple undo/redo/checkpoints



# Selected Design? - Layout



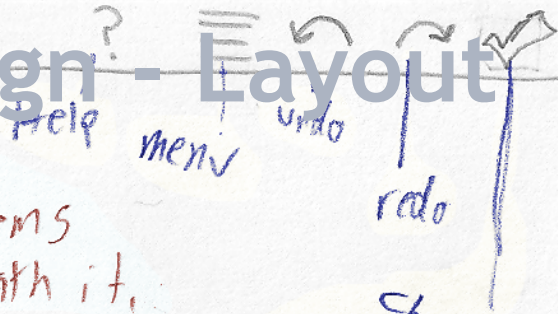
Actions is selected, so items span out beneath it.

Text search

Drag out actions in boxes.

scroll

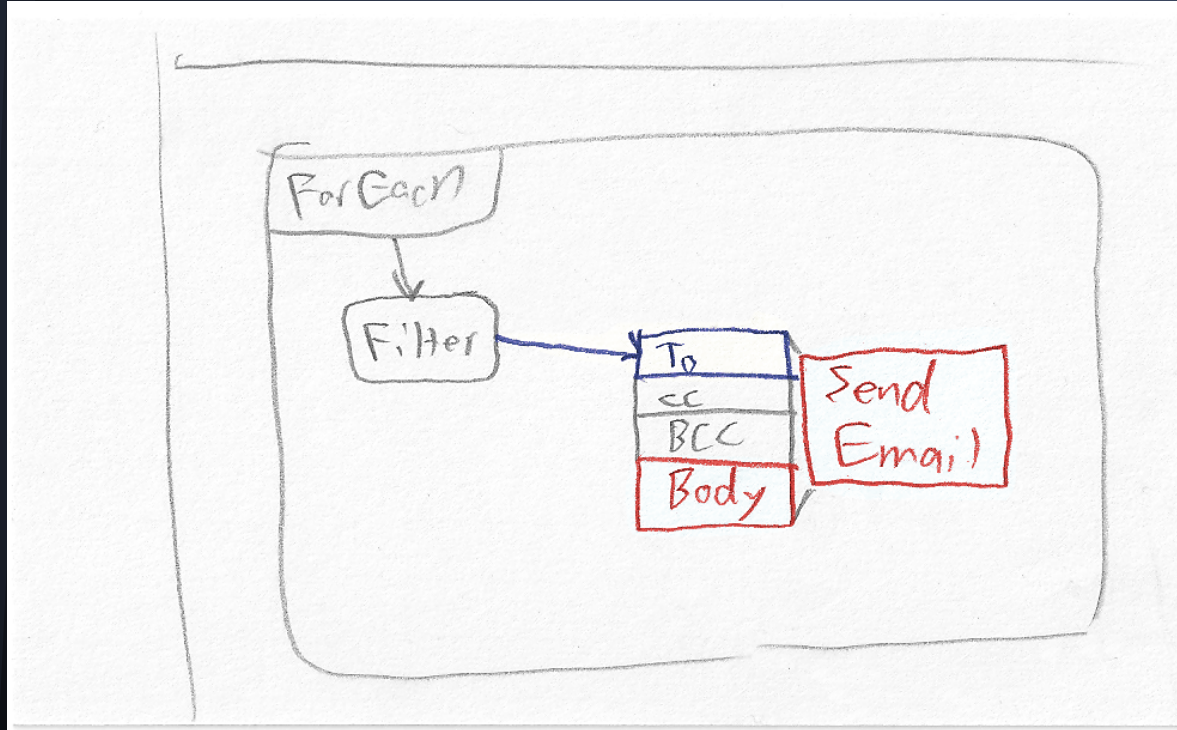
Items with "..." open to sub-menus



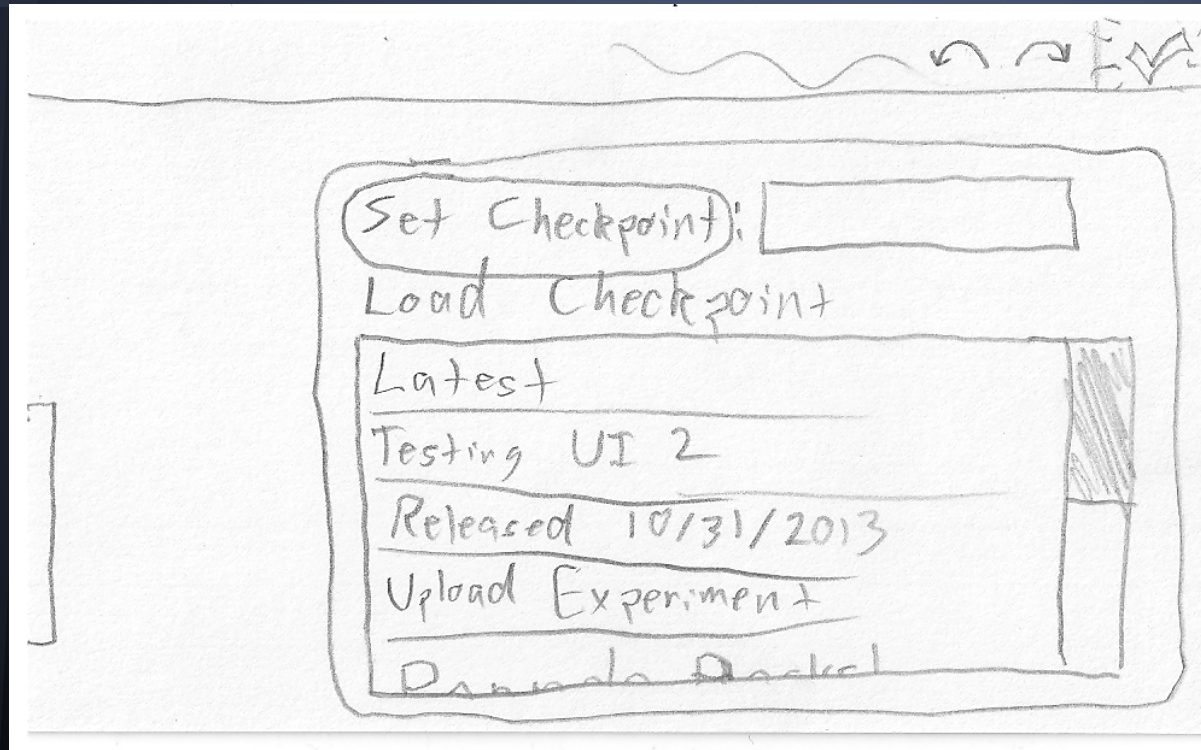
checkpoints:  
Browse revision history  
save a checkpoint  
restore a checkpoint



# Selected Design - ForEach example



# Selected Design - Revision history

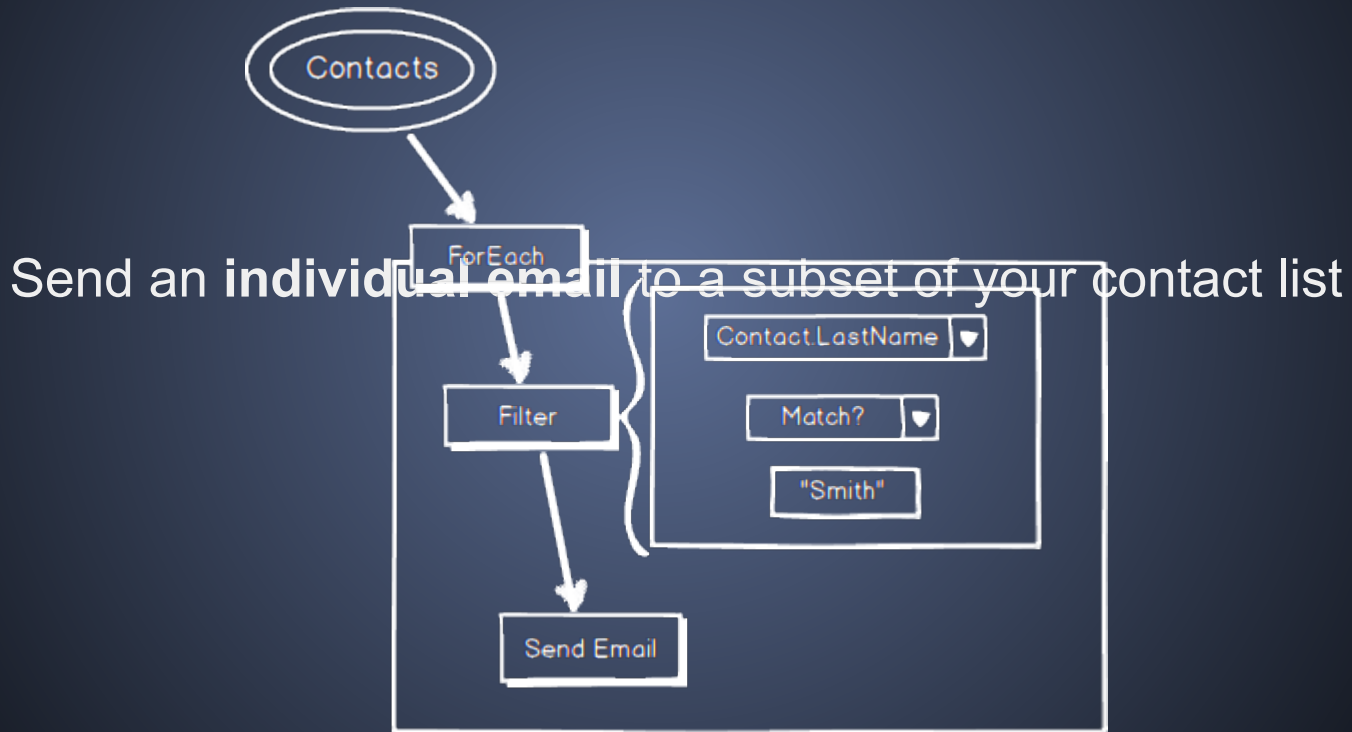




# Representative Scenarios



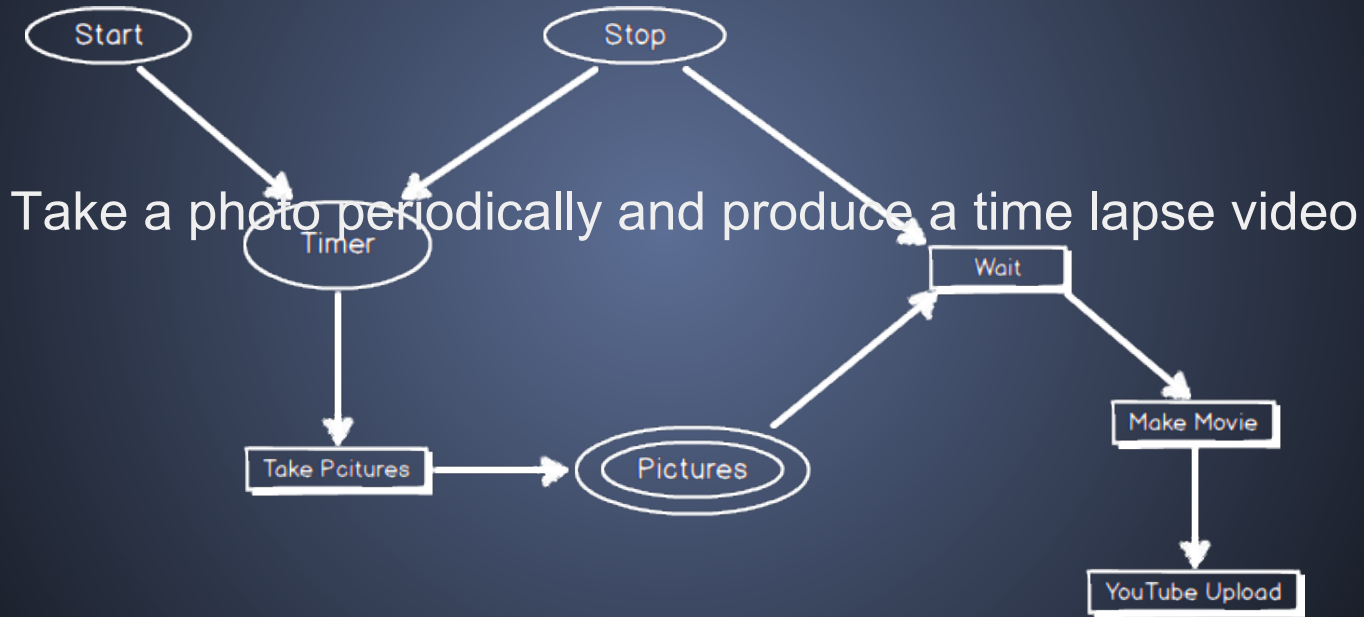
# Representative Scenarios



# Representative Scenarios



# Representative Scenarios



# Summary

- Two separate design problems
- Lessons learned:
  - There's always another way!
- Next steps:
  - paper prototype and user testing

