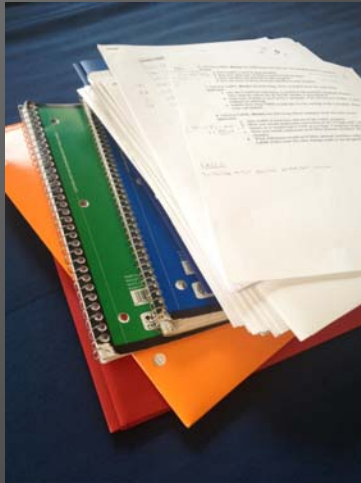
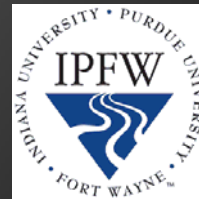


MOBILE SEMESTER ASSISTANT APP FOR ORGANIZING COURSE MATERIALS



CPET 491 (Phase II)
Fall Semester-2012
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Project Advisor/Instructor:
Professor Paul Lin

CEIT Department

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Presentation Outline

- ◉ Executive Summary
- ◉ Introduction
- ◉ Solution
- ◉ Development
- ◉ Software Analysis & Design
- ◉ Simulation
- ◉ Software Integration & Testing
- ◉ Hardware Integration & Testing
- ◉ Validation
- ◉ Cost & Risk Management
- ◉ Problems/Trouble
- ◉ Conclusion

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Executive Summary

- Create document scanner primarily for the use with school materials
- Free and effective alternative to other similar apps on the market
- App has ability to organize course files and act as digital portfolio...something other apps lacked
- Targeted toward students

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Introduction

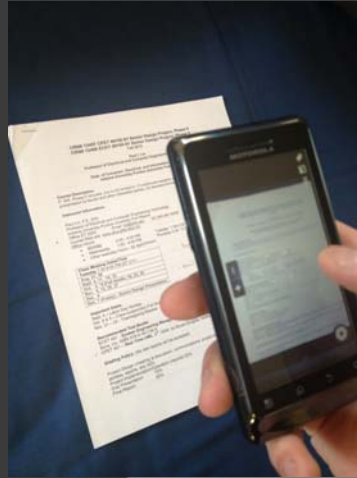
- Students given large amount of handouts/papers over course of semester
- Students prefer to use their phone for school related activities
 - Survey showed 82% of students from nearly 272 majors said they sometimes or often used their smartphones for school related tasks
- Effective medium to implement a solution and organize student materials

Ennico, Clifford, "Legal Issues for Mobile App Developers," Creators.com, 2010. [Online]
<http://testkitchen.colorado.edu/projects/reports/smartphone/smartphone-appendix1>

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Solution

- One convenient place to store materials
- App digitally organizes materials in convenient place based on courses
- Free download, while other similar apps \$.99 - \$4.99
- Semester Assistant is inexpensive and convenient



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Development Criteria

- Simple, easy to use
- Neat and organized interface
- Based off Android Mobile OS
 - Android 2.2 Froyo and later
- Utilizes built in camera
- Saved images sharable
 - Between other apps but not courses



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Development Resources

- Windows 7 Ultimate: Service Pack 1 (64-bit OS)
- Eclipse Platform Version 4.2.1 (Juno)
- Android Software Development Kit Version r20.0.3
- Android Development Tools Plugin
- Emulator testing and Motorola Droid 2 Global running Android 2.3.3

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Development Timeline

- Sketches of layouts
- Multiple design improvements
 - Buttons, spinners, and component changes
 - Layout changes
- Research in necessary functions
 - Intents, Sqlite, dbHelper, Cursors, Adapters, etc
 - 3 textbooks and multiple internet sources
- Integration
- Debugging, Testing, Validation
- Hardware testing

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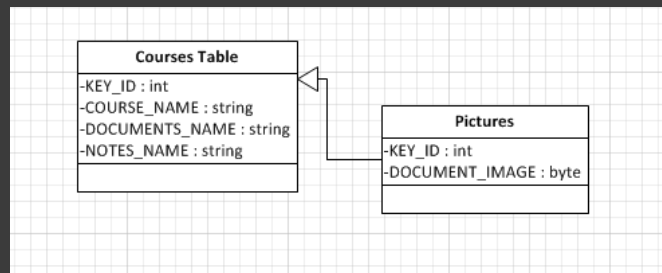
Software Analysis- SQLiteDatabase

- Open source database embedded into Android
- Supports SQL syntax, transactions, etc
- Requires approx. 250 Kbyte memory
- Available on all Android devices
- Does not require setup or administration
- Utilize SQLiteOpenHelper to create and upgrade database

Vogel, Lars, "Android SQLite Database and ContentProvider - Tutorial," Vogella.com, 2010. [Online]
 < <http://www.vogella.com/articles/AndroidSQLite/article.html> >.

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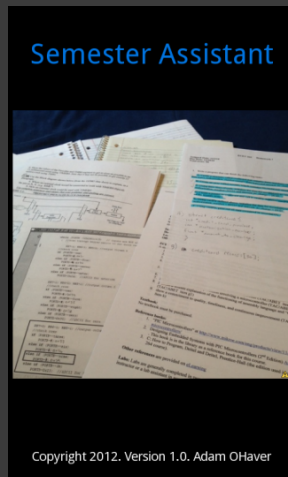
Software Analysis- Database Structure



- Semester Assistant contains two tables
- First table holds course information
- Second table holds table of images for course
- Linked based on Key ID
- Document Images are saved as Byte array type, but stored as paths in table

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Software- Splash Screen



- ◉ Loads resources
- ◉ App name, Author
- ◉ Version number
- ◉ Utilizes Timer Utility for 5000 ms
- ◉ Passes intent to launch MainMenu Activity

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Software- Main Menu Screen



- ◉ Shows saved courses in List View
- ◉ List View expandable and scrollable
- ◉ User selection launches Class Menu by passing Intent
- ◉ Edit Courses button allows addition or deletion of courses

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Software- Edit Course Screen

Course Name:

Semester:

- Allows text input from user to create course
- Utilizes soft keyboard for entry
- Save Course button saves course to database
- Checks for required fields

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Software- Edit Course Screen

Select Course to Delete

MA 157 Spring 11

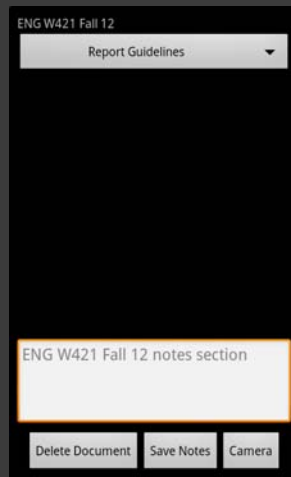
Select a Course

MA 157 Spring 11	<input checked="" type="radio"/>
CPET 490 Spring 12	<input type="radio"/>
ENG W421 Fall 12	<input type="radio"/>

- Delete stored course
- Spinner allows selection of courses
- Delete button verifies action with Alert Dialog
- Passes Intent back to Main Menu activity upon deletion

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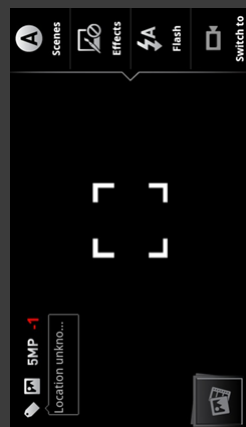
Software- Course Menu Screen



- Spinner contains saved document images
- Displays image in Image View below Spinner
- Notes section
- Passes action to camera for adding documents

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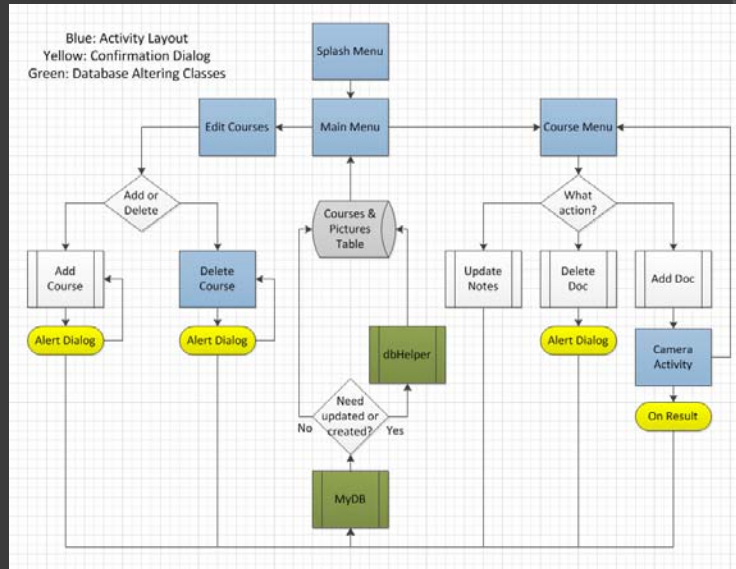
Software- Camera Screen



- Utilizes built in camera app
- On Activity Result saves image
- Accepts cancellation
- Utilizes effects, flash, etc

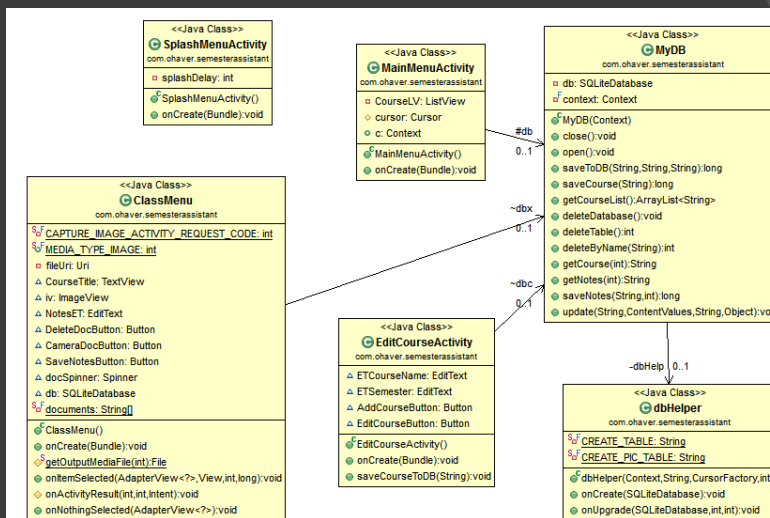
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Flowchart Diagram



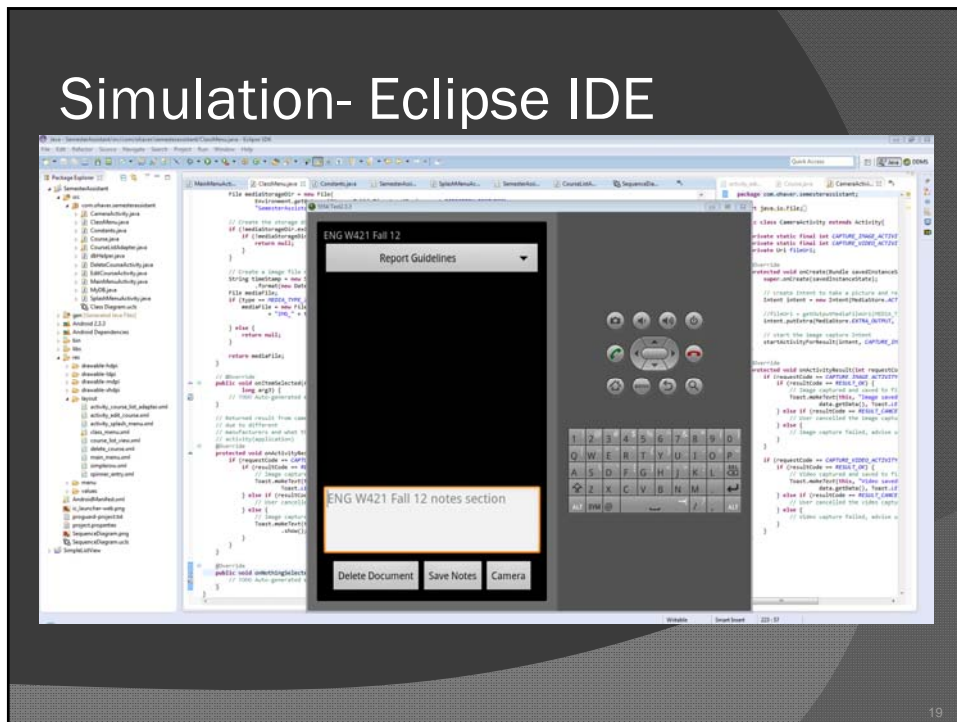
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Class Diagram



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Simulation- Eclipse IDE



Simulation

- LogCat for errors, exceptions, resources, etc.
- DDMS for emulator
 - Pull files for viewing and verification purposes- Database Tables
- Android Virtual Device Manager
 - Different Platforms, APIs, SD card support, screen sizes etc.
 - Testing for variety of devices

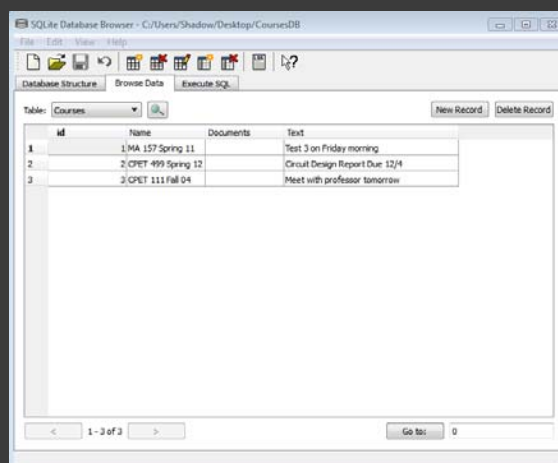
Software Integration & Testing



- Passing intents between activities
- Main Menu List View showed all stored courses
- Camera images could be seen in created app folder
- Ran numerous tests, examples, and looked for bugs and necessary fixes

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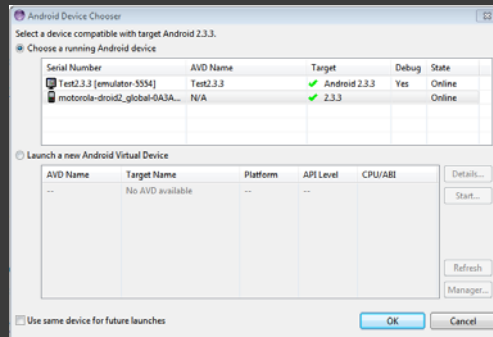
Software Integration & Testing



- Sqlite Database Browser software
- Allowed to visually see data structure of tables
- Could see column values as well as types

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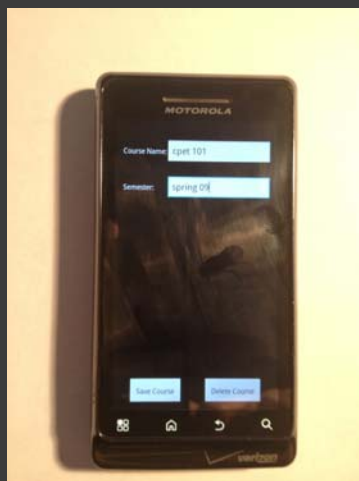
Hardware Integration & Testing



- Launch application on Droid 2
- Able to test camera capability and view stored images
- Lacked LogCat used to show error reports
- Tested database functionality

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Hardware Integration & Testing



- Droid 2 testing
- Adding/deleting courses
- Selection of courses
- Camera testing and debugging
- Allowed to see app characteristics not seen on emulator

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Validation

- AlertDialogs used for verification
- Created courses could be seen in list view on main menu
- Course selection would open corresponding course screen
- Image capture would save image and path to database

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Cost Management

Item	Initial Cost	Actual Cost
Computer running Windows 7	\$0.00	\$0.00
JAVA Development Kit	\$0.00	\$0.00
Eclipse IDE	\$0.00	\$0.00
Android Software Development Kit	\$0.00	\$0.00
Droid 2 Global Smartphone	\$0.00	\$0.00
USB cable for Droid 2	\$20.00	\$0.00
Programming Textbooks	\$60.00	\$77.87
Total Cost	\$80.00	\$77.87

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Risk Management

- Top 3 Risks
 - Large scope (1)
 - Coding complexities (5)
 - Not enough resource material (6)
- Scope and coding work played huge part in schedule
- Required much more projected time

		Risk Ranking				
Likelihood	5					
	4					5
	3				6	1
	2				2,9	
	1		4	3,8	7	
		1	2	3	4	5
		Severity				

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Conclusion

- App is effective, practical way of organizing course materials
- Goal to compete with other published apps, and to see customer feedback
- Plan on publishing and getting feedback from market
- Have already heard how beneficial this app can be from other students

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Problems & Troubles

- ◉ Intent variable passing and cursors
- ◉ SQLite database problems
 - Creation
 - Updating
 - Deletion
- ◉ Camera testing
 - Null parameter variable passing and errors
 - Emulator functionality
- ◉ Time constraints

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Application Status

- ◉ Currently about 90% completed
- ◉ Nearly all of app coded for just need to work out bugs and errors
- ◉ Looking to continue with project and publish to Android Market
- ◉ Have many more ideas for future additions and functionality

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Lessons Learned

- Programming requires a lot of patience and problem solving skills
- Testing and integration take considerable amount of time
- How to program in Eclipse, and utilize ADT and SDK
- More depth in Java and XML
- What is necessary when creating an application and what all is involved

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Questions?

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Demo

