LESSON PLAN

B.C.A 5th Semester

Teaching Schedule

030010513: CC13 Fundamentals of Mobile Application Development

Objective: To develop skills to describe mobile technologies, mobile environment and to develop mobile application for mobile device using mobile application resource, application component, services and mobile development APIs.

Course Outcomes: Upon completion of the course, the student shall be able to

CO1: Describe the different mobile technologies, mobile development platform and mobile GUI.
CO2: Comprehend working of mobile applications, their life cycle, and interaction among applications.
CO3: Design and develop convenient mobile applications with compelling user interfaces by using GUI elements.
CO4: Use mobile application development APIs for data storage, retrieval, user preferences, files, and databases.
CO5: Utilize the power of background services, broadcast receiver and notifications.
CO6: Use mobile media APIs to develop audio and video based mobile applications.

Unit	Sub Unit	No. of Lecture(s)	Topics	Reference Chapter/Additional Reading	Teaching Methodology to be used	Evaluation Parameters
Unit 1 : Overview(Total hours:4 hours)						
	1.1	1	Introduction to Mobile Technologies	WM#1, Page No:03-05	Topic Slide/Chalk Talk	
	1.2	1	Platform Architecture and Features		Topic Slide/Chalk Talk	
	1.3		Mobile Platform Versions	WM#1, Page No:02-03	Topic Slide/Chalk Talk	
	1.4	1	Development Tools for Mobile Application	WM#1, Page No:09-14	Topic Slide/Chalk Talk	

	1.5		Anatomy of Mobile Application	WM#1, Page No:29-33	Topic Slide/Chalk Talk	
	1.6	1	Creating Virtual Device and Sample Application		Topic Slide/Chalk Talk	
Unit 2 : Core Components(Total hours:8 hours)						
	2.1	1	Activity life cycle	DM#2,Page No:44-50 WM#2, Page No:36-40	Demonstration/Chalk-Talk	
	2.2	1	Generating and Deploying Application file	WM#12, Page No:471-481	Demonstration/Chalk-Talk	Quiz-1
	2.3	3	Linking Activity using Intents	DM#2,Page No:56-61 WM#2, Page No:53-57, 59-68	Demonstration/Chalk-Talk	
	2.4	3	Calling built-in applications	WM#2, Page No:85-97	Demonstration/Chalk-Talk	
Unit 3: Resources and Designing Interface(Total hours:12 hours)						
	3.1	1	Application Resource	DM#2,Page No:50-55 RM#3,Page No: 65-69	Demonstration/Chalk-Talk	
	3.2	2	Types of Layouts	DM#5,Page No:130-140 WM#3,Page No: 107-112 RM#4,Page No:98-100	Demonstration/Chalk-Talk	
	3.3	2	GUI Elements	DM#3,Page No:69-96	Active Learning Activity (10 Minutes	Unit Test-1

				WM#4,Page No: 160-179,191-202 WM#5,Page No: 219-230,243-249	Paper)	
	3.4	2	Creating Dialog box in Application	DM#10,Page No:205-216 WM#4,Page No:179-191 WM#4, Page No:42-53 https://www.lynda.com/Android-tutorials/Android-Communicating-User/513591-2.html	Chalk-Talk/ Video Session & Hands-on	
	3.5	3	Usage of Menu	DM#6,Page No:146-149 WM#5,Page No: 234-242 https://www.lynda.com/Android-tutorials/Android-Development-Essential-Training-Manage-Navigation-Events	Chalk-Talk/Vide Session & Hands-on	
	3.6	2	Animation basics	DM#18,Page No:391-403 RM#11,Page No:442-446	Demonstration/Chalk-Talk	
Unit 4 : Data Persistence(Total hours:10 hours)						
	4.1	3	User Preferences	DM#25,Page No:559-560 WM#6,Page No: 251-263 RM#7,Page No:221-223	Demonstration/Chalk-Talk	Openbook
	4.2	2	Internal Storage	DM#25,Page No:561-562	Demonstration/Chalk-	

				WM#6,Page No: 263-273 RM#7,Page No:246-248	Talk	
	4.3	2	External Storage	DM#25,Page No:562-562 WM#6,Page No: 263-273 RM#7,Page No:246-248	Demonstration/Chalk-Talk	
	4.4	3	Database management	DM#25,Page No:564-577 WM#6,Page No: 273-290 https://www.lynda.com/Androidtutorials/Welcome/112584/121155-4.html	Demonstration/Chalk-Talk	
Unit 5 : System Services(Total hours:8 hours)						
	5.1	3	Standard Broadcast Actions	http://developer.android.com/reference/android/content/Intent.html DM#16,Page No:343-346	Chalk-Talk/ Video Session & Hands-on	
	5.2	1	Alarm Manager	DM#16,Page No:365-370 RM#9,Page No: 351-353 WM#8,Page No:321-324 RM#17,Page No: 713-715	Demonstration/Chalk-Talk	
	5.3	2	SMS Manager	RM#9,Page No: 351-353 WM#8,Page No:321-324 RM#17,Page No: 713-715	Demonstration/Chalk-Talk	

	5.4	2	Notification Manager	DM#16,Page No:346-350 WM#2,Page No: 98-103	Demonstration/Chalk-Talk	Unit Test-2
Unit 6 : Media APIs(Total hours:6 hours)						
	6.1	1	Using Media APIs	DM#20 ,Page No: 451-452	Demonstration/Chalk-Talk	
	6.2	3	Multimedia audio content- Creating and Playing, Kill and Releasing Memory	DM#20,Page No:453-456	Demonstration/Chalk-Talk	
	6.3	1	Playing Background Sounds	DM#20,Page No:464-465	Demonstration/Chalk-Talk	
	6.4	1	Playing Video Content	DM#20,Page No:465-468	Demonstration/Chalk-Talk	Internal

Text book:

1. Dave MacLean, Pro Android 5, Apress.**[DM]**

Reference Books:

1. Wei-Meng Lee, Beginning Android 4 Application Development, Wiley India Pvt Ltd.**[WM]**
2. Reto Meier, Professional Android 2 Application Development, Wiley India Pvt Ltd.**[RM]**
3. https://developers.google.com/android/[Note: Reference for location based API.
4. Lauren Darcey, Shane Conder, Android Wireless Application Development, Pearson.**[LD]**
5. Mark L Murphy, Beginning Android, Wiley India Pvt. Ltd.**[MM]**

Note: # denotes chapter number.

Course objectives and Course outcomes mapping:

To make students to develop mobile application for mobile devices using resource, application component on mobile environment: CO1, CO2, CO3, CO4, CO5

To make them utilize mobile development APIs: CO6

Course units and Course outcome mapping:

Unit No.	Unit Name	Course Outcomes					
		CO1	CO2	CO3	CO4	CO5	CO6
1	Overview	✓					
2	Core Components	✓	✓				
3	Resources and Designing Interface	✓	✓	✓			
4	Data Persistence	✓	✓	✓	✓		
5	System Services	✓	✓	✓		✓	
6	Media APIs	✓	✓	✓	✓		✓

Programme Outcomes:

PO1: Proficiency in and ability to identify problems related to computer science as well as design and apply computational knowledge to solve them.
PO2: Ability to design, develop, test and maintain system, component, product or process as per needs and specification.
PO3: Understanding of professional and ethical role and responsibility.
PO4: Recognition of the need for and ability towards life-long learning.
PO5: Knowledge of programming languages, database systems, operating systems, software engineering, Web & Mobile technology and relevant modern issues along with strong project development skill.
PO6: Ability to demonstrate the use of modern tools, models and languages to solve problems related to software development
PO7: An ability to communicate effectively with a range of audiences.

Programme Outcomes and Course Outcomes mapping:

Programme Outcome	Course Outcomes					
	CO1	CO2	CO3	CO4	CO5	CO6
PO1	✓	✓	✓	✓	✓	✓
PO2	✓	✓	✓	✓	✓	✓
PO3		✓	✓	✓	✓	✓
PO4	✓	✓	✓	✓	✓	✓

PO5	✓	✓	✓	✓	✓	✓
PO6	✓	✓	✓	✓	✓	✓
PO7	✓	✓	✓	✓	✓	✓

Computing Environment:

A student must have the following computing environment in laboratory and/or on his/her laptop.

- Android SDK 1.5.1
- Android Studio V1.5.1 or above

Modes of Transaction (Delivery):

Unit No	Topic Detail	Teaching Approach	PO mapped
3.3	GUI Elements	Active Learning Activity (10 Minutes Paper) Students will be given a layout design covered in the lecture duration and will be ask to write source code for the layout in last 10 minutes. Source code will be review by teacher and remarks will be provided to students regarding their progress in the upcoming lecture.	PO1, PO5
3.4	Creating Dialog box in Application	**Video Session & Writing Skill:** **Video Session:** Student will list out the major class used for implementation, and its usage in layout. **Writing Skill:** one definition will be given to them and write source code for the features used in the list out classes from the video session.	PO1, PO5
3.5	Usage of Menu	**Hands-On & Video Session:** **Video Session:** Student will list out the major class used for implementation, and its usage in	PO1, PO2, PO5,PO6

		layout. **Hands-On:** one definition will be given to them to implement the list out features used in the list out classes from the video session.	
5.1	Standard Broadcast Actions	**Hands-On & Video Session:** **Video Session:** Student will list out the major class used for implementation, and its usage in layout. **Hands-On:** one definition will be given to them to implement the list out features.	PO1, PO2, PO5,PO6

Activities/Practicum:

The following activities shall be carried out by the students:

- Student shall develop mini mobile application.
- Student shall submit white paper on any one mobile operating system including its features.

The following activities shall be carried out by the teacher:

Learner	Activities to be done	PO mapped
For slow learners	After taking feedback from the student regarding understanding of concept, questions shall be provided for the topics in which they are finding difficulty to understand and will be discussing answers in the last 10 minutes of lectures.	PO1,PO5
For advanced learners	Will be providing 2 extra features (Pop-up menu and frame-by-frame animation) not covered in syllabus.	PO1,PO2,PO4,PO5,PO6
For all	• Discuss the purpose of any two mobile operating systems and its market value. • Elaborate case study on	PO2,PO5

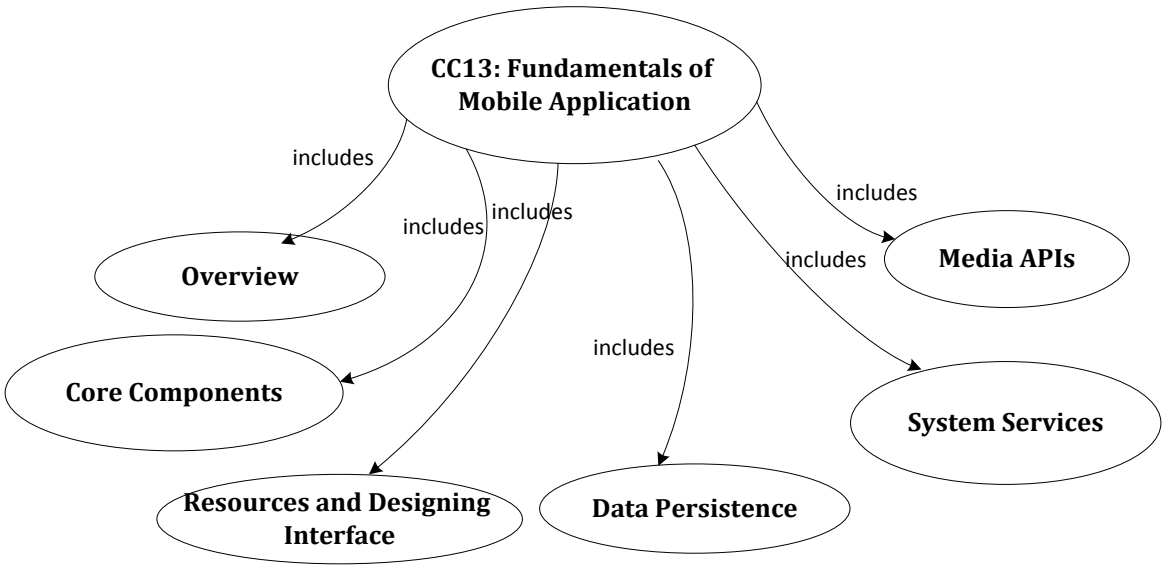
	different mobile operating systems. • Installation of one mobile environment.	

Number of Practical Problems in Journal: 16

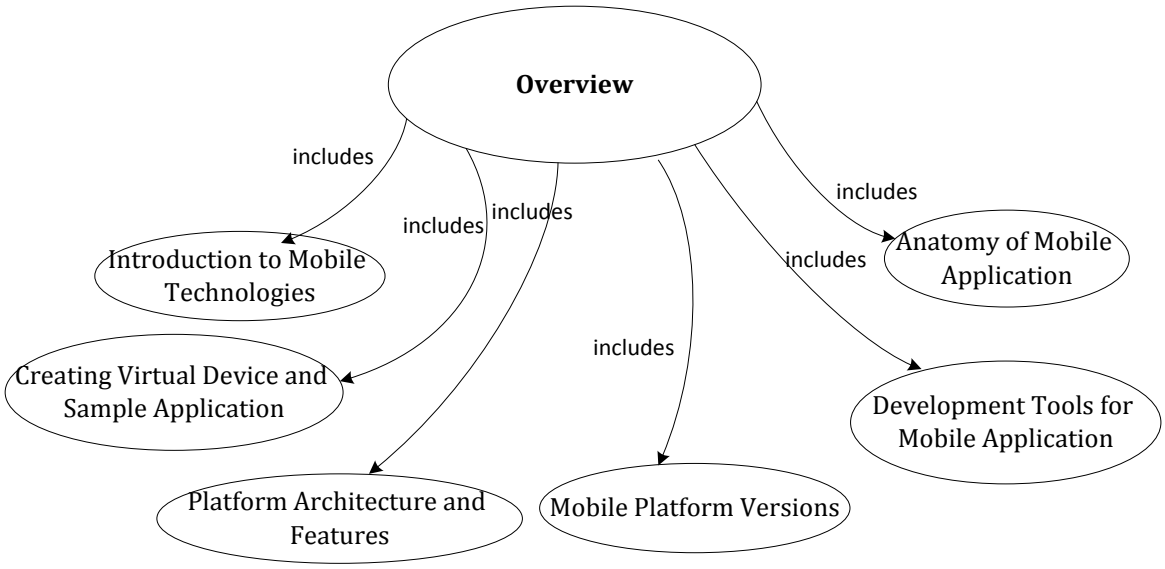
Total sets to be developed for each division:

Unit Number	Number of Questions	Time required to implement and debug the question (in hours)	Minimum required of Journal Certification
Unit -1	1	1	1
Unit -2	3	9	3
Unit -3	5	15	5
Unit -4	3	9	3
Unit -5	3	9	2
Unit -6	2	5	1
TOTAL	17	48	15

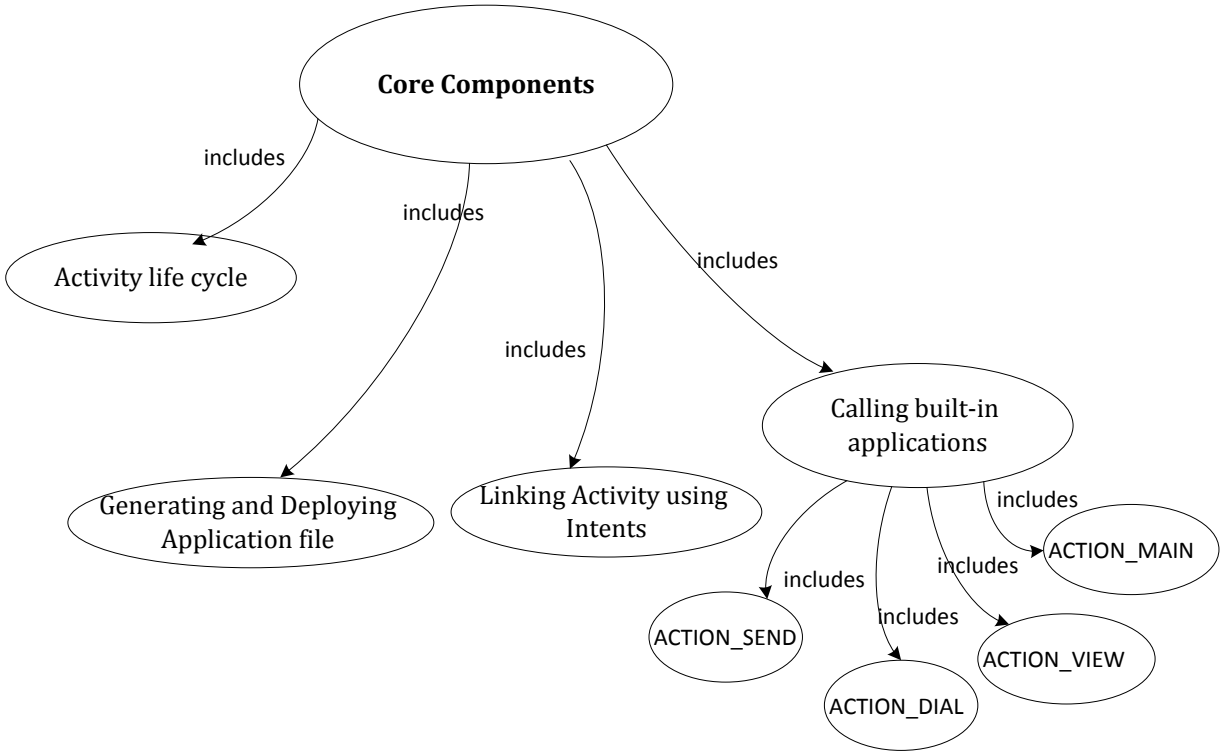
Concept map:



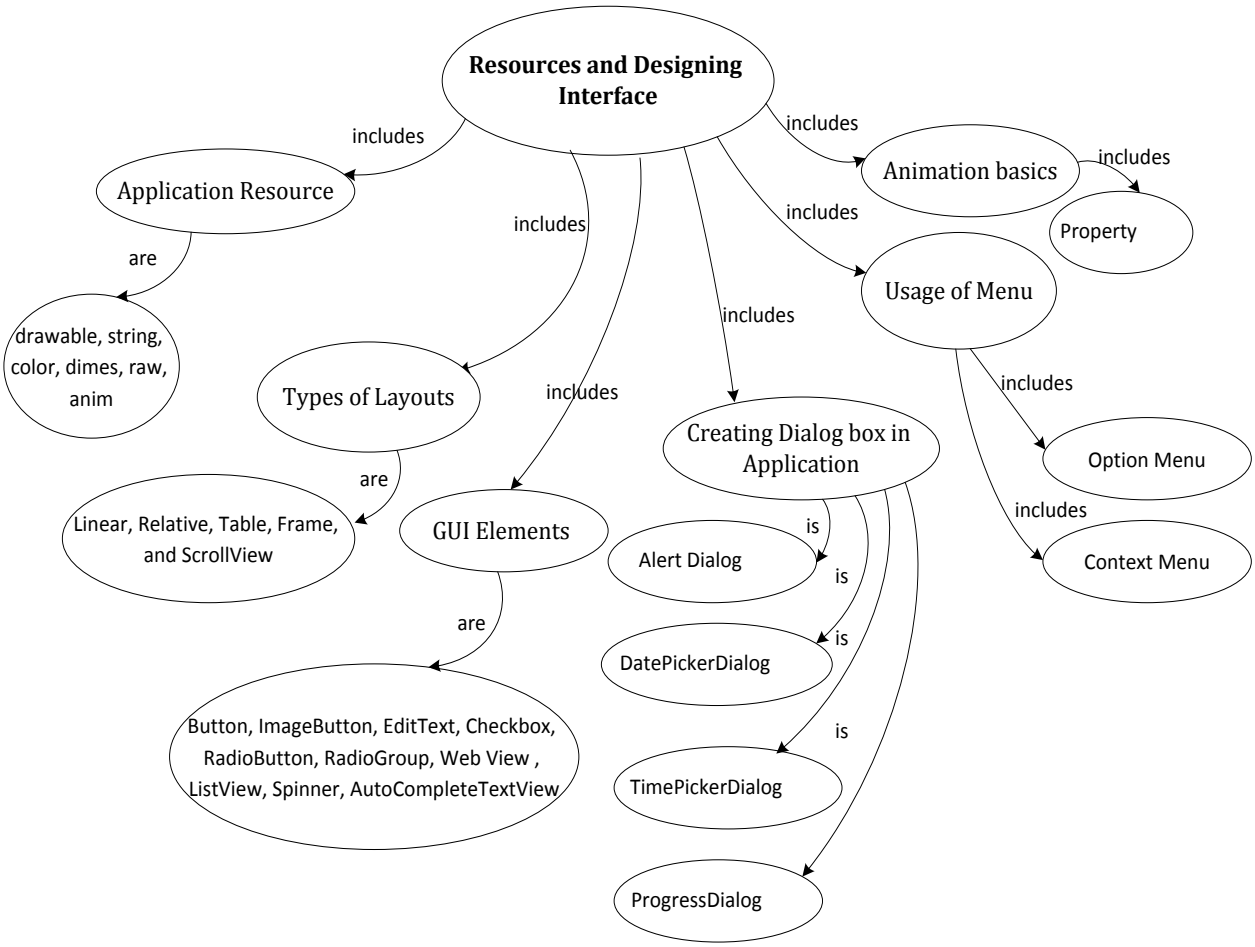
Unit-1 Overview



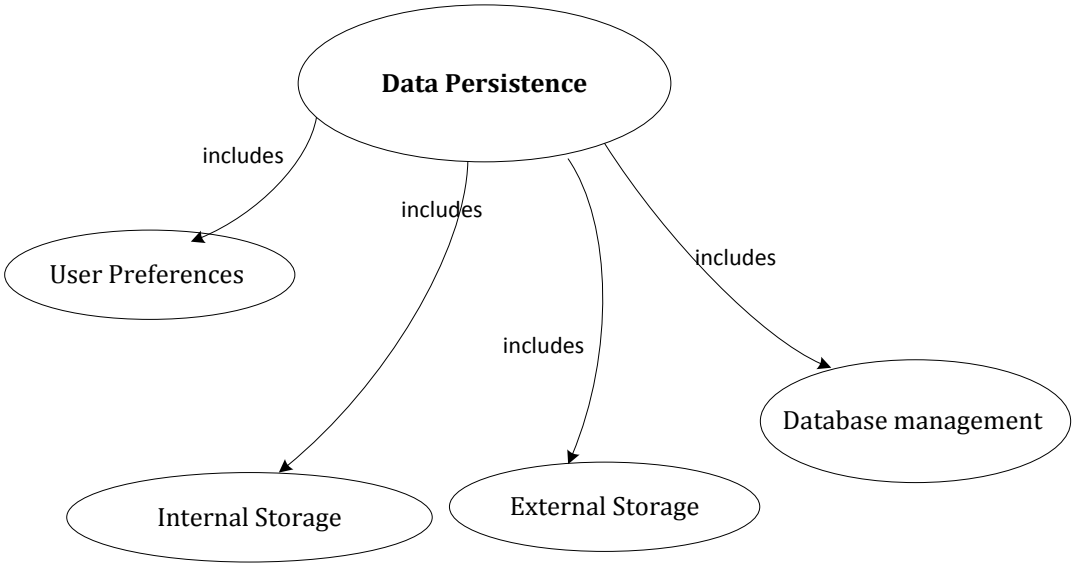
Unit-2 Core Components



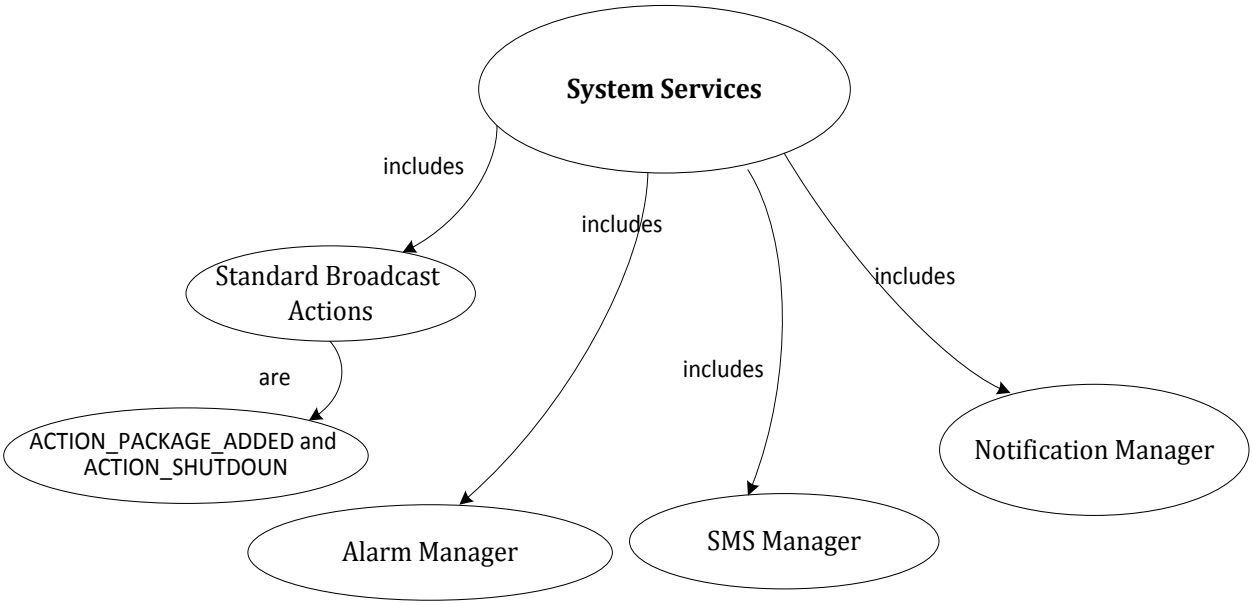
Unit-3 Resources and Designing Interface



Unit-4 Data Persistence



Unit-5 System Services



Unit-6 Media APIs