

Semester Fifth

Punjab Technical University
Bachelor in Mobile Computing & Internet Batch 2014 onwards

MOBILE APPLICATION DEVELOPMENT

BMCI 501

SECTION-A

Introduction: Overview of Java, Basics of Android & its applications, Smartphone's future, Comparison of Android with other environments.

Android Architecture: Android Stack, Android applications structure.

UI Architecture: Application context, Intents, Activity life cycle, supporting multiple screen sizes.

SECTION-B

User Interface Widgets: Text controls, Button controls, Toggle buttons, Images.

Notification and Toast: Parameters on Intents, Pending intents, Status bar notifications, Toast notifications.

Menus & Dialogs: Localization, Options menu, Context menu; Alert dialog, Custom dialog, Dialog as Activity.

Lists: Using string arrays, Creating lists, Custom lists.

Location and Maps: Google maps, Using GPS to find current location.

Working with data storage: Shared preferences, Preferences activity, Files access, SQLite database.

Animation: View animation, Draw able animation.

SECTION-C

Network Communication: Web Services, HTTP Client, XML and JSON.

Services: Service lifecycle, Foreground service.

Publishing Your App : Preparing for publishing, Signing and preparing the graphics, publishing to the Android Market.

SECTION-D

Introducing SQLite: SQLiteOpenHelper and creating a database, Opening and closing a database

Cursors and its types, Working with cursors Inserts, updates, and deletes.

DATABASE CONNECTIVITY : SQLite Data Types, Content Values, Adding, Updating and Deleting Content , Content provider: introduction, Query providers.

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Programming IN PHP

BMCI-502

SECTION-A

Introduction to PHP : Evolution of PHP & its comparison, Interfaces to External systems, Hardware and Software requirements, PHP Scripting, Web Designing Basics and WYSIWYG Editor, Receiving User Input, Repeating Code.

Basic PHP Development : Working of PHP scripts, Basic PHP syntax, PHP data types, Google Caffeine, displaying type information, Testing for a specific data type, Changing type with Set type, Operators, Variable manipulation, Dynamic variables, Variable scope, Accessing variable with the global statement Static vs. Dynamic Optimization, Analytics, Analysis and ROI Concept.

Control Structures: If() and elseif() condition Statement, The switch statement, Using the ? Operator, Using the while() Loop, The do while statement, Using the for() Loop, Breaking out of loops, Nesting loops.

SECTION-B

Function : Function definition, Creation, Returning values, User-defined functions, Dynamic function, Function calls with the static statement, default arguments, Passing arguments to a function by value.

String Manipulation: Formatting String for Presentation, Formatting String for Storage, Joining and Splitting String, Comparing String, Matching and replace Substring.

Array : Anatomy of an Array , Creating index based and Associative array , Accessing array Elements , Looping with Index based array , Looping with associative array using each() and foreach(), Library function.

SECTION-C

Forms : Working with Forms, Super global variables, Super global array, Importing user input, Accessing user input, Combine HTML and PHP code, Using hidden fields, Redirecting the user.

Working with File and Directories: Understanding file & directory, Opening and closing a file , Coping, renaming and deleting a file , Working with directories , Building a text editor , File Uploading & Downloading.

Generating Images with PHP: Basics computer Graphics, Creating Image , Manipulating Image , Using text in Image.

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Database Connectivity with MySql : Introduction to RDBMS , Connection with MySql Database, Performing basic database operation(DML) (Insert, Delete, Update, Select), Setting query parameter , Executing query , Join (Cross joins, Inner joins, Outer Joins, Self joins).

Cookies: Introduction of Cookies, Setting time in a cookie with PHP, Deleting a cookie, Creating session cookie, Working with the query string.

Session : Starting a session, Registering Session variables, working with session variables, destroying session, passing session Ids, encoding and decoding session variables, increase session expire time, working of session without cookie.

SECTION-D

Advance PHP techniques: Introduction about FTP/SMTP server, Math functions, File upload, File Download, E-mail with PHP, PHP configuration file, Error tackling and debugging

PHP Project: Various Application of PHP Project, Requirements analysis of Project.

SOFTWARE TESTING AND QUALITY ASSURANCE

BMCI-503

SECTION-A

Testing Principles : Need of testing, Basic concepts – errors, faults, defects, failures, test bed, unit testing, integration testing system, system testing, regression testing, alpha, beta and acceptance testing , functional testing, performance testing, recovery testing, white box testing, black box testing, verification and validation.

Test Management : Testing Life Cycle – Roles and activities, Test Planning – forming a test team, develop test plan review ,Test Cases design strategies black box approach: random testing, equivalence class partitioning and boundary value analysis. white box approach: test adequacy criteria, coverage and control flow graphs, paths, loop testing, mutation testing. Test execution: build test data, life cycle of defect, defect tracking, defect detection stages, defect detection stages, defect types, defect severity, defect analysis and prevention.

SECTION-B

Software Metrics : Scope of software metrics, Classifying software measures, Measurement basics – representational theory, scales, meaningfulness, What to measure – GOM technique, Control flow structure, product quality metrics – MTTF, defect density, customer problems, customer satisfaction, function point, Metrics for software maintenance, In-process quality metrics.

Quality Assurance : Quality concepts – quality, quality control, quality assurance, cost of quality Software quality assurance– SQA activities, software reviews, inspections, audits, Software reviews, inspections, audits, Software reliability Quality Attributes: correctness, reliability, usability, integrity, portability, maintainability, interoperability. Ishikawa's Seven Basic Tools.

SECTION-C

Comparative evaluation of techniques: Testing tools, Dynamic analysis tools, test data generators, Debuggers, test drivers etc.

Technical Metrics for Software: Quality factors, framework, Metrics for analysis, design, testing source code etc.

Object Oriented Testing: OOT strategies and issues: Test case design, interface testing.

SECTION-D

Quality Management : Quality Standards, Basic concept of – ISO 9000 & 9001, CMM, Six Sigma.

CMM : Development of CMM, CMM – Following KPAs : requirements management (RM), software project tracking and oversight (SPTO), software configuration management (SCM), organization process definition (OPD), software product engineering (SPE), peer reviews (PR), quantitative process management (QPM), defect prevention (DP), process change management

DATA WAREHOUSING & MINING

BMCI 504

SECTION-A

Data Warehousing : Introduction, need for data warehousing, Operational & Informational Data Stores, Data Ware house Characteristics, Data Warehouse role & Structure, The cost of warehousing data.

OLAP & OLTP: Introduction to OLAP & OLTP, Difference between OLAP & OLTP, OLAP Operations.

SECTION-B

Data Warehousing: Building a Data Warehouse, Design/Technical/Implementation Considerations, Data Preprocessing Overview. Data Summarization, Data Cleaning, Data Transformation, Concept Hierarchy, Structure. Patterns & Models, Artificial Intelligence (Overview). Multidimensional Data Model, Schemas for Multidimensional Data (Star Schema, Snowflake Schema, Fact Constellation), Data Warehouse Architecture, Data Warehouse Design, OLAP Three-tier Architecture, Indexing & Querying in OLAP, OLAM, Efficient Methods of Cube Computation, Discovery Driven Exploration of Data Cubes, Attributed-Oriented Induction.

SECTION -C

Data Mining: Association Rule Mining, Market Basket Analysis, Apriori Algorithm, Mining Multilevel Association Rules, From Association Mining to Correlation Analysis, Constraint Based Association Mining, Introduction to Classification, Classification by decision Tree, Attribute Selection Measure.

SECTION -D

Prediction: Introduction to Prediction techniques, Accuracy of a Classifier, Cross-Validation, Bootstrap, Boosting, Bagging, Introduction to Clustering, Classification of Various Clustering Algorithms, Selecting and Using Right DM Technique, Selecting and Using Right DM Technique, Data Visualization.

Information Security

BMCI 505

Section A

Information Security Concepts : Information Security Overview, Background and Current Scenario, Principles of Security- Information Classification, Policy Framework, Role based Security in an organization, Components of Information Systems, Balancing Information Security and Access, Approaches to information Security Implementation, Security Systems Development Life Cycle.

Section B

Security Threats and Vulnerabilities: Overview of Threats and Vulnerabilities-Intruders, Malicious Software, Viruses and related Threats, Desktop Security, Email security: PGP and S/MIME, Web Security: Web authentication, SSL and SET, Database Security. Firewalls-Overview, Design principles and Types.

Section C

Security Management and Laws: Introduction to Security Management, Access Control and Intrusion Detection, Overview of Identification and Authorization, Intrusion Detection Systems and Intrusion Prevention Systems, Security Procedures and Guidelines, Business Ethics and Best Practices, Security Assurance, Security Laws, IPR , International Security Standards, Security Audit, **SSE-CMM / COBIT etc.**

Section D

Cryptography : Concepts and Techniques, Symmetric and Asymmetric Key Cryptography, Steganography , Symmetric Key Ciphers- DES, AES (Structure and Analysis). Asymmetric Key Ciphers- Principles of Public Key cryptosystems, RSA Algorithm and its Analysis. Digital Signatures.

Software Lab – VIII (Mobile Application Development)

BMCI- 506

Implementation of all the programs related to theory concepts studied in Mobile Application Development [BMCI - 501].

Practical will be based on the syllabus of theory paper of Practical lab

Android Programming, Installing the SDK, Creating Android Emulator , Installing Eclipse

Installing Android Development Tools, Supporting multiple screen sizes, Alert dialog, Custom dialog, Dialog as Activity, Using string arrays , Creating lists , Custom lists.

Database SQLite Programming

- ✓ SQLiteOpenHelper
- ✓ SQL API, spinner, List view
- ✓ SQLiteDatabase
- ✓ Cursor
- ✓ Reading and updating Contacts
- ✓ Reading bookmarks
- ✓ Example: Develop an App to demonstrate database usage. CRUD operations must be implemented. Final details should be viewed in GridView as well as in ListView.

Software Lab – IX (Programming In PHP)

BMCI - 507

Implementation of all the programs related to theory concepts studied in Programming In PHP [BMCI - 502].

Practical will be based on the syllabus of theory paper of Practical lab. Students need to work on project of PHP.