

4.1 OBJECT ORIENTED PROGRAMMING WITH JAVA

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Rationale

Today, the most likely place you will find Java is on World Wide Web. The web acts as convenient transport mechanism for Java programs and the web's ubiquity has popularized Java as an Internet development tool. Java has shifted the programming paradigm of single machine to distributed network of machines. Any application on World Wide Web can be easily implemented. Internet can have numerous applications and various protocols. This course will enable the students to learn in detail network programming language Java.

DETAILED CONTENTS

| | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Unit –1 | 14 Periods |
| Introduction to Java : A brief history, how Java works?, Java Virtual Machine (JVM), Java In Time (JIT) compiler, Java features, using Java with other tools, native code, Java application types, comparison with C and C++ | |
| Unit –2 | 16 Periods |
| Working with data types, control flow statements, arrays, casting, command line arguments Java Classes and Memory Management: Introduction to Classes, inheritance, encapsulation and polymorphism, constructors and finalizers, garbage collection, access specifier. | |
| Unit –3 | 14 Periods |
| Interfaces and Packages: Using Java interface, using Java packages | |
| Unit –4 | 12 Periods |
| Exception Handling and Stream File: Over view of exception handling, method to use exception handling, method available to exceptions (The throw statement, the throws class, finally class), creating your own exception classes. | |
| Unit –5 | 12 Periods |
| Threads and Multi-threading :Overview, thread basics – creating and running a thread, The thread control methods, The threads life cycle and synchronization. | |
| Unit –6 | 12 Periods |
| Introduction to Applet, Application and JDK :Java applets Vs Java applications, building application with JDK, building applets with JDK, HTML for Java applets, managing input-output stream Java Data Base Connectivity (JDBC). | |

LIST OF PRACTICALS

1. Programming exercise on control flow statements in Java
2. Programming exercise on Arrays and String
3. Programming exercise on inheritance
4. Write Program for exception handling
5. Write programs for Multithreading

6. Programming exercise on Java applets

7. Write program for Java Data base connectivity

SUGGESTION

RECOMMENDED BOOKS

1. The Complete Reference Java by HerbelSchildt; McGraw Hill, New Delhi
2. Java Programming by Balagurusamy, Tata McGraw Hill Education Pvt Ltd , New Delhi
3. Computer Programming in Java, W C/D by JunaidKhateeb, Wiley-India Pvt Ltd. Daryaganj, New Delhi
4. The Complete Reference by Patrick Naughton, Tata McGraw Hill Education Pvt Ltd , New Delhi
5. Set of Books on Java by Sun Microsystems.
6. Java 2 Programming Bible by Aaron Walsh, Justin Couch, Daniel Steinberg, IDG Books India Pvt. Ltd., NetajiSubhash Marg, Darya Ganj, New Delhi
7. Java Pogramming- “How to Program Java” by Dietal and Dietel
8. An Introduction to Java Programming by Y Daniel Liang; Prentice Hall of India
9. Core Java by Cay S Horseman and Lray Carnell.
10. Introduction to Cryptography with applets by David Bishop, Narosa Publishing House Pvt Ltd, Darya Ganj, New Delhi 110002

SUGGESTED DISTRIBUTION OF MARKS

| Unit No. | Time Allotted (Hrs) | Marks Allotted |
|--------------|---------------------|----------------|
| 1 | 14 | 10 |
| 2 | 16 | 20 |
| 3 | 14 | 10 |
| 4 | 12 | 15 |
| 5 | 12 | 10 |
| 6 | 12 | 15 |
| Total | 80 | 80 |

4.2 Application of E-Commerce

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Rationale

“Electronic commerce” or “Doing, business online” is becoming critical in three interrelated dimensions. Customer-to-business interactions, customer-to-customer, intrabusiness interactions and business-to-business interactions. Electronic Commerce facilitates the network form of organization where small flexible firms rely on other partner companies for component supplies and product distribution to meet changing customer demand more effectively. The transaction management aspect of electronic commerce enables firms to reduce costs by enabling better coordination in sales, production and distribution processes and automated supply chain network. Electronic Data Interchange (EDI), Electronic Mail and Electronic Fund Transfer (EFT), streamline business process, reduces paperwork and increase automation. The course will enable the students to understand e-commerce, its applications, the processes and the security issues.

DETAILED CONTENTS

Unit –1 10 Periods
E-Commerce concept: Meaning, definition, concept, features, function of commerce, E-Commerce practices v/s traditional practices, scope and basic models of E-Commerce limitations of E-Commerce, precaution for secure E-Commerce, proxy services. Advantage & Disadvantages, Pre-requisite of E-Commerce, Electronic Commerce & Business.

Unit –2 16 Periods
Types of E-Commerce: Meaning of B2C, B2B, C2C, P2P. Application in B2C-, Net Banking/Internet banking, -Banking E- Trading E-Auction – Introduction and overview of these concepts. Application of B2B distributor, B2B service provider, benefits of B2B on Procurement, just in time delivery, Consumer to consumer and peer to peer business model Introduction and basic concept.

Unit –3 10 Periods
Applications of Electronic Commerce- Application of E Commerce in Direct Marketing and Selling, Supply Chain Management, Corporate Purchasing, Financial and Information Services, Obstacles in adopting E – Commerce Applications. Future of E – commerce.

Unit –4 16 Periods
Electronic Payment systems – Overview of Electronic Payment Systems, Cyber-cash (Customer to Merchant Payments, Peer to Peer Payments, Security), Smart Card, Electronic Fund Transfer, Portals: Introduction to portals – Calendaring and scheduling, functions of government portal., education portal, enterprise portal, business portal, E-commerce portals, Building own website: Reasons for building own websites, Ideal website, Domain registration, web hosting and promotion.

Unit –5 12 Periods
 Electronic Data Interchange: Concept of EDI, difference between paper based Business and EDI Based business, Advantages of EDI, Application areas for EDI, Action plan Implementing EDI, Factors influencing the choice of EDI, Software Concept of Electronic. Signature, Access Control, Network Enabled EDI, EDI Advantages & Disadvantages of EDI, Limitations of EDI.

Unit –6 16 Periods
 E-Security: Introduction to security, Electronic security, Attaching methods, Security practices, Cryptography, Hacker, Hacker’s view, Secure Electronic transaction (SET), Secure socket layer(SSL), Practical tips to secure E-commerce, security tools, Electronic Commerce Act, Virtual private network.
 Internet security: Secure Transactions, Computer monitoring, Privacy issues, Privacy on the internet, Corporate E- mail Privacy.

RECOMMENDED BOOKS

1. E- Commerce and web designing by R. Goel and Ramesh Chandra, JPC- 4771/ 23 Ansari road- Darya Ganj- 110002.
2. Electronic Commerce – A Manager’s Guide by Ravi Kalakota and Andrew B. Whinston; Addison Wesley (Singapore) Pvt Ltd, New Delhi.
3. “E-Business – Roadmap for Success” by Ravi Kalakota and Maxia Robinson; Addison Wesley (Singapore) Pvt Ltd, New Delhi.
4. E-Business (R) Evolution by Amor; Addison Wesley (Singapore) Pvt Ltd, New Delhi
5. Ontiers of Electronic Commerce by Ravi Kalakota and Andrew B. Whinston; Addison Wesley (Singapore) Pvt Ltd, New Delhi11
6. E-Business with Net Commerce (with CD) by Shurety; Addison Wesley(Singapore) Pvt Ltd, New Delhi.
7. E-commerce by C,S,V. Murthi Himalaya Publication house
8. The Internet Compete Reference by Harley Hahh, Tata McGraw Hill Edition.

SUGGESTED DISTRIBUTION OF MARKS

| Unit No. | Time Allotted (Hrs) | Marks Allotted |
|--------------|---------------------|----------------|
| 1 | 10 | 10 |
| 2 | 16 | 20 |
| 3 | 10 | 10 |
| 4 | 16 | 15 |
| 5 | 12 | 10 |
| 6 | 16 | 15 |
| Total | 80 | 80 |

4.3 INFORMATION SECURITY & CYBER LAWS

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Rationale

This course has been designed by keeping in view the basic computer users and information system managers. The concepts are needed to understand risks and how to deal with them. It is hoped that the student will have a wider perspective on security in general and better understanding of how to reduce and manage the security risks.

DETAILED CONTENTS

- Unit –1 12 Periods
History of Information Systems and its Importance, basics, Changing Nature of Information Systems, Need of Distributed Information Systems, Role of Internet and Web Services, Information System Threats and attacks, Classification of Threats and Assessing Damages.
- Unit –2 16 Periods
Security in Mobile and Wireless Computing- Security Challenges in Mobile Devices, authentication Service Security, Security Implication for organizations, Laptops Security, Basic Principles of Information Security, Confidentiality, Integrity Availability and other terms in Information Security, Information Classification and their Roles.
- Unit –3 16 Periods
Security Threats in E-Commerce, Virtual Organization, Business Transactions on Web, E-Governance , Concepts in Electronics payment systems, E-Cash, Credit/Debit Cards. Physical Security- Needs, Disaster and Controls, Basic Tenets of Physical Security and Physical Entry Controls, Access Control- Biometrics, Factors in Biometrics Systems, Benefits, Criteria for selection of biometrics, Design Issues in Biometric Systems, Interoperability Issues, Economic and Social Aspects.
- Unit –4 16 Periods
Digital Signature, Requirement of Digital Signature System, Finger Prints, Firewalls, Design and Implementation Issues, Policies Network Security- Basic Concepts, Dimensions, Perimeter for Network Protection, Network Attacks, Need of Intrusion Monitoring and Detection.
- Unit –5 20 Periods
Security metrics- Classification and their benefits Information Security & Cyber Law, IPR, Patent Law, Copyright Law, Information technology Act 2000 (ITA -2000), Legal Issues in Data mining Security, Building Security into Software Life Cycle Ethics- Ethical Issues, Issues in Data and Software Privacy, Overview of Cyber Crimes & its types, Punishment for: Identity theft, violation of privacy, cyber terrorism, transmitting or publishing obscene material .

RECOMMENDED BOOKS

1. Godbole, “ Information Systems Security”, Willey
2. Merkov, Breithaupt, “ Information Security”, Pearson Education
3. Yadav, “Foundations of Information Technology”, New Age, Delhi
4. Schou, Shoemaker, “ Information Assurance for the Enterprise”, Tata McGraw Hill
5. Sood, “Cyber Laws Simplified”, Mc Graw Hill
6. Furnell, “Computer Insecurity”, Springer
7. IT Act 2000

SUGGESTED DISTRIBUTION OF MARKS

| Unit No. | Time Allotted (Hrs) | Marks Allotted |
|--------------|---------------------|----------------|
| 1 | 12 | 10 |
| 2 | 16 | 20 |
| 3 | 16 | 10 |
| 4 | 16 | 15 |
| 5 | 20 | 25 |
| Total | 80 | 80 |

4.4 OPEN SOURCE SOFTWARE

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Rationale

This course is aimed at providing the students with a fairly good knowledge and understanding of Open Source Software. After completion of this subject students will be able to use copyright free Open Source Software products in research and collaborate in enhancement of these OSS products.

DETAILED CONTENTS

Unit –1

16 Periods

Introduction: Open Source Origins, Differences among Open Source, freeware, proprietary and other software. Principle and Techniques of Open Source Development, Issues in Open Source Software Development.

Unit –2

12 Periods

Legal Issues: Copyright and IPR, Open Source Licenses, Open standards, W3C Protocols, Role of XML in Open Source Software Development.

Unit –3

16 Periods

Open source operating systems: LINUX: Introduction, General Overview Kernel Mode and user mode Process, Advanced Concepts, Scheduling, Personalities, Cloning, Signals, Development with Linux Basic LINUX Commands. .

Unit –4

16 Periods

OPEN SOURCE DATABASE - MySQL: Introduction, Starting, terminating and writing your own SQL tables, Record selection Technology, Working with strings, Date and Time, Sorting Query Results, Generating Summary.

Unit –5

14 Periods

OPEN SOURCE PROGRAMMING LANGUAGES -PHP: Introduction, Programming in web environment, variables, constants, data types, operators, Statements, Functions, Arrays.

Unit –6

06 Periods

Case studies related to successful implementation of open source software.

LIST OF RACTICALS

1. To install linux/Fedora/ ubuntu and understand its file system i.e. ext2, ext3.
2. To configure LINUX OS using LILO, Grub.
3. Introduction of LINUX shell-(Korn, Bourne, C Shell) and using shell commands.
4. To use XML and prepare database in XML.
5. To use MySQL and create tables in MySQL.
6. To prepare Web page using PHP.

7. To prepare Web forms using PHP and store database in MySQL.

RECOMMENDED BOOKS

1. Beginning PHP5, Apache, MySQL, Web Development by Elizabeth Naramore, Jason Gerner, Yann Le Publishing Inc.
2. Unix for Programmers and Users by Graham Glass, King Ablas; Pearson Education
3. Remy Card, Eric Dumas and Frank Mevel, "The Linux Kernel Book", Wiley Publications, 2003.
4. Steve Suchring, "MySQL Bible", John Wiley, 2002
5. Rasmus Lerdorf and Levin Tatroe, "Programming PHP", O'Reilly, 2002
6. Steven Holzner, "PHP: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.
7. Vikram Vaswani, "MYSQL: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.

SUGGESTED DISTRIBUTION OF MARKS

| Unit No. | Time Allotted (Hrs) | Marks Allotted |
|--------------|---------------------|----------------|
| 1 | 16 | 15 |
| 2 | 12 | 15 |
| 3 | 16 | 15 |
| 4 | 16 | 15 |
| 5 | 14 | 15 |
| 6 | 06 | 05 |
| Total | 80 | 80 |

4.4 TALLY ACCOUNTING

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RATIONALE:

This subject enables the students to understand the basic concept of accounting. It also allows to appreciate the feature and enable them to use the accounting package “Tally”

DETAILED CONTENTS

- Unit –1 18 Periods
Basic Concepts of Accounting, Financial Statements, Financial Statement Analysis, Cost Centre, Basic concepts of Inventory, Tally Configuration, Data Directory & Folders configuration, Single & Multiple User, Tally Screen Components, Mouse / Keyboard Conventions & Key, Combinations, Switching between screen areas, Quitting Tally. Maintaining Company Data, Basic Company Details, Create/Alter/Select/Load/Close a Company, Chart of Accounts, Company Features, and Configuration.
- Unit –2 14 Periods
1. Create, Alter & Display
a. Groups and Ledgers
b. All accounting voucher types
2. Accounting Voucher transactions, Account Invoice transactions, Excise Invoice, Export Invoice, Transactions using Bill-wise details.
3. Journal Transactions, payment voucher, Godown summary
4. Creating pay-roll masters , Processing pay-roll in tally, Accounting for employer P.F. and G.P.F. contributions 3. Tally E-text Filling 6Hrs
- Unit –3 10 Periods
1. Reports like balance sheet, Profit & Loss account, Ratio analysis Trial Balance.
2. Accounts books like cash / bank book, All Led g e r s Group summary & vouchers, Sales, purchase & journal registers.
3. Cost centre & category summary, Cost centre breakup ledger & group breakup, outstanding receivables & payables, interest receivable & payable, Statistics, Cash & Fund flow, Day book List of Accounts, Reversing journals, optional vouchers, postdated vouchers.
- Unit –4 10 Periods
1. Create, Alter & Display Stock Groups and Stock Items,
2. All inventory voucher types and transactions Inventory details in accounting vouchers.

3. Reports like Stock summary, Inventory books like Stock item, Group summary, Stock transfers, Physical stock register, Movement analysis, Stock group & item analysis, stock category analysis Ageing analysis, Sales order & Purchase order book, Statement of inventory related to Godowns, categories, stock query, Reorder status, Purchase & Sales order summary, Purchase & Sales bill pending, Exception reports like negative stock & ledger, overdue receivables & payables, memorandum vouchers, optional vouchers, post-dated vouchers, reversing journal .

Unit –5

12 Periods

- 1 Cheque Printing, Common printing options, Different printing formats, MultiAccount printing, Dynamic- Report specific options.
2. Creating Group Company, Use of Tally vault, Using Security control & defining different security levels, Use of Tally Audit.
3. Back-up & Restore, Splitting company data, Export & import of Data, ODBC compliance, use of E-mail, Internet publishing, Upload, web browser & online help, Re-write data.

LIST OF PRACTICALS

1. Preparation of trial balance using tally.
2. Profit and loss accounts using tally.
3. Balance sheet preparation using tally.

RECOMMENDED BOOKS

1. IMPLEMENTING TALLY 9 BY Vishnu Priya Singh; COMPUTECH PUBLICATIONS Ltd,
2. TALLY ERP 9 TRAINING GUIDE - 4TH REVISED & UPDATED EDITION Paperback – 2018 by Asok K. Nadhani

SUGGESTED DISTRIBUTION OF MARKS

| Unit No. | Time Allotted (Hrs) | Marks Allotted |
|--------------|---------------------|----------------|
| 1 | 18 | 25 |
| 2 | 14 | 20 |
| 3 | 10 | 10 |
| 4 | 10 | 10 |
| 5 | 12 | 15 |
| Total | 64 | 80 |

SUGGESTION

4.6 MAJOR PROJECT

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Major Project aims at developing innovative skills in the students whereby they apply in totality the knowledge and skills gained through the course work in the solution of particular problem or by undertaking a project. The individual students have different aptitudes and strengths. Project work, therefore, should match the strengths of students. For this purpose, students should be asked to identify the type of project work, they would like to execute. It is also essential that the faculty of the respective department may have a brainstorming to identify suitable project assignments for their students. The project assignment can be individual assignment or a group assignment. The students should identify themselves or accept the given project assignment at least two to three months in advance. The project work identified in collaboration with industry should be preferred. The project assignments may consist of:

- Installation of computer systems, peripherals and software
- Programming customer based applications
- Web page designing including database connectivity
- Database applications
- Networking (Cabling, Hubs, Switch etc)
- Software Development
- Fabrication of components/equipment (computer related components)
- Fault-diagnosis and rectification of computer systems and peripherals
- Bringing improvements in the existing systems/equipment
- Projects related to Multimedia
- Projects related to Computer Graphics
- Web Hosting
- Configuration of Network Operating System (Windows, Linux)
- Configuration of servers (Proxy, DNS etc)
- Create the Projects based on Inventory control, online attendance system, Payroll , Banking, Hotel Industry, Tourism, Reservation , Games and quiz.

A suggestive criterion for assessing student performance by the external (personnel from industry) and internal (teacher) examiner is given in table below:

| Sr. No. | Performance criteria | Max.** marks | Rating Scale | | | | |
|--------------------|-------------------------------------------------------------------|--------------|--------------|-----------|-----------|-----------|-----------|
| | | | Excellent | Very Good | Good | Fair | Poor |
| 1. | Selection of project assignment | 10 | 10 | 8 | 6 | 4 | 2 |
| 2. | Planning and execution of considerations | 10 | 10 | 8 | 6 | 4 | 2 |
| 3. | Quality of performance | 20 | 20 | 16 | 12 | 8 | 4 |
| 4. | Providing solution of the problems or production of final product | 20 | 20 | 16 | 12 | 8 | 4 |
| 5. | Sense of responsibility | 10 | 10 | 8 | 6 | 4 | 2 |
| 6. | Self expression/ communication skills | 5 | 5 | 4 | 3 | 2 | 1 |
| 7. | Interpersonal skills/human relations | 5 | 5 | 4 | 3 | 2 | 1 |
| 8. | Report writing skills | 10 | 10 | 8 | 6 | 4 | 2 |
| 9. | Viva voce | 10 | 10 | 8 | 6 | 4 | 2 |
| Total marks | | 100 | 100 | 80 | 60 | 40 | 20 |

The overall grading of the practical training shall be made as per following table

| | Range of maximum marks | Overall grade |
|------|------------------------|---------------|
| i) | More than 80 | Excellent |
| ii) | 79 > 65 | Very good |
| iii) | 64 > 50 | Good |
| iv) | 49 > 40 | Fair |
| v) | Less than 40 | Poor |

In order to qualify for the diploma, students must get “Overall Good grade” failing which the students may be given one more chance of undergoing 8 -10 weeks of project oriented professional training in the same industry and re-evaluated before being disqualified and

declared “not eligible to receive diploma ”. It is also important to note that the students must get more than six “goods” or above “good” grade in different performance criteria items in order to get “Overall Good” grade.

Important Notes

1. This criteria must be followed by the internal and external examiner and they should see the daily, weekly and monthly reports while awarding marks as per the above criteria.
2. The criteria for evaluation of the students have been worked out for 100 maximum marks. The internal and external examiners will evaluate students separately and give marks as per the study and evaluation scheme of examination.
3. The external examiner, preferably, a person from industry/organization, who has been associated with the project-oriented professional training of the students, should evaluate the students performance as per the above criteria.
4. It is also proposed that two students or two projects which are rated best be given merit certificate at the time of annual day of the institute. It would be better if specific nearby industries are approached for instituting such awards.

The teachers are free to evolve another criteria of assessment, depending upon the type of project work.

The students must submit a project report of not less than 50 pages (excluding coding). The report must follow the steps of Software Engineering Concepts

It is proposed that the institute may organize an annual exhibition of the project work done by the students and invite leading Industrial organizations in such an exhibition. It is also proposed that two students or two projects which are rated best be given merit certificate at the time of annual day of the institute. It would be better if specific industries are approached for instituting such awards.