Network Security
## Syllabus

<table>
<thead>
<tr>
<th>Unit</th>
<th>Topic</th>
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</table>
| I     | **Computer Security**: Introduction, Need for security, Principles of Security, Types of Attacks  
        **Cryptography**: Plain text and Cipher Text, Substitution techniques, Caesar Cipher, Mono-alphabetic Cipher, Polygram, Polyalphabetic Substitution, Playfair, Hill Cipher, Transposition techniques, Encryption and Decryption, Symmetric and Asymmetric Key Cryptography, Steganography, Key Range and Key Size. |
| II    | **Symmetric Key Algorithms and AES**: Algorithms types and modes, Overview of Symmetric key Cryptography, Data Encryption Standard (DES), International Data Encryption Algorithm (IDEA), RSA, RC5, Blowfish, Advanced Encryption Standard (AES) |
| III   | **Asymmetric Key Algorithms, Digital Signatures and RSA**: Brief history of Asymmetric Key Cryptography, Overview of Asymmetric Key Cryptography, RSA algorithm, Symmetric and Asymmetric key cryptography together, Digital Signatures, RSA, RC4, AES, 3DES, SHA, RSA, DSS, PKI, EC algorithms. |
| IV    | **Digital Certificates and Public Key Infrastructure (PKI)**: Digital Certificates, Private Key Management, The PKIX Model, Public Key Cryptography Standards (PKCS), XML,PKI and Security, Hash functions, Key Predistribution, Blom’s Scheme, Diffie-Hellman Key, Predistribution, Kerberos, Diffie-Hellman. |
| V     | **Network Security, Firewalls and Virtual Private Networks**: Brief Introduction to TCP/IP, Firewalls, IP Security, Virtual Private Networks (VPN), Intrusion  
| VI    | **User Authentication and Kerberos**: Authentication basics, Passwords, Authentication Tokens, Certificate-based Authentication, Biometric Authentication, Kerberos, Key Distribution Center (KDC), Security Handshake Pitfalls, Single Sign On (SSO) Approaches |

**Books:**  
*(Unit I: Chapter 1,2, Unit II: Chapter 3, Unit III: Chapter 4, Unit IV: Chapter 5, Unit V: Chapter 6, Unit VI: Chapter 7)*

**References:**  
UNIT –I

1. Describe the principle of security.
2. Write a short note on security policy.
3. Why do we need security?
4. What are the legal and ethical issues involved in computer security?
5. Give the classification of attack.
6. Write the difference between active and passive attack.
7. Write a short note on Denial of service attack.
8. Explain the types of virus.
9. How will you protect computer from virus?
10. Describe the lifecycle of virus.
11. Write a short note on worms.
12. Write a short note on Trojan horse.
13. Write a short note on cryptography.
14. Explain the crytography techniques.
15. Write a short note on ceaser cipher.
16. Write a short note on modified ceaser cipher.
17. Write a short note on mono alphabetic cipher.
18. Write a short note on polyalphabetic cipher.
19. Write a short note on Polygram substitution
20. Write a short note on transposition method.
21. Convert the following plain text into playfair
   i. Today is sunday
22. Write a short note on simple columnar technique.
23. What is vernam cipher.
24. Describe steganography.
25. Define Cryptosystem. Explain it with suitable diagram.
26. Explain the following terms:
   i)Encryption ii)Decryption iii)Ciphers iv)Cryptanalysis
27. What are ciphers? What is the difference between “Transposition Cipher” and “Substitution Cipher”?
28. Define Monoalphabetic and polyalphabetic cipher. State whether following ciphers are monoalphabetic or polyalphabetic:
   i. Vigenere cipher     ii. Affine cipher
   iii. Autokey cipher iv. Shift key cipher
29. Write a short note on :Affine cipher/Hill Cipher/Vernam cipher/permutation cipher
30. What is cryptanalysis? Discuss different cryptanalysis attack.
31. Explain the concept of public key and Private key used in cryptography. What is the advantage of having two separate keys?
32. Compare between Symmetric cryptography and Asymmetric Cryptography.
33. Explain the concept of Symmetric Cryptography in detail.
34. Explain the concept of Asymmetric Cryptography in detail
35. Explain in detail RSA algorithm.
36. What is Euclidean theorem? Explain it with suitable example.
38. What are the different modes of DES? Explain any one in detail

Problems:
1. Use an affine cipher to encrypt the word “android “with the key pair(5,2)

2. Encryption key for permutation cipher is (5 6 1 3 7 4 2 ).Find the decryption key and decrypt the following ciphertext:
   IO M S N S I O S C R I I U C C T S E U Y L Z S F Z U S

3. Use the vigenere cipher with keyword “HEALTH” to encipher the message,”Life is full of surprises”
UNIT-II

1. What are the different types of algorithms used for encryption?
2. Write the difference between stream cipher and Block cipher algorithm.
3. Describe the algorithm modes
   a. ECB       b.CDC       c.CBC       d.OFB
4. Give advantages and disadvantages of different modes of algorithm.
5. Write the difference ECB and CDC.
6. How DES algorithm is attacked.
7. How IDEA algorithm works?
8. Explain the working of RC4.
9. Explain the working of RC5.
10. What is Blowfish algorithm? How keys are generated using Blowfish?
11. Describe the AES algorithm.
12. Explain key expansion steps using AES.
13. How one time initialization works in AES.
15. What is Digital Signature? Explain the concept in detail.
16. Write a short note on ElGamal Signature Scheme.
17. What is Message digest? Explain its importance.
18. Define Hash function. Discuss security of Hash functions.
19. Explain in detail Birthday attack.
20. Explain the following terms:
    i)Key Predistribution ii)session key distribution iii) key agreement
22. Discuss Blom’s key predistribution scheme.
23. State the Algorithm for One- Time Signature Scheme
UNIT III

1. Write the difference between symmetric and Asymmetric cryptography.
2. Write advantage and Disadvantage of symmetric key cryptography.
3. Write a short note on Asymmetric key cryptography.
4. Explain RSA algorithm.
5. What is digital Envelop?
6. Explain best features of symmetric and asymmetric algorithm?
7. What is message digest? What are the requirementof it?
8. Explain the concept of Digital Signature.
9. What are requirement of a Message Digest?
10. What is collosion of message?
11. What is Birthday attack?
12. How MD5 works?
13. Explain the operation of MD5.
14. Give the advantages of MD5.
15. How SHA works?
16. Difference between MD5 and SHA.
17. Write short note on Message authentication code.
18. How HMAC works?
19. Discuss the problems with HMAC.
20. With example explain knapsack algorithm.
21. With help of E1Gamal explain problems with the public key exchange.
22. Explain Man in the middle attack
24. Explain in detail OSI security Architecture.
25. What are passive attacks? Discuss various passive attacks.
26. What are active attacks? Discuss various passive attacks.
27. Differentiate between active and passive attacks. Explain both these types of attacks giving an example of each.
28. What are security services? Explain the following security services: i)Authentication ii)Data integrity
29. Explain the following terms: i)Authentication  ii)Access Control  iii)Non-Repudiation
30. State and Explain various security mechanisms.
31. Differentiate between Passive attack & active attack.
32. List & explain the categories of security mechanism of x.800.
33. List & explain the categories of security services of x.800.
34. Describe OSI security architecture.
35. What are the problems of computer security mechanism?
36. Describe CIA Triad of computer security.
37. Explain Network security model.
UNIT-IV

1. Describe the concept of Digital Certificate.
2. What is Certification Authority?
3. Describe the various fields in digital certificate.
4. Describe the various steps involved in Digital certificate creation.
5. How can we verify a Digital Certificate?
7. What is cross certification?
8. What is certificate revocation?
9. Explain Digital certificate validation process.
10. Difference between OCSP and SCVP.
11. Describe the types of certificates.
12. How can we protect private key?
13. List and explain PKIX services.
14. Explain PKIX model.
15. Describe password based encryption standard.
16. List Public key encryption standards.
17. Explain XML Encryption.
19. What are three threats associated with user authentication over a network?
20. What four requirements were defined for Kerberos?
21. Discuss X.509 Authentication service.
22. In PGP, explain how Bob and Alice exchange the secret key for encrypting messages.
23. Explain the general format of PGP message.
24. In S/MIME, explain how Bob and Alice exchange the secret key for encrypting messages.
25. Write a short note on S/MIME functionality.
26. Write short note on Kerberos
UNIT – V

1. Draw TCP/IP architecture diagram and explain it.
2. Briefly discuss the fields inside TCP segment.
3. Briefly discuss the fields inside IP datagram format.
4. Explain the exchange of data from the source to destination from different layers in TCP/IP.
5. How firewall protects attacks from untrusted network?
6. Describe the types of firewall.
7. What are the different types of techniques attacker can use to break the firewall.
8. Give the advantages and disadvantages of firewall.
9. Write short note on VPN.
10. Explain static and dynamic web page.
11. Write short note on SSL.
12. How SSL works?
13. How SSL can be attacked by buffer overflow?
14. Difference between SSL AND TLS.
15. Write short note on SHTTP?
16. How Time stamping protocol works?
17. Describe the components of SET.
18. Describe the SET process.
19. Draw the block diagram and explain the SET model.
20. Difference between SSL and SET.
21. With the help of block diagram explain 3-D secure internal flow.
22. Describe the model of electronic money.
23. Give the security mechanism used in Electronic money.
24. Write short note on Privacy enhanced mail.
25. Write short note on pretty good privacy.
27. How security is provided in GSM.
28. How security is provided in 3G
29. What services are provides by IPsec?
30. Explain Transport and Tunnel mode.
31. Write a short note on ESP.
32. What are the applications of IP security?
33. What are the benefits / advantages of IP security?
34. What are the groups of IP security document?
35. What is the role of IPSec in routing application?
36. Describe transport mode & tunnel mode.
37. How do IPSec maintain it policy in applications?
38. What parameters identify an SA & what parameters characterize the nature of SA?
39. What is the concept of IP Security Association in IPSec?
40. What are the attributes of Security Association database?
41. Describe ESP packet format
42. Describe anti-relay attack / service.
43. Compare transport mode / tunnel mode of IP.
44. Explain the term: Security Association Bundle.
45. Explain the protocols supported in Transport mode & Tunnel mode.
46. What are the basic combinations of Security Association?
47. Explain IPSec key management.
48. What is the concept of IKE? What are its features? Explain IKE header format?
UNIT –VI

1. How clear text password works?
2. How the passwords are protected?
3. Describe the process of storing message digest of password in the user database.
4. Describe the process of password encryption.
5. Write the problems with password.
6. What are Authentication tokens?
7. What are the different types of Authentication tokens?
8. How does certificate based authentication works?
9. How does Biometrics authentication works?
10. How does Keberos works?
11. What is Key Distribution Center?
12. What is Security Handshake Pitfall?
13. Describe Mutual Authentication and discuss types of it.
15. What is a firewall? Explain the necessity of firewall.
17. What is Application Level Gateway? Explain its working.
18. What are advantages and disadvantages of Application Level Gateway? How is it different from circuit level gateway and packet filter firewall?
19. What is DMZ? Explain the importance of DMZ.
20. What is malicious software? Classify it.
22. What is a virus? Discuss different types of viruses.
23. How viruses are different from worms and Trojan horses?
24. Explain the structure of a virus.
25. What is DOS? How DOS is different from DDOS?
27. What is Intrusion Detection System? How IDS is different from firewall?
28. Explain different types of Intrusion Detection System
ASP.NET with C#
# Syllabus

## Unit-I
Review of .NET frameworks, Introduction to C#, Variables and expressions, flow controls, functions, debugging and error handling, OOPs with C#, Defining classes and class members.

## Unit-II
Assembly, Components of Assembly, Private and Shared Assembly, Garbage Collector, JIT compiler. Namespaces Collections, Delegates and Events. **Introduction to ASP.NET 4:** Microsoft.NET framework, ASP.NET lifecycle. **CSS:** Need of CSS, Introduction to CSS, Working with CSS with visual developer.

## Unit-III
**ASP.NET server controls:** Introduction, How to work with button controls, Textboxes, Labels, checkboxes and radio buttons, list controls and other web server controls, web.config and global.asax files.  
**Programming ASP.NET web pages:** Introduction, data types and variables, statements, organizing code, object oriented basics.

## Unit-IV
**Validation Control:** Introduction, basic validation controls, validation techniques, using advanced validation controls.  
**State Management:** Using view state, using session state, using application state, using cookies and URL encoding.  
**Master Pages:** Creating master pages, content pages, nesting master pages, accessing master page controls from a content page.  
**Navigation:** Introduction to use the site navigation, using site navigation controls.

## Unit-V
**Databases:** Introduction, using SQL data sources, GridView Control, DetailsView and FormView Controls, ListView and DataPager controls, Using object datasources.  
**ASP.NET Security:** Authentication, Authorization, Impersonation, ASP.NET provider model

## Unit-VI
**LINQ:** Operators, implementations, LINQ to objects,XML,ADO.NET, Query Syntax.  
**ASP.NET Ajax:** Introducing AJAX, Working of AJAX, Using ASP.NET AJAX server controls.  
**JQuery:** Introduction to JQuery, JQuery UI Library, Working of JQuery
Books:

Beginning Visual C# 2010, K. Watson, C. Nagel, J.H Padderson, J.D. Reid, M.Skinner, Wrox (Wiley) 2010. (Unit I: Chapter 1 to 10, Unit II: Chapter 11, 13)

Murach’s ASP.NET 4 Web Programming with C# 2010, 4th Edition, Anne Boehm, Joel Murach, SPD. (Unit III: Chapter 6 Unit IV: Chapter 7,8,9,10 Unit V: Chapter 12,13,14,15,16,17,19,20 Unit VI: Chapter 21)

Beginning ASP.NET 4 in C# and VB, I. Spanjaars, Reprint 2011. (Unit II: Chapter 2 and 3 Unit III: Chapter 5 Unit VI: Chapter 14)

References:
Unit I

1. Discuss the brief history of .NET.
2. What is .NET? Enlist the feature of .NET.
3. Draw and explain the .NET framework architecture.
4. Explain Write() and WriteLine() with an example.
5. Discuss the implicit and explicit datatype with an example.
6. OR Elaborate the concept of boxing and unboxing.
7. Enlist the various ways of debugging available in .NET with an appropriate examples.
8. What are the characteristics of C#?
10. List & Explain the Features of .NET 4.0 in detail.
11. Explain the .NET architecture.
12. Explain CLR, CLS, CTS, JIT.
13. What is Common Language Runtime (CLR)?
14. Explain common type system (CTS)?
15. What is Common Language Specification (CLS)? Why it so important?
16. What is Garbage Collector? How it works?
17. What is .NET assembly? Explain its types.
18. Explain Client Application Development and Server Application Development.
19. What are the major features of C#?
20. Explain framework base class library.
21. Explain .NET features.
22. What are core C# features?
23. What are the characteristics of C#? Explain.
24. What are the applications of C#?
25. List & Explain the Data types available in C#.
26. List & Explain Different types of Operators available in C#.
27. What are Implicit Casting and Explicit Casting?
28. How to declare Namespace in C#?
29. Explain foreach loop in C#.
30. Write a program to insert and read elements from the Array.
31. Write a program to give user choice to select destination city for travel.(Use Switch Case)
32. Write a note on Jump statement.
33. What is Jagged Array?
34. Explain with example any five methods of String.
35. Explain types of function parameters.
36. Write a program to demonstrate Function Overloading.
37. Write a note on command line arguments.
38. What is debugging in C#.
39. Explain monitoring variable content.
40. Explain how to debug in Break mode in .NET IDE.
41. What are the types of errors?
42. What is user define exception? Explain with Syntax
43. What are the main concepts of OOPs?
44. Explain the Object Lifecycle.
45. What is inheritance? What are the different forms of inheritance?
46. Which are the types of polymorphism explain with an example?
47. Illustrate with an example, how the System.Object class works?
48. How to define class in C#?
49. Write a simple program to demonstrate use of class.
50. What is operator overloading?
51. How to overload unary operator? Explain with simple example.
52. How to overload binary operator? Explain with simple example.
53. How a method of a class is defined?
54. What is constructor? Is it compulsory to use constructor in a class?
55. Explain the types of constructors.
56. Describe the importance of destructor?
57. Write a note on abstract class?
58. Explain the difference between interface and abstract classes.
59. What is the difference between class and structure?
60. How to define structure in C#?
61. Differentiate between structs and classes.
Unit II

1. What is assembly? Discuss the purpose of assembly in .NET framework.
2. What is namespace? Write in details about System namespace.
3. State the role namespace in .NET framework.
4. What is meant by property? Why are they called as smart field.
5. Write the difference between private and shared assembly.
6. What are the application services provided by ASP.NET?
7. Draw and discuss the life cycle of C#.
8. State the role of ASP.NET page life cycle, while developing web page.
9. Explain the requirement of delegate with an example.
10. How does the CSS overcome with drawback of HTML?
11. What are the different types of collections in .NET?
13. Explain HashTable collection.
14. What are the different types of generic collections?
15. Which interfaces are declared in System.Collections namespace?
16. Explain the types of comparisons between objects.
17. What is ‘is’ operator and ‘as’ operator?
18. Explain the concept of Boxing and Unboxing.
19. Explain IComparable interface and IComparer interface.
20. What is an Event? Define Delegate.
21. What are the types of Delegates?
22. Explain how to implement Delegates in C#.NET.
23. What are delegates and why are they required?
24. How do you validate the controls in an ASP .NET page?
25. What is graphical user interface (GUI)? Give its advantages.
26. List and explain any five common properties and events of controls.
27. How can we display an icon or a bitmap image on the Button control?
28. What is the difference between Label and Link Label?
29. What is the difference between Radio button and Check box control?
30. Give any five properties of Textbox control.
31. What is the function of the CheckState property of the CheckBox control?
32. What is the function of the AutoCheck property of the Radio button control?
33. What is the use of ListView control?
34. What is the use of Tab control?
35. What is the use of menus and toolbars in our windows application?
36. Give the properties of ToolstripMenuItem.
37. Which items are present in the Toolstrip Item Collection Editor?
38. What is the difference between SDI and MDI?
39. Give the advantages of MDI application.
Unit III

1. Enlist the different ASP.NET server controls with their properties.
2. Explain Sorted, SelectedMode, MultiColumn, SelectedItem and SelectedIndex properties of ListBox control.
3. Discuss the role of web.config file and global.asax file in ASP.NET application.
4. How does the code is organizing in ASP.NET web page?
5. Explain with an example.
6. Where we can use Static Website?
7. Explain need of Dynamic Content.
8. Give the advantages of ASP.NET.
10. What are page events?
11. What are control events?
13. What is ViewState?
14. Explain any two ASP.NET server control.
15. Explain any five Common Properties of the server controls.
16. Explain any five HTML controls.
17. What is ASP.NET Anchor Control?
18. Explain Validation controls available in .NET.
19. Write a note on state management in ASP .NET.
20. What are the rules of web.config file?
21. Explain the work of session state in ASP.NET.
22. What is the application state in ASP.NET?
23. What is Global.asax file? Explain its structure.
24. What is CSS? Give its advantages and disadvantages.
25. How to write CSS style?
26. What are the types of CSS?
27. How to add Themes to our application?
Unit IV

1. How can we access the master page controls from a content page?
2. Explain any two site navigation controls in ASP.NET with an example.
3. What is the need of Session and Application object in ASP.NET web pages?
4. Explain any two validation controls with an appropriate example.
5. How does the cookie help in state management of ASP.NET web programming?
6. Write the steps to create the masterpage and display the layout of masterpage along with content page.
7. Which are the types of intrinsic objects?
8. Explain any three intrinsic objects.
10. What is need for State Management Techniques?
11. What is query string in ASP.NET?
12. Explain the cookies in ASP.NET.
13. What is a SESSION and APPLICATION object?
14. What is the use of master page?
15. How to create a Master Page using an existing design template.
16. Explain any two Site Navigation Controls in ASP.NET
17. Write a note on Menu Control and SiteMapDataSource control.
18. Explain Site Navigation in code in ASP.NET.
19. How to create a Simple User Control in ASP.NET?
20. How to validate user control?
Unit V

1. How does the ListView and DataPager control display the data on the browser?
2. Discuss in brief: 'ObjectDataSource' control.
3. Explain the three types of authentication available in ASP.NET.
4. Display the data with help of grid view, form view, details view.
5. Explain SQL server 2008 with its features.
8. Explain the any 5 SQL commands with their syntax and examples.
9. List & Explain the Data types supported in SQL Server 2008.
10. Introduce Microsoft ADO.NET? Explain the Data providers provided by ADO.NET.
11. Explain ADO .NET object model with help of suitable diagram.
12. List & Explain ADO .NET objects in short.
13. Explain in brief the Data Bound Controls.
14. Explain following Data bound Controls in brief.
   a. Single Item Control
   b. Paging Control
15. What are the 3 major types of connection objects in ADO.NET?
16. List the 4 common ADO.NET Namespaces?
17. List all the steps in order, to access a database through ADO.NET?
18. Explain DataAdapter object.
19. What is the difference between DataReader and DataAdapter?
20. How to display data in a DataGrid with relationship between two tables.
21. How to achieve DataBindings for TextBoxes using SQL Server in .NET.
22. When do you use ExecuteReader, ExecuteNonQuery, ExecuteScalar methods?
23. What is ADO .NET and what is difference between ADO and ADO.NET?
24. What is Crystal report?
25. How to create crystal report in ASP.NET? Explain with steps.
27. Explain the any two types of Operators with their list in LINQ.
28. Write LINQ query syntax in brief.
29. How to mix query syntax and extension methods?
30. What is LINQ to Objects?
31. What is Projections in LINQ?
32. Explain is LINQ to XML
33. Write short note on XPath.
34. Explain the main security aspects of ASP .NET in detail.
35. Explain the Provider Model of ASP .NET.
36. Write the details about providers in ASP .NET provider model.
37. State the ways of deployment of website in ASP .NET.
38. Explain in brief xCopy Deployment of website in Asp .NET.
39. How to publish the website in ASP .NET.
Unit VI

1. Write any two types of operators available in LINQ.
2. Explain the working of AJAX in ASP.NET with an example.
3. Discuss in brief the concept of Jquery.
4. Explain the working of AJAX.
5. List the advantages & disadvantage of AJAX.
6. Write short note on XMLHttpRequest Object.
7. Explain the basic steps for creating AJAX application with Asp .NET.
8. Write short note on ScriptManager&UpdatePanel Controls.
9. What is web service?
10. Explain the basic steps of creating web service in Visual studio 2010.
11. Brief the concept of JQuery.
12. Why we should prefer to use jQuery.
13. Explain the syntax of jQuery with the example.
14. What does dollar symbols ($) means in JQuery?
15. What is the use of Document Ready function?
16. Name some of the methods of JQuery used to provide effects?
17. List and explain jQuery selectors.
18. Write short note on jQuery event functions.
20. How to remove DOM element? Explain with example.
21. List and explain jQuery effect methods.
22. Write short note jQuery and Extensibility.
23. What is ASP.NET AJAX?
SOFTWARE TESTING
# Syllabus

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<td><strong>Test design techniques:</strong> Identifying test conditions and designing test cases, Categories of test design techniques, Specification-based or black-box techniques, Structure-based or white-box techniques, Experience-based techniques</td>
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<td><strong>Test management:</strong> Test organization, Test plans, estimates, and strategies, Test progress monitoring and control, Configuration management, Risk and testing, Incident management</td>
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<td>Unit-VI</td>
<td><strong>Tool support for testing:</strong> Types of test tool, Effective use of tools: Potential benefits and risks, Introducing a tool into an organization</td>
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</tbody>
</table>

## Books:

*(Unit I: Chapter 1,2, Unit II: Chapter 3, Unit III: Chapter 4, Unit IV: Chapter 5, Unit V: Chapter 6, Unit VI: Chapter 7)*  
**B2: FOUNDATIONS OF SOFTWARE TESTING** by Dorothy Graham, Erik van Veenendaal, Isabel Evans, Rex Black  
*(Unit I: Chapter 1, Unit II: Chapter 2, Unit III: Chapter 3, Unit IV: Chapter 4, Unit V: Chapter 5, Unit VI: Chapter 6)*

## References:

Software Testing by Yogesh Singh, Cambridge University Press  
Software Testing Principles, Techniques and Tools, M.G. Limaye, TMH  
Unit 1

1. Define the term testing. List the objectives of testing.
2. What are the causes of software defects?
3. Explain the role of testing in software development, maintenance and operations.
4. Compare testing and quality process.
5. What is Quality? Explain its importance.
7. How will you determine that testing in a software is enough?
8. Explain the following statement "Focusing on defects can help us plan our tests".
9. Write short note on "Defect clusters change over time".
10. Explain the testing principles.
11. Explain the fundamental test process.
12. Explain how test planning and test control are related to each other.
13. Who is a tester? Explain the role of the tester?
14. List the levels of independence from the lowest level of independence to the highest.
15. What factors should be kept in mind while reviewing and testing process?
16. What are the test closure activities?
17. Write short notes on:
   a. Evaluating exit criteria and reporting.
   b. Test implementation and execution.
   c. Test planning and control.
   d. Test closure activities.
Unit 2

1. Explain the V-model with the help of diagram.
2. Discuss the four test levels of V-Model. Explain the Iterative development model.
3. Explain the Rapid Application Development Model.
4. What is Agile Development Model?
5. Differentiate between Functional testing and Non Functional Testing.
6. What is structural testing?
7. Discuss confirmation and regression testing.
8. List the reasons for maintenance testing.
9. Describe the role of regression testing.
10. What are the triggers for maintenance testing?
11. What are the different types of planned modifications?
12. Describe adhoc corrective modifications.
13. Explain the six quality characteristics according to ISO 9126.
14. Explain Re-testing process.
15. Write short note on:
   a. Component Testing
   b. Integration Testing
   c. System Testing
   d. Acceptance Testing
16. Differentiate between Integration and component testing.
17. What is the difference between re-testing and regression testing?
1. Differentiate between Static and Dynamic testing.
2. What are the advantages of Static Testing?
3. Discuss the Review Process.
4. What are the phases of a Formal Review Process?
5. List the minimum set of points for performing the entry check.
6. Explain Lick off meeting.
7. Explain Review meeting and classify the defect severity.
8. Explain the role of moderator in Review process.
9. List the focuses that can be identified with the help of reviews.
10. Classify the different types of Review.
11. Discuss the goals of Walkthrough.
12. What are the objectives of technical review?
13. Explain the characteristics of Inspection.
14. What are the success factors for reviews?
15. Write short note on Coding standards.
16. Explain the role of author in Review process.
17. Explain the role of manager in Review process.
18. What are the different aspects of code structure?
Unit 4

1. Justify the statement "test analysis: Identify the test conditions".
2. What is IEEE 829 standard for Test design specification template?
3. "Test Implementation results in specifying test procedures or scripts." Discuss
4. What are the specification based testing techniques?
5. Where do we apply the different categories of testing techniques?
7. How do we design the test cases?
8. Explain Decision table testing.
9. What is state transition testing?
10. How do we test invalid transitions?
11. What is Use Case Testing?
12. What is Test coverage?
13. Differentiate between Statement Coverage and statement testing.
15. How do we use Decision table for test design?
16. Explain the structure based testing technique.
17. How do we measure coverage?
18. Differentiate between Decision coverage and decision testing.
19. What is IEEE 829 standard for Test CASE specification template?
20. Justify the statement "test design: specifying test cases".
21. Explain Exploratory testing technique.
22. What are the internal factors that are to be considered while deciding a test
23. What are the external factors that are to be considered while deciding a test
Unit 5

1. What are the skills required by test staff?
2. What are the objectives of test planning?
3. List the factors affecting test effort?
4. What are the different types of test strategies?
5. Explain the factors to be considered while selecting test strategy?
6. How do we monitor the progress of test activities?
7. Write short note on Test Control.
8. What is Configuration management?
9. Define Risk and discuss the levels of risks.
11. Explain Risk Management.
12. What are the components according to IEEE 829 standard test incident report template
13. Differentiate between Independent and Integrated testing?
14. What are the common metrics which are included for test monitoring?
15. What are the different Project Risks involved in testing process?
Unit 6

1. What are the features of test management tools?
2. Differentiate between Requirement management tool and Incident management tool.
3. What are the features of Configuration management tool?
4. Explain the characteristics of Review Process.
5. What are the risks factors involved in using tools?
6. Discuss the different levels of scripting.
7. What are the factors to be considered in selecting tools?
8. Write short note on Pilot Project.
9. What are the features of Test Comparators?
10. Explain the characteristics of Coverage management tools.
11. What are the potential benefits of using tools?
12. What are the features of Dynamic Analysis Tools?
13. Discuss the characteristics of Test Data preparation tools.
14. Write short note on Test Designing tools.
15. Differentiate between Load Testing tools and Monitoring tools.
ADVANCE JAVA
# Syllabus

| Unit-I | **Event Handling:** The delegation event model, Events, Event classes, Event Listener Interfaces, Using the Delegation event model, Adapter classes, inner classes  
**AWT:** Windows fundamentals, Working with frame windows, Control fundamentals, - Labels, Buttons, CheckBox, Radio button TextFileld, Understanding Layout Manager |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Unit-II</td>
<td><strong>Swing:</strong> JColorChooser, JComboBox, JFileChooser, JFrame, JLabel, JMenuBar, JOptionPane, JLayeredPane, JDesktopPane, JPanel, JPopupMenu, JProgessBar, JRootPane, JScrollPane, JSeparator, JSlider, JSplitPane, JTabbedPane, JTable, JTableHeader, JToolbar, JToolTip, JTree, JViewport, JEditorPane, JTextPane, JTextArea, JTextField, JPasswordField, JButton, JMenuItem, JCheckBox-MenuItem, JRadioButton-Menuitem, JCheckBox JRadioButton, JMenu</td>
</tr>
</tbody>
</table>
| Unit-III | **Introduction to servlets:** Need for dynamic content, java servlet technology, why servlets?  
**Servlet API and Lifecycle:** servlet API, servletConfig interface, ServletRequest and ServletResponse Interfaces, GenericServlet Class. ServletInputStream And ServletOutputStream Classes, HttpServletRequest Interface, HttpServlet Class, HttpServletRequest and HttpServletResponse Interfaces, HttpSession Interface, Servlet Lifecycle.  
**Working with servlets:** organization of a web application, creating a web application(using netbeans) , creating a servlet, compiling and building the web application |
| Unit-IV | **JDBC:** Design of JDBC, JDBC configuration, Executing SQL statement, Query Execution, Scrollable and updatable result sets, row sets, metadata, Transaction. **JSP:** Introduction, disadvantages, JSP v/s Servlets, Lifecycle of JSP, Comments, JSP documents, JSP elements, Action elements, implicit objects, scope, characterquoting conventions, unified expression language. |
### Unit-V

**Java server Faces:**
Need of MVC, what is JSF?, components of JSF, JSF as an application, JSF lifecycle, JSF configuration, JSF web applications (login form, JSF pages) **EJB:** Enterprise bean architecture, Benefits of enterprise bean, types of beans, Accessing beans, packaging beans, creating web applications, creating enterprise bean, creating web client, creating JSP file, building and running web application.

### Unit-VI

**HIBERNATE:** Introduction, Writing the application, application development approach, creating database and tables in MySQL, creating a web application, Adding the required library files, creating a java bean class, creating hibernate configuration and mapping file, adding a mapping resource, creating JSPs. **STRUTS:** Introduction, Struts framework core components, installing and setting up struts, getting started with struts.

### Books:

**B1** Java Complete Reference, Herbert Schildt, Seventh Edition, Tata McGraw Hill. (Unit I Chapter 20,21,22)

**B2** Core Java Vol. II – Advanced Features, Cay S. Horstmans, Gary Coronell, Eight Edition, Pearson Education (Unit II: Chapter 6, Unit IV: Chapter 4 and Oracle Java Documentation on UISWing)

**B3** Java EE 6 for Beginners, Sharanam Shah, Vaishali Shah, Shroff Publishers and Distributors (Unit III: Chapter 5,6,7, Unit IV: Chapter 13,14,15,16, Unit V: Chapter 18, 1,9,24,25, Unit V: Chapter 33,34,35,36,37,38)

### References:


Advanced Java Technology, Savaliya, Dreamtech.
Advanced Java

1. What is GUI? Explain its advantages.
2. What is swing? Explain its features.
3. Explain the difference between AWT & Swing components OR Heavyweight & Lightweight Components
4. Explain the different panes available in swing.
5. Explain in detail the Swing Components and the Containment Hierarchy.
6. Which methods are used in Swing for drawing?
8. Write a simple Swing program to demonstrate “Hello World” title of GUI window.
9. Differentiate between lightweight and heavyweight components.
10. Explain the following classes:
    a. JFrame b. JList c. JTable
    d. JTree  e. JTextField  f. JTextArea
    g. JProgressBar h. JTabbedPane i. JScrollPane
11. Explain ActionEvent class with an Example.
12. What is JFrame? Explain its features.
13. How JFrame constructors are used in different ways for creation of frame?
14. Explain creation of JFrame with help of simple program.
15. Write short note on JFrame actions.
16. Explain JFrame Event Handling with help of simple program.
17. Explain various frame borders with help of simple swing program.
18. Explain JInternalFrame with its constructors.
19. How can we create JInternalFrame? Demonstrate with simple example.
20. What is JWindow? Explain its Constructors? Give simple example for creation of JWindow?
21. What is JLabel? Explain its Constructors? Give simple example for creation of JLabel?
22. What is JTextField? Explain its Constructors? Give simple example for creation of JTextField?
23. Explain creation of checkbox and radio buttons in swing with help of simple program.
24. What is Menu Bar? Explain the components used for creation of Menu Bar. Give simple swing Menu Bar example.
25. What is custom data model & custom renderer?
26. Explain in detail the creation of fixed choice JList with its components?
27. Explain in detail the creation of changeable choice JList with help of example?
28. Write short note on List and Combo Box in swing.
29. Write a short program to demonstrate use of Combo Box and List in swing.
30. Explain JTable in swing with the steps of creating a Table.
31. How we can achieve sorting and filtering in swing.
32. What are Trees in Swing? Explain Tree nodes and Models.
33. How we can handle tree events in swing?
34. Write a program swing to demonstrate creation of a tree.
35. Explain Test Box in swing.
36. Write a simple swing program to show use of Text Box and Password field.
37. Write a simple swing program to show use of styled text.
38. Explain different types of progress indicators in swing.
39. Write short note creation of progress bar in swing.
40. When to use a Progress Bar & Progress Monitor?
41. List and explain the components of progress monitor API.
42. Write short note on split panes in swing. Explain the constructors & methods of it.
43. How to create Tabbed panes in swing?
44. Write short note on Desktop Pane & Internal frames in swing.
45. Explain the Web architecture with its associate terms.
46. What are the Types & Benefits of a Web Application?
47. Explain the need of Dynamic Website with its application Areas.
48. What is Servlet? Write Short note on Java Servlet Technology.
49. What are the benefits of Servlets?
50. List the characteristics of Servlets.
51. Explain the working of Servlets with help of suitable diagram.
52. List & Explain the types of Servlets.
53. Explain the following methods of ServletRequest interface of servlet API
   a. getParameter  b. getServerName
   c. setattribute  d. getattributeNames
   e. getParameterValues
54. Explain the GenericServlet with its constructors and Methods.
55. Write short note on Servlet & ServletConfig by explaining its methods and Constructors.
56. Explain any 5 classes/ Interfaces from Servlet API with their constructors & methods.
57. Write short note on Cookie class.
58. Explain Servlet life cycle with help of suitable diagram.
59. Explain the directory structure of Web Application for executing Servlet Application.
60. What is Deployment Descriptor & Context Path?
61. Write a Servlet Application for Online Inventory Management.
62. Create a Servlet Application for shopping cart.
63. Create a Servlet Application to respond more than one user.
64. What is the database? State the reasons behind using the database.
65. Explain the 3 rules for dealing with database.
66. What is JDBC? Explain the architecture of JDBC in detail.
67. Write short note on JDBC Driver. Explain its types & advantages.
68. List and explain the advantages of using JDBC.
69. Write and explain the steps for Java Database Connectivity.
70. What are scrollable ResultSet in JDBC?
71. Write short note updatable resultset.
72. Explain RowSet and its type in JDBC.
73. Write short note on JDBC Transactions.
74. How to use save points in JDBC?
75. What is JSP? Explain its advantages and advantages.
76. Differentiate between JSP and Servlet.
77. Explain the phases of JSP life cycle.
78. Explain the coding styles of JSP page.
79. What are directives in JSP? Explain its types.
80. List and explain scripting elements used in JSP page.
81. What are different action elements used in JSP page.
82. List and explain any 5 JSP Implicit Objects with their methods.
83. Write short note on Exception object used in JSP.
84. Write short note on request and response object in JSP.
85. Explain the different scopes of JSP objects.
86. List and explain Character Quoting Conventions.
87. Write short note on Unified Expression Language.
88. Explain Immediate and Deferred Evaluation of Expressions in Unified Expression Language.
89. Write short note on value and Method expression.
90. How we can use Unified Expression Language in JSP explain with code samples.
91. List and explain implicit objects used with Unified Expression Language.
92. How we can use variables, literals & operators using EL in JSP code?
   Explain it with sample code snippets.
93. Explain how to use function in Unified Expression Language.
94. Create a JSP Application which accepts input as Fahrenheit and converts it in Celsius.
95. Create a JSP Application to demonstrate use of request and response objects.
96. Create a JSP Application to demonstrate use of session and cookies.
97. Create a 4 page JSP Application which carries values from one page to another.
98. Create a JSP Application for server side form validation.
99. What is JSF? Explain the benefits of JavaServer Faces Technology.
100. Write short note on MVC architecture?
101. Explain the features of MVC models.
102. List and explain elements of JSF.
103. Explain in details phases of JSF Life cycle.
104. Explain Facelets.
105. Explain the use and structure of web.xml file.
106. Explain the use and structure of faces-config.xml file.
107. Create a JSF Application to demonstrate use of Action listeners in JSF.
108. Create a JSF Application of Registering a Student for coaching classes.
109. Create a JSF Application of saving feedback of user in MySQL database.
110. What is EJB? Explain the components of Enterprise bean architecture.
111. Explain the benefits of EJB.
112. Write detail note on type of Enterprise beans.
113. Write short note on followings
   - Session beans
   - Message Driven Beans
   - Entity beans
114. Explain the ways of accessing Enterprise beans.
115. Describe the contents of an Enterprise Bean.
117. Create an EJB Application to demonstrate use of Stateful Session Bean.
118. Create Simple Bank Account application using an EJB.
119. What is Hibernate? Explain the features of Hibernate.
120. State the reasons behind using the Hibernate.
121. Explain the Hibernate architecture with help of suitable diagram.
122. Explain the structure of hibernate.cfg.xml.
123. Explain the components of Hibernate configurations.
124. Explain the working of Hibernate.
125. What are POJO in hibernate?
126. Create a Hibernate Application to demonstrate fetching records from the database.
127. Create Simple Hibernate application to demonstrate use of Sessions.
128. Create a Hibernate Application to demonstrate Many To Many
129. Explain struts with its versions.
130. Explain in brief MVC architecture with help of suitable diagram.
131. Why we use struts?
132. Explain in detail about core components of Struts framework.
133. What are Actions in struts? State the Execution Flow of Actions in struts.
134. Explain structure and working of struts.xml file.
135. Write a short on Interceptors in struts.
137. What is OGNL in struts? State & explain the Execution Flow of Value Stack.
138. State the execution flow of struts in detail.
139. Create an Application to handling multiple buttons in HTML Form in Struts.
140. Create Simple Struts File Upload application.
141. Create a Struts Application to demonstrate handling the Exceptions.
142. Create Simple Struts Application to demonstrate use of Interceptors.
143. What are web services?
144. Write short note on SOAP.
145. Explain how to create Web Services with JAX-WS.
146. Create a simple Web Service and client using JAX-WS providing Loan Calculator.
147. What is Email? Explain the anatomy of Email message.
148. Explain different type of Mail Protocols.
149. Explain in detail components of JAVA Mail API.
150. Write short note on following.
   □ Session in JAVA Mail □ Authenticator
   □ Classes used in JAVA Mail
151. What are Naming & Directory Services?
152. What is JNDI? What is JNDI lookup?
153. How we can use JNDI Naming with the recourse.
154. Write short note on Resource Injection and its types.
155. How we can achieve Directory Searching using JNDI.
156. What are the two types of expressions in unified EL.
157. What is Java Server Faces?
158. Write the features that are new in JavaServer Faces 2.0.
LINUX ADMINISTRATION
# Syllabus

## Unit-I

**Introduction:** Introduction to UNIX, Linux, GNU and Linux distributions  
**Duties of the System Administrator:** The Linux System Administrator, Installing and Configuring Servers, Installing and Configuring Application Software, Creating and Maintaining User Accounts, Backing Up and Restoring Files, Monitoring and Tuning Performance, Configuring a Secure System, Using Tools to Monitor Security  
**Booting and shutting down:** Boot loaders-GRUB, LILO, Bootstrapping, Init process, rc scripts, Enabling and disabling services.  
**The File System:** Understanding the File System Structure, Working with Linux- Supported File Systems, Memory and Virtual File Systems, Linux Disk Management, Network Configuration Files

## Unit-II

**System Configuration Files:** System wide Shell Configuration Scripts, System Environmental Settings, Network Configuration Files, Managing the init Scripts, Configuration Tool, Editing Your Network Configuration  
**TCP/IP Networking:** Understanding Network Classes, Setting Up a Network Interface Card (NIC), Understanding Subnetting, Working with Gateways and Routers, Configuring Dynamic Host Configuration Protocol, Configuring the Network Using the Network  
**The Network File System:** NFS Overview, Planning an NFS Installation, Configuring an NFS Server, Configuring an NFS Client, Using Automount Services, Examining NFS Security

## Unit-III

**Connecting to Microsoft Networks:** Installing Samba, Configuring the Samba Server, Creating Samba Users 3, Starting the Samba Server, Connecting to a Samba Client, Connecting from a Windows PC to the Samba Server  
**Additional Network Services:** Configuring a Time Server, Providing a Caching Proxy Server
Unit-IV

**Internet Services:** Secure Services, SSH, scp, sftp
Less Secure Services (Telnet ,FTP, sync,rsh ,rlogin,finger,talk and ntalk, Linux Machine as a Server, Configuring the xinetd Server, Comparing xinetd and Standalone, Configuring Linux Firewall Packages,

**Domain Name System:** Understanding DNS, Understanding Types of Domain Servers, Examining Server Configuration Files, Configuring a Caching DNS Server, Configuring a Secondary Master DNS Server, Configuring a Primary Master Server, Checking Configuration

Unit-V

**Configuring Mail Services:** Tracing the Email Delivery Process, Mail User Agent (MUA), Introducing SMTP, Configuring Sendmail, Using the Postfix Mail Server, Serving Email with POP3 and IMAP, Maintaining Email Security

**Configuring FTP Services:** Introducing vsftpd, Configuring vsftpd, Advanced FTP Server Configuration, Using SFTP

Unit-VI

**Configuring a Web Server:** Introducing Apache, Configuring Apache, Implementing SSI, Enabling CGI, Enabling PHP, Creating a Secure Server with SSL

**System Administration:** Administering Users and Groups Installing and Upgrading Software Packages

**Books:**

**B1:** Red hat Linux Networking and System Administration, 3rd Edition by Terry Collings and Kurt Wall, Wiley Publishing

(Unit I: Chapter 1,6,7,8, Unit II: Chapter 8,11,12, Unit III: Chapter 14, 17, Unit IV: Chapter 19, 20, Unit V: Chapter 21, 22, Unit VI: Chapter 23,29,30

**References:**

UNIX: Concepts and techniques, S. Das, Tata McGraw-Hill,
Wale Soyinka, Tata McGraw-Hill
Beginning Linux by Neil Mathew 4th Edition
Unit 1

Duties of the System Administrator

1. Describe the role of Linux System Administrator.
2. Enlist the duties of system administrator.
3. Who are ‘super user’ or ‘root user’?
4. Explain the security concept in Linux system.
5. What are Crackers and Bug trackers?

Booting and shutting down

1. Define Booting. Give the activities of Boot Strap.
2. What is BIOS?
3. Write a short note on Startup Scripts.
4. Write a Short Note on init and runlevels.
5. Explain about init process in detail.
6. Explain about Boot Loader in detail.
7. What is GRUB Loader?
8. Explain the working of GRUB.
9. Write a Short Note on LILO Loader.
10. Write a Short Note on lilo.conf file.
11. Explain how will you enable and disable any services.
12. How to identify the problems if LILO Fails to load itself?

The File System

1. Write a Short Note on FHS with an example.
2. Explain root directory in detail with its directories.
3. Write a Short Note on ext3,ext2.
4. Write a Short Note on FREEVxFS and GFS.
5. Write a Short Note on Memory File Systems.
6. Write a Short Note on Virtual File Systems.
8. Write a Short Note on Linux Supported File Systems.
9. Write a Short Note on Linux Disk Management.
10. Write a Short Note on Metadevices.
11. What is LVM?
12. What is RAID?
13. Write a Short Note on RAID levels.
UNIT 2

System Configuration Files.

1. Write a short note on System Configuration Files.
2. Write a short note on grub.conf file.
3. Write a short note on cron files.
4. Write a short note on syslog.conf files.
5. Write a short note on ld.so.conf files.
7. Write a short note on /etc/sysconfig/ directories.
8. Write a short note on network configuration files.
9. Write a short note on iptables.
10. Explain in detail about Systemwide shell configuration scripts.
11. Explain in detail about system environmental settings.
12. Describe /etc/sysconfig/clock.
14. Discuss about files to change when setting up a system or moving the system.
15. Discuss how to setup the IP address.
16. How to setup a hostname?
17. How would you setup the DNS Name Resolution?
18. What is Name Service Resolution Order?
19. Discuss about starting up network services from xinetd.
20. Discuss about starting up network services from rc scripts.
22. Discuss how to manage the init scripts.
23.

TCP/IP Networking

1. Write a short note on TCP/IP.
2. Explain in detail about Network Classes with examples.
3. Discuss about how to setup a Network Interface Card.
4. How to configure the Network Card?
5. How to configure an Internal Network?
6. Explain in detail about subnetting with an example.
7. How to interpret IP Addresses?
8. What is Classless InterDomain Routing?
9. How to configure DHCP?
10. What do you mean by IP Masquerading?

The Network File System

1. Write a short note on NFS.
2. Write a short note on NFSv4.
4. Give advantages and disadvantages on NFS.
5. How to configure NFS Server?
6. How to configure NFS Client?
7. How to configure NFSv4 Client?
8. Describe NFS Servers Daemons.
Unit 3

Connecting to Microsoft Networks

1. What is Samba? How will you install it?
2. Explain in detail about smb.conf file.
3. Explain in detail about global section in smb.conf file.
4. Explain in detail about homes section in smb.conf file.
5. Explain in detail about printers smb.conf file.
6. How to create samba users.
7. How to connect to a samba client.

Additional Network Services

1. Write a short note on Time server.
2. How to select time server or Reference Clocks.
3. How to configure the time server.
4. Write a short note on ntpd servers.
5. How to configure an NTP Client and Server.
6. What is Proxy Server?
7. Describe in detail about Squid.
Unit 4

Internet Services

1. Write a short note on Secure Services.
2. Write a short note on Less Secure Services.
3. How to configure the xinetd server.
4. Explain about the services started by xinetd.
5. Explain about the stand alone services.

Domain Name System

1. Write a short note on DNS.
2. Write a short note on BIND.
3. Write a short note on named.conf, named.ca and named.local files.
4. Write a short note on zone and reverse zone files.
5. What are the different types of domain servers?
6. How to configure Caching DNS Server.
8. How to configure a Primary Master Server.
9. How will you check your DNS Configuration.
11. How to enable Guest User FTP Accounts.
12. Describe in detail about SFTP.
Unit 5

Configuring Mail Services

1. Write a short note on Mail User Agent.
2. Write a short note on Mail Transfer Agent.
3. Write a short note on Mail Delivery Agent.
4. Write a short note on m4 Macro Processor.
5. Write a short note on Postfix Mail Server.
6. Write a short note on Dovecot.
7. Describe in detail about SMTP.
8. What is POP3?
10. What is sendmail and how to configure it?
11. Explain in detail about Mail Queue and Aliases.
10. Explain about the most common vulnerabilities that affect email security.

Configuring FTP Services

4. Write a short note on vsftpd.
5. How to configure vsftpd.
6. How to configure User level FTP Access.
7. What are the different features available while configuring vsftpd.
8. How to disable Anonymous FTP.
Unit 6

Configuring a Web Server

1. Write a short note on Apache.
2. Write a short note on Apache Services.
3. Write a short note on httpd Services.
4. What is Content Negotiation?
5. Describe features of Apache.
6. What are the different changes incorporated in Apache 2?
7. How do web servers work?
8. How to configure Apache?
9. How to configure Global Behavior of Apache Server?
10. How to configure Default Apache Server?
11. How to configure Virtual Servers?
12. What are Virtual servers?
13. What is SSI and how to implement it?
14. Describe CGI and explain how to enable it.
15. Describe PHP and explain how to enable it.
16. How to create a Secure Server with SSL?
17. How to create a Self-Signed Certificate?
18. How to obtain a certificate from a certification Authority?
System Administration:

1. Write a short note on the User Database file.
2. Write a short note on Shadow Password System.
3. How will you add a user? Describe useradd options and arguments.
4. Describe the fields in /etc/passwd file.
5. Describe chage command.
8. Describe the Root Account.
9. How to simultaneously modify multiple accounts.
10. How to view current and past login information and to determine what processes users are running.
11. How to create, modify and delete groups.
12. Describe RPM.
15. Explain in details about sudo.
16. Explain in details about /etc/sudoers files.
17. Explain in details about Quotas.
18. Explain in details about RPM’s query mode.
19. How to install, upgrade, delete and verify RPMs.
20. How can you check software versions in RPMs.