Home

Savitribai Phule Pune University
Third Year of Artificial Intelligence and Data Science (2019 Course)
317536: Mini Project

Teaching Scheme:	Credit	Examination Scheme:
TH: 02 Hours/Week	01	Term Work (TW): 50 Marks Oral(OR): 25 Marks

Prerequisite Courses, if any: **Computer Networks (317521)**

Companion Course, if any: **Cyber Security (317530), Elective II****

Part A Cyber Security

Course Objectives:

- To understand threats/vulnerabilities to networks and countermeasures.
- To provide understanding of cryptography and its applications.
- To explain various approaches to Encryption techniques.
- To understand working of firewall and IDs.

Course Outcomes:

On completion of the course, learner will be able to–

CO1: Identify basic security attacks and services
CO2: Analyze the vulnerabilities and design a security solution.
CO3: Implement symmetric and asymmetric key algorithms
CO4:Demonstrate network security applications, Firewall, IDs.

List of Assignments (any five assignments)

1. Implementation of S-DES
2. Implementation of S-AES
3. Implementation of Diffie-Hellman key exchange
4. Implementation of RSA.
5. Implementation of ECC algorithm.
6. Enable/Configure (windows/ubuntu)firewall. Create rules to filternetwork trafficand to block unauthorized network traffic.
7. Configure and demonstrate an Intrusion Detection System (IDS) to detect suspicious activities and generate alerts when detected.

Mini Project (any one)

8. Mini Project 1: Implement Cross Site Scripting using stored attack. A stored cross-site scripting vulnerability in the comment functionality. [Note: To implement this assignment, submit a comment that calls the alert function when the blog post is viewed.]
9. Mini Project 2: Implement SQL injection vulnerability attack that causes the application to display details of all theproducts available on website.
10. Mini Project 3: Design the Access control vulnerability. [Note: This assignment has an unprotected admin panel. It is located at an unpredictable location, but the location is disclosed somewhere in the application. Use https://portswigger.net]
11. Mini Project 4: This task is to demonstrate insecure and secured website. Develop a web site and demonstrate how the contents of the site can be changed by the attackers if it is http based and not secured. You can also add payment gateway and demonstrate how money transactions can be hacked by the hackers. Then support your website having https with SSL and demonstrate how secured website is.

Learning Resources

Text Books:

3. Setup, Create and connect your Word Press site to an object storage bucket using Lightsail service.

Note: All assignments are mandatory.

Part B : Elective II : Software Modeling and Architecture

Prerequisite Courses, if any: Object Oriented Programming (210243), Software Engineering (210253)

Companion Course, if any: Software Modeling and Architecture

Course Objectives:

- To understand SoftwareModelingandArchitecture
- ToUsetoolsandtechniquesofSoftwareModelingandArchitecture
- To Designanddevelopapplicationsusing UML
- To Applytheknowledgeof SoftwareModelingandArchitectureforproblemsolving

Course Outcomes:

On completion of the course, learner will be able to–

CO1: UsetoolsandtechniquesofSoftwareModelingandArchitecture

CO2: ApplytheknowledgeofSoftwareModelingandArchitectureforproblemsolving

CO3: DesignanddevelopapplicationsusingUML

List of Assignments

Select a moderately complex system which has at least 4-5 major functionalities. Identify stakeholders. Actors and write detail problem statement for your system. Implement following scenarios by taking reference of design model implementation using suitable object-oriented language.

1. Prepare Use Case Model
2. Draw detail use case diagram using UML 2.0 notations
3. Draw activity diagram with swim lanes using UML 2.0 Notations for major Use Cases
4. Prepare analysis model-class model
5. Draw sequence diagram for every scenario by using advanced notations using UML2.O(Identify at least 5 major scenarios (sequence flow) for your system)
6. Prepare Object Diagram, Package Diagram, Component diagram, Development diagram
7. Specify and document the architecture and design pattern with the help of templates. Implement the system features and judge the benefits of the design patterns accommodated.

Learning Resources

Text Books:

1.JimArlow,IlaNeustadt,"UML2andtheunifiedprocess–practicalobject-orientedanalysis anddesign",AddisonWesley,Secondedition,ISBN978-0201770605

2.LenBass,PaulClements,RickKazman,"SoftwareArchitectureinPractice",Second Edition,Pearson,ISBN978-81-775-8996-2

3. Hassan Gomaa, "SoftwareModelingandDesign- UML,Use cases,PatternsandSoftware Architectures",CambridgeUniversityPress,2011,ISBN978-0-521-76414-8

Erich Gamma,"DesignPatterns", Pearson, ISBN 0-201-63361-2

References Books:

1.GardyBooch,JamesRambaugh,IvarJacobson,"Theunifiedmodelinglanguageuserguide",

PearsonEducation,Secondedition,2008,ISBN0-321-24562-8.
2.LanSommerville,"SoftwareEngineering",9thedition,ISBN-13:978-0-13-703515-1ISBN-10:0-13-703515-2.

e-Books:

1. https://dhomaseghanshyam.files.wordpress.com/2016/02/gomaa-softwaremodellinganddesign.pdf

MOOC Courses:

@The CO-PO mapping table

PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	3	-	3	-	-	-	-	-	-	1
CO2	1	1	3	-	3	-	-	-	-	-	-	1
CO3	1	1	2	1	2	-	-	-	-	-	-	1