INT301:OPEN SOURCE TECHNOLOGIES

L:0 T:0 P:4 Credits:2

Course Outcomes: Through this course students should be able to

CO1 :: recall Open-Source Software Development Methods to understand open-source models, licenses, copyrights, and Intellectual property

CO2 :: apply shell script concepts to automate commands and repetitive tasks

CO3 :: apply concepts to build shell functions, handle scripts with signals, manage version control, and debug multiple files

CO4 :: discuss the importance and use of Git and Git-hub in the project development

CO5 :: apply various open-source tools in Digital Forensics

CO6 :: use FTK imager to create, and analyze a forensic image, capture memory, encrypt and export files

List of Practicals / Experiments:

Open Source Software Development Methods

- Introduction to Open Source Software Development Methods
- Open Source Software
- Proprietary Software
- Pragmatism vs Idealism
- History of Open Source Software
- Advantages of OSS
- OSS Licenses and Legal Issues
- Copyrights: Fundamental of copyright
- filing copyright
- copyleft
- Introduction to Intellectual property
- types of intellectual property
- Intellectual property registration steps

Open Source for Developers

- Fundamentals of Bash Shell Scripting: Creating and executing scripts
- working with variables and input
- command line arguments
- control structures: if, nested if, test, case, while, for

Open Source Revision Control Systems

- Git and GitHub Introduction
- Installing Git
- Getting started on GitHub
- Configuring Git, Creating a Git repository
- Creating and editing files
- Adding files to your Git repository, Making changes and tracking them

- Synchronizing your local Git repository with GitHub
- Deleting and renaming files
- Undoing changes
- Branching, Tags and releases
- Downloading a repository
- Managing multiple copies of a repository

Widely used open-source tools in Digital Forensics

- Computer forensics fundamentals
- Benefits of forensics
- computer crimes and computer forensics
- Digital evidence
- Types of digital evidence
- Volatile data, Nonvolatile data
- Digital forensics tools: File analysis tools, Network analysis tools, Database analyzers, Registry tools, Data capture tools, Email scanners

Open-source FKT Tools

- Creating a Forensic Image
- Capturing Memory
- Analyzing Image dump
- Mounting Images to Drive
- Custom Content Images using AD encryption
- Decrypt AD Encryption
- Obtain Protected Files
- Detect EFS Encryption
- Export Files
- Disk imaging using FTK imager

Advanced Bash Shell Scripting and Version Control

- Shell script Functions
- Script control- handling the signals
- using RCV and CVS
- debugging using gdb
- handling multiple source files using make
- creation of manual pages

Text Books:

1. FUNDAMENTALS OF OPEN SOURCE SOFTWARE by M. N. RAO, PHI Learning Pvt Ltd

2. YOUR UNIX: THE ULTIMATE GUIDE by SUMITABHA DAS, MCGRAW HILL EDUCATION

3. GUIDE TO COMPUTER FORENSICS AND INVESTIGATIONS by CHRISTOPHER STEUART, BILL NELSON, AMELIA PHILLIPS, Cengage India Private Limited

References:

1. BEGINING LINUX PROGRAMMING by NEIL MATHEW & RICHARD STONES, WROX PROGRAMMER