CSE111:ORIENTATION TO COMPUTING-I

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

Course Outcomes: Through this course students should be able to

CO1 :: enumerate about the various functional components of a computer system

CO2 :: discuss the various components of operating system to get more insights about the functionalities of a digital computer

CO3 :: describe the different types of file systems and their applications to store and manage data

CO4 :: predict cohorts based upon their capability and accordingly gain the technical skills

CO5 :: understand the importance of various available pathways and getting insights to streamline their career

CO6 :: practice technical concepts using various tools and create technical profiles on different computing platforms

Unit I

Computer Systems : Basic structure of computer and its working, Computer associated peripherals, Memories - RAM, ROM, Secondary storage devices, System Configuration – features and comparison (SSD vs hybrid, types of RAMs, Processors - cores/threads), BIOS Configuration, Compare and contrast PC connection interface (USB, SATA, HDMI, NFC, Bluetooth), RAID, GPU basics, Synchronization across CPU and GPU.

Computer Languages : Machine language, Assembly language, High level language, Steps in development of a program, Compilation and Execution, Compiler, Interpreter, Assembler.

Unit II

Operating System : Operating Systems and its components, Windows Operating System Versions and features, Installation Process, Directory Hierarchy of Windows Operating System (Single level and multiple level), Bootloader.

Linux Operating System : Linux OS and its features, Distribution versions, installation process, Directory Hierarchy of Linux System (single level and multiple level)., Partitions: Understanding disk partitions and obtaining partition information using system tools, Comparison of windows and Linux OS, Virtual Machines.

Unit III

File system management : File system basics, Types of file systems (FAT, GFT, HFS, NDFS, UDF, Extended file systems), Pipes and redirection, Searching the file system using find and grep with simple regular expressions, Basic process control using signals, Pausing and Resuming process from a Linux terminal, terminating a process, Adding/removing from search path using PATH variable.

Other Shell commands : ls, cat, man, cd, touch, cp, mv, rmdir, mkdir, rm, chmod, pwd, ps, kill, etc, Kernel and types of kernels.

Unit IV

Cohorts and Skill Sets : Introduction to Cohorts, Purpose of Cohorts, Companies, Skills required and skill sources for different Cohorts (Internal and External)

Types of Cohorts : Cloud Computing, Cyber Security, Data Science, Full Stack Development, Machine Learning, Software Methodologies and Testing, UI/UX, Metaverse and Internet of Things, Job Roles for Different Cohorts

Unit V

Pathways : Introduction to Pathways, Purpose of Pathways, Job Roles for Different Pathways, Types of Pathways: Product Based, Service Based, Government Jobs, Higher studies, Entrepreneurship

MOOCs and Hackathons : Introduction to MOOCs and Hackathons, Types of MOOCs, Various MOOCs Platforms, Benefits of MOOCs, Globally Recognized Hackathons and Competitions, MAANG Companies

Unit VI

Version Control : Overview of Git and GitHub, Install git and create a GitHub account, Create a local git repository, Add a new file to the repository, Creating a commit, Creation of a new Branch

Profile Creation : Figma, GitHub, Stack overflow, HackerRank, HackerEarth, GeeksforGeeks.

References:

1. RED HAT RHSCA/RHCE 7 by SANDER VAN VUGT, PEARSON

2. OPERATING SYSTEM CONCEPTS by ABRAHAM SILBERSCHATZ, PETER B. GALVIN, GERG GAGNE, WILEY