

Programming Paradigms and Technologies

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- **Programming Paradigms – 227 Min**
 - Introduction to Programming Paradigms
 - i. Inline
 - ii. Structured
 - iii. Object Oriented
 - iv. Concurrent Programming
 - v. Event-Driven Programming
 - Inline Programming Paradigm
 - i. Machine Language
 - 1. Binary
 - 2. Hexadecimal
 - ii. Assembly Language
 - 1. Opcode
 - 2. Mnemonics
 - 3. Intel vs Arm
 - iii. Interpreter, Compiler and Assembler
 - iv. Opcode Decoding
 - 1. Intel Software's Developer Manual
 - 2. Arm Developer's Community
 - Procedural Programming Paradigm
 - i. Variables
 - ii. Arrays and Pointer
 - iii. Structures and Unions
 - iv. Functions and Headers
 - Object Oriented Programming Paradigm
 - i. Namespaces
 - ii. Classes and Objects
 - iii. Inheritance and Polymorphism

- iv. Templates and Virtual Functions
 - v. Protected, Private and Public Access
 - Concurrent Programming Paradigm
 - i. Concurrency Scheme
 - ii. Process-Based Concurrency
 - 1. Multiprocessing
 - 2. Interprocess Communication – IPC
 - iii. Threads-Based Concurrency
 - 1. Multithreading
 - 2. Shared Memory

- **Programming Technologies**

- Software Engineering Technologies
 - i. Compilers and Linkers
 - ii. Interpreters
 - iii. Virtual Machines
- Browser Technologies
 - i. Browser Engine
 - 1. Document Object Model
 - 2. CSS Document Object Model
 - 3. Blink Chromium Engine
 - ii. JavaScript Engine
 - 1. Chrome V8
 - 2. Chakra
 - 3. SpiderMonkey
- Compilers and Linkers
 - i. C Preprocessor
 - ii. C Optimizer
 - iii. C Compiler
 - iv. C Linker
- Interpreters
 - i. Python Bytecode
 - ii. Python Interpreter
- Java Virtual Machines
 - i. Java Virtual Machine

- ii. Java Bytecode
 - iii. JVM Opcode
- Microsoft Virtual Machines
 - i. Microsoft Common Language Runtime
 - ii. Intermediate Language
 - iii. JIT Compiler
- Hypervisors or VMM
 - i. Virtual Machine Monitor
 - ii. Types of VMM
 - 1. Baremetal
 - a. Citrix
 - b. XEN
 - 2. Hosted
 - a. VMware
 - b. Parallel
 - c. VirtualBox
 - iii. Hypervisor Networking Adapters

- **Hacking Terms**

- Vulnerability
 - i. Buffer Overflow
 - ii. Cross-site Scripting
 - iii. Sql Injection
 - iv. OWASP' other
- CVE and CVSS
- Exploit and Exploitation
 - i. Remote Exploits
 - ii. Local Exploits
- Shellcode/Payload
 - i. Privilege Escalation
 - ii. Add User
- Malicious Software
 - i. Miner
 - ii. Botnets

- iii. Ransomware
- iv. Spyware & Trojan
- v. ...

- **Security Terms**

- Firewall
 - i. Host-Based Firewall
 - ii. Network-Based Firewall
- IDS/IPS
 - i. Network-IDS
 - ii. Host-IDS
- UTM
- DLP
- SIEM