Roadmap-SDE Product Based Companies

5. Build a Strong Foundation

- DBMS
- Operating System,
- Computer Networks

1. Programming Language Basics

- Choose a programming language (Java, C++, Python, JavaScript)
- Understand syntax & OOPS concept

4. System Design Concepts

- Learn Scalability, Distributed Systems, Load Balancing
- Caching & Data Base Design

6. Competitive Coding & Projects Deployment

- Solve DSA problems on LeetCode, HackerRank
- Document Code solution, projects on GitHub.
- Web Apps, Mobile Apps
- Open-source projects

2. Data Structures & Algorithms

- Arrays, Strings, Linked List, Stacks, Queue
- Hashing, Heap
- Recursion
- Searching & Sorting

3. Advanced Data Structures & Algorithms

- Trees, Graph
- Divide-and-Conquer
- Greedy Algorithms
- Dynamic Programming
- Backtracking
- Branch-and-Bound

7. Prepare, Apply Strategically & Get Placed

- Aptitude (Quants, Logical, Verbal, Reasoning DI)
- Soft Skills (GD prep., HR prep., Comm. Skills)
- Job Board Awareness
- Relevant resume
- LinkedIn profile updation
- Search for potential opportunities
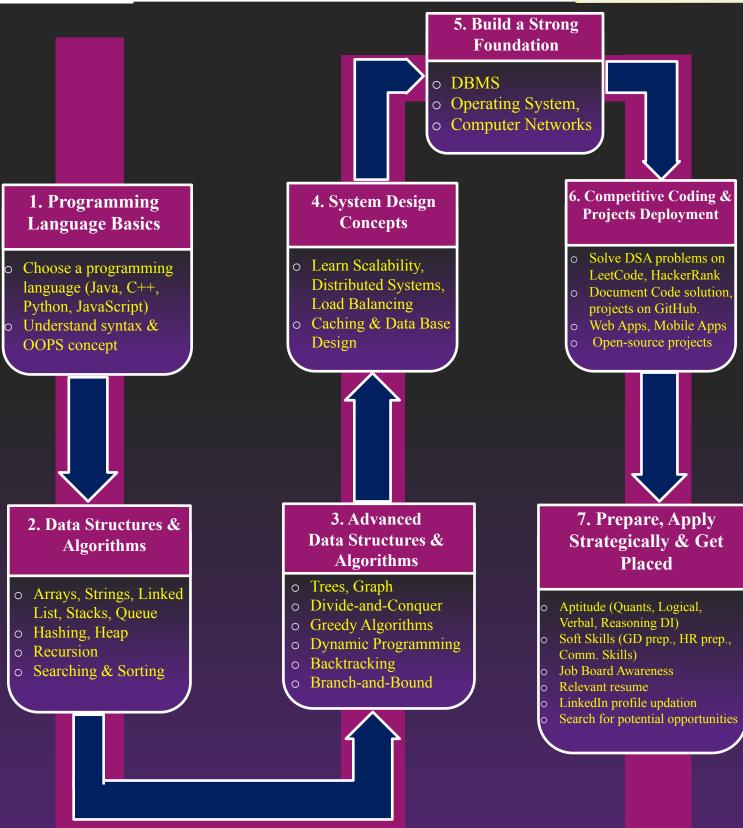
Job Roles

1. Software Engineer – Steps 1 to 7
2. System Engineer – Steps 1,2 & 5 to 7
3. Game Developer – Steps 1,2 & 5 to 7
4. Software Developer – Steps 1 to 7
5. Java Developer – Steps 1 to 7
6. API Developer – Steps 1,2 & 4 to 7
7. Android Developer – Steps 1,2 & 4 to 7

Roadmap-SDE Service Based Companies

Recruitment-Process

1. Aptitude round
2. Coding round
3. Technical Interview
4. HR Interview

Aptitude-Round

1. Quantitative Aptitude
2. Logical Reasoning
3. Verbal Ability
4. CS-Fundamental
5. Programming/ Coding

Quantitative-Aptitude

- Arithmetic, Algebra, Geometry
- Number System, Profit & Loss
- Data Interpretation & Probability
- Time, Speed, Distance, & Work
- Simple & Compound Interest
- Permutation & Combination
- Percentage, Partnership, Calendar
- Problems on Ages, Numbers, Train

Logical-Reasoning

- Analogy, Cause and Effect
- Number, Letter, Symbol Series
- Verbal Reasoning & Classification
- Statement and Assumption
- Statement Argument and Conclusion
- Analyzing Arguments & Judgments
- Logical Deduction, Course of Action
- Logical Problems & Games

Verbal-Ability

- Antonyms, Synonyms, Spellings
- Spotting Errors, Comprehension
- Sentence Formation, & Correction
- Sentence Improvement, Closet Test
- Verbal Analogies, Selecting Words
- Change of Voice & Speech
- Ordering of Sentences
- Idioms and Phrases
- One Word Substitutes

Coding-Round

- Online Test: (2 - 3 Questions)
  C (Array, String, Function, Pointers)

Websites for Practice:

- PrepInsta / Sanfoundry / GeeksforGeeks / TalentBattle
- Hackerrank / Medium / w3schools

CS-Fundamentals

Practical: (Working-Knowledge)
- OOPs with C++/JAVA/Python
- Structured Query Language (SQL)

Theory: (Concepts)
- DBMS, OS, CN & AIML , DLData
  Structures & Algorithms

Contents/ Resources

Books:
- RS Aggarwal/Arun Sharma (Level-2)

Websites:
- IndiaBIX / m4maths / Hitbullseys
- GeeksforGeeks / Freshersworld
- PrepInsta / FACE Prep
- JavaTpoint / Tutorilaspoints

Hiring-Platforms

- On-Campus/ Off-Campus
- AMCAT/CoCubes/eLitmus
- TCS(NQT)/Cognizant (GenC)
- Infosys(InfyTQ)/
  Wipro(NTH)
- Tech Mahindra (NxtStep)

Job - Roles

Technical: (Core-Development)
- Software Developer/ Engineer
- Graduate Trainee/Entry-level
- System Analyst
- Database Administrator (DBA)

Non-Technical:
- Quality Assurance/Test Engineer
- Network Engineer
- Technical Support Engineer

FSD ROADMAP With SpringBoot

SHARDA UNIVERSITY — Beyond Boundaries

Sharda Informatics — STRIVE FOR EXCELLENCE
Code | Compete | Conquer

1. Web Dev Fundamentals
- **HTML5**: Semantic Markup
- **CSS3**: Responsive Design
- **JavaScript (ES6+)**: Modern Syntax

2. Responsive Design and Frameworks
- FlexBox
- BootStrap
- Tailwind

3. JavaScript Advanced
- Async functions
- Arrow functions
- ES Modules
- Typescript

4. Frontend Frameworks And Libraries
- React
- Angular
- Vite

6. Backend Development With Spring
- Spring Boot
- JPA, Hibernate
- API development

7. Java
- Core Java
- Collections ,Stream API
- JDBC
- Servlet

7. Database Fundamentals
- SQL(MySQL Or PGSQL)
- NoSQL(MongoDB)
- Datamodeling

8. DevOps
- Containerizattion,Docker
- Kubernetics
- Integration(CI/CD)
- Git,Github
- Jenkins

9. Testing
- Unit Testing
- Jmeter, test engine
- Junit Mockito

10. Build and Deploy
- Web services, Nginix, Apache,AWS,Azure
- DNS Management
- Monitoring and logging

11. Soft Skills & Aptitude
- Project Portfolio
- Aptitude (Quants, Logical, Verbal, Reasoning DI)
- Soft Skills (Interview Prep, GD prep., Comm. Skills)
- Job Board Awareness & Job Search
- Resume and LinkedIn

Job Roles
1. Full Stack Developer - 1 to 8 & 10 +11
2. Front-End Developer - 1 to 5 & 11
3. Back-End Developer - 6 to 8 & 10 + 11
4. DevOps Engineer – 1 to 11
5. Technical Lead – 1 to 11
6. Software Engineer – 1 to 11

MERN / MEAN DEVELOPER ROADMAP

Sharda Informatics
STRIVE FOR EXCELLENCE

1. Web Dev Fundamentals

- HTML5: Semantic Markup
- CSS3: Responsive Design
- JavaScript (ES6+) : Modern Syntax

2. Responsive Frameworks

o Flexbox
o Bootstrap
o Tailwind CSS

3. Advanced JavaScript

o Async Functions
o Arrow Funcitions
o ES Modules
o Typescript

4. Frontend Frameworks

o React
o Angular
o Svelte

5. State Management for Frontend

o Redux
o Context API
o Routing

6. Backend Frameworks

o Node.js
o Express.js
o API Development

7. Database Fundamentals

o SQL (MySQL or PGSQL)
o NoSQL (MongoDB)
o Data Modeling
o Caching

8. Testing

o Unit Testing
o Jest
o Mocha
o TDD

9. DevOps

o Git / GitHub
o Containerization
o Docker
o Kubernetics
o Jenkins (CI/CD)

10. Build and Deployment

o Web Services (Nginx, Apache)
o Platforms – AWS, Azure
o DNS Management
o System Design

11. Prepare, Apply Strategically & Get Placed

o Project Portfolio
o Aptitude (Quants, Logical, Verbal, Reasoning DI)
o Soft Skills (Interview Prep, GD prep., Comm. Skills)
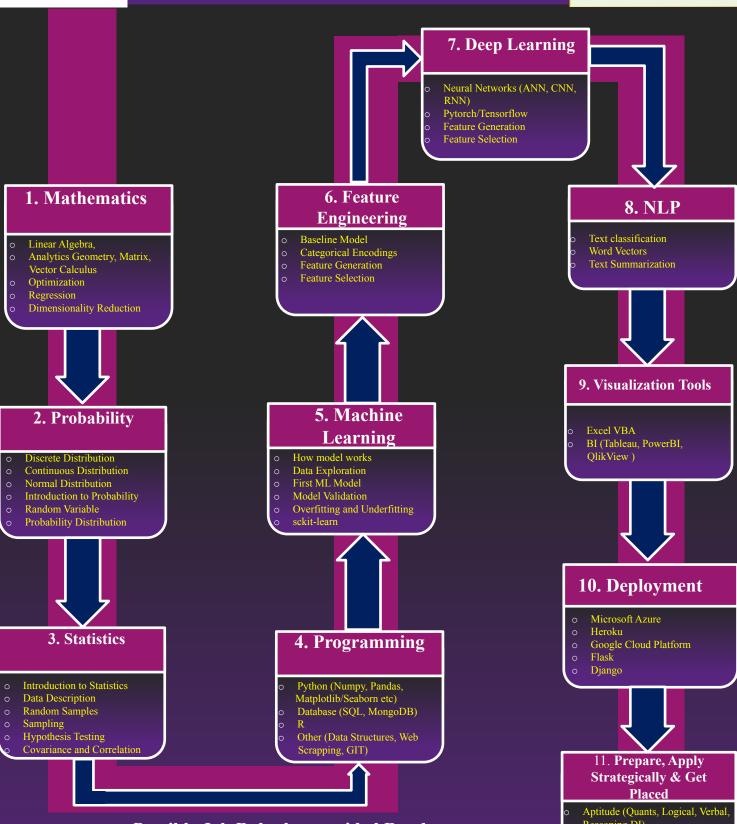o Job Board Awareness & Job Search
o Resume and LinkedIn

Job Roles

1. Full Stack Developer - 1 to 8 & 10 to 11

2. Front-End Developer - 1 to 5 & 11

3. Back-End Developer - 6 to 8 & 10 to 11

4. DevOps Engineer – 6 to 11

5. Web Developer - 1 to 8 & 10 to 11

6. Software Engineer – 1 to 11

7. UI/UX Developer – 1 to 5 & 11

8. Solution Architect – 6 to 11

Data Science / ML / AI Roadmap

1. Mathematics
- Linear Algebra,
- Analytics Geometry, Matrix, Vector Calculus
- Optimization
- Regression
- Dimensionality Reduction

2. Probability
- Discrete Distribution
- Continuous Distribution
- Normal Distribution
- Introduction to Probability
- Random Variable
- Probability Distribution

3. Statistics
- Introduction to Statistics
- Data Description
- Random Samples
- Sampling
- Hypothesis Testing
- Covariance and Correlation

4. Programming
- Python (Numpy, Pandas, Matplotlib/Seaborn etc)
- Database (SQL, MongoDB)
- R
- Other (Data Structures, Web Scrapping, GIT)

5. Machine Learning
- How model works
- Data Exploration
- First ML Model
- Model Validation
- Overfitting and Underfitting
- sckit-learn

6. Feature Engineering
- Baseline Model
- Categorical Encodings
- Feature Generation
- Feature Selection

7. Deep Learning
- Neural Networks (ANN, CNN, RNN)
- Pytorch/Tensorflow
- Feature Generation
- Feature Selection

8. NLP
- Text classification
- Word Vectors
- Text Summarization

9. Visualization Tools
- Excel VBA
- BI (Tableau, PowerBI, QlikView)

10. Deployment
- Microsoft Azure
- Heroku
- Google Cloud Platform
- Flask
- Django

11. Prepare, Apply Strategically & Get Placed
- Aptitude (Quants, Logical, Verbal, Reasoning DI)
- Soft Skills (GD prep., HR prep., Comm. Skills)
- Job Board Awareness
- Relevant resume and cover letter
- LinkedIn profile updation
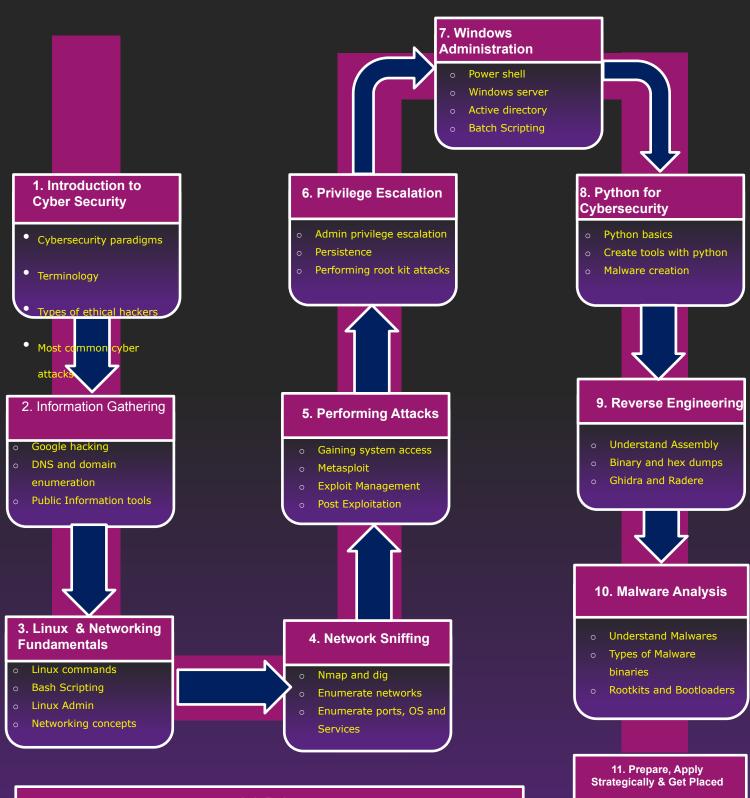- Search for potential opportunities

Possible Job Roles by provided Roadmap:
- Machine Learning Engineer (1 to 7 & 11)
- Data Analyst (1 to 9 & 11)
- Data Scientist (1 to 11)
- Business Analyst (1 to 4 & 11)
- Data Engineer (1 to 6 & 11)

CYBERSECURITY ROADMAP

SHARDA UNIVERSITY
Beyond Boundaries

A+
SHARDA UNIVERSITY
Beyond Boundaries
A+
Code | Compete | Conquer
Sharda Informatics
STRIVE FOR EXCELLENCE

1. Introduction to Cyber Security

- Cybersecurity paradigms
- Terminology
- Types of ethical hackers
- Most common cyber attacks

2. Information Gathering

- Google hacking
- DNS and domain enumeration
- Public Information tools

3. Linux & Networking Fundamentals

- Linux commands
- Bash Scripting
- Linux Admin
- Networking concepts

4. Network Sniffing

- Nmap and dig
- Enumerate networks
- Enumerate ports, OS and Services

5. Performing Attacks

- Gaining system access
- Metasploit
- Exploit Management
- Post Exploitation

6. Privilege Escalation

- Admin privilege escalation
- Persistence
- Performing root kit attacks

7. Windows Administration

- Power shell
- Windows server
- Active directory
- Batch Scripting

8. Python for Cybersecurity

- Python basics
- Create tools with python
- Malware creation

9. Reverse Engineering

- Understand Assembly
- Binary and hex dumps
- Ghidra and Radere

10. Malware Analysis

- Understand Malwares
- Types of Malware binaries
- Rootkits and Bootloaders

11. Prepare, Apply Strategically & Get Placed

- Project Portfolio
- Aptitude (Quants, Logical, Verbal, Reasoning DI)
- Soft Skills (Interview Prep, GD prep., Comm. Skills)
- Job Board Awareness & Job Search
- Resume and LinkedIn

Job Roles

1. SOC Analyst - 1 to 4 & 11
2. Network Security - 1 to 4 & 11
3. Penetration Tester - 6 to 8 & 10 + 11
4. Compliance and audit engineer – 1 to 11
5. Reverse Engineer – 1 to 11
6. Malware Analyst – 1 to 11