Essential Topics for Fresher Interviews

1. OBJECT-ORIENTED PROGRAMMING (OOPs)

- Four Pillars: Encapsulation, Abstraction, Inheritance, Polymorphism

- Class, Object, Constructor, Destructor, Method Overloading & Overriding

- Example:

```
  class Car:
    def __init__(self, brand, model):
      self.brand = brand
      self.model = model
    def display(self):
      print(f"Car: {self.brand} {self.model}")
  my_car = Car("Toyota", "Camry")
  my_car.display()
```

2. NETWORKING

- OSI Model (7 Layers), TCP/IP Model (4 Layers)

- IP Addressing, Subnetting, CIDR, HTTP, HTTPS, FTP, SSH

- DNS, DHCP, NAT, Routing (Static & Dynamic)

- TCP vs UDP: Reliable vs Unreliable Transmission

3. STRUCTURED QUERY LANGUAGE (SQL)

- Basic Queries: SELECT, INSERT INTO, UPDATE, DELETE

- Joins: INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL JOIN

- Indexing, Normalization, ACID Properties

- Example: Find the second highest salary:

```
  SELECT MAX(salary) FROM Employee WHERE salary < (SELECT MAX(salary) FROM Employee);
```

4. OPERATING SYSTEMS (OS)

- Processes, Threads, Multithreading, Multitasking

- Memory Management: Paging, Segmentation, Virtual Memory

- File System, Permissions, Linux Commands (ls, pwd, chmod, chown, ps, top, kill)

- Example: What happens when you type a URL in a browser?

  1. DNS Lookup

  2. TCP Handshake

  3. HTTP Request sent

  4. Server Response

  5. Browser renders the webpage

ADDITIONAL TOPICS FOR CLOUD & DEVOPS ASPIRANTS:

- Git, GitHub, CI/CD (Jenkins, GitHub Actions)

- Infrastructure as Code (Terraform, CloudFormation)

- Containers (Docker, Kubernetes)

- Cloud Basics (AWS IAM, S3, EC2, Load Balancing, Auto Scaling)

SUMMARY - MUST-KNOW TOPICS FOR A FRESHER INTERVIEW:

- OOPs: Classes, Objects, Inheritance, Polymorphism, Encapsulation, Abstraction

- Networking: OSI Model, IP Addressing, DNS, Routing, HTTP vs HTTPS

- SQL: Joins, Indexing, Queries, ACID Properties, Normalization

- OS: Process Management, Memory Management, Linux Commands, File Systems