

DN 4.0 Deep Skilling Week 1 Assignment Submission

Design principles & Patterns

Exercise 1: Implementing the Singleton Pattern Output:

```
Logger Initialized at 2025-06-19T18:33:28.892277900
[INFO] 2025-06-19T18:33:28.894280100 - Service started
[DEBUG] 2025-06-19T18:33:28.905280500 - Processing business logic...
[INFO] 2025-06-19T18:33:28.905280500 - Service completed
[INFO] 2025-06-19T18:33:28.905280500 - Connecting to database
[DEBUG] 2025-06-19T18:33:28.906312400 - Executing connection string
[INFO] 2025-06-19T18:33:28.906312400 - Database connection established
[ERROR] 2025-06-19T18:33:28.906312400 - Simulated error log
```

Exercise 2: Implementing the Factory Method Pattern

Output:

```
Sending an SMS Notification
Sending an Email Notification
Sending a Push Notification
```

Data Structures and Algorithms

Exercise 1: E-commerce Platform Search

Function Output:

```
Enter keyword (name/category): electronics
Do you want to filter by price range? (yes/no): yes
Enter minimum price: Rs. 2000
Enter maximum price: Rs. 10000

Search Results:
- Smartwatch | Category: Electronics | Price: Rs. 8000.0
- Bluetooth Speaker | Category: Electronics | Price: Rs. 3000.0
- Headphones | Category: Electronics | Price: Rs. 2000.0
```

```
Enter keyword (name/category): Furniture
Do you want to filter by price range? (yes/no): no
```

Search Results:

- Office Chair | Category: Furniture | Price: Rs. 4000.0
- Study Table | Category: Furniture | Price: Rs. 5500.0
- Bookshelf | Category: Furniture | Price: Rs. 3500.0

```
Enter keyword (name/category): Camera
Do you want to filter by price range? (yes/no): yes
Enter minimum price: Rs. 100
Enter maximum price: Rs. 200
```

Search Results:

No products found matching the search.

Exercise 2: Financial Forecasting

Output:

```
Monthly Financial Forecast:
- January | Revenue: Rs.120000.0 | Expenses: Rs.85000.0 | Profit: Rs.35000.0
- February | Revenue: Rs.110000.0 | Expenses: Rs.78000.0 | Profit: Rs.32000.0
- March | Revenue: Rs.130000.0 | Expenses: Rs.92000.0 | Profit: Rs.38000.0
- April | Revenue: Rs.125000.0 | Expenses: Rs.88000.0 | Profit: Rs.37000.0
- May | Revenue: Rs.140000.0 | Expenses: Rs.95000.0 | Profit: Rs.45000.0
- June | Revenue: Rs.150000.0 | Expenses: Rs.102000.0 | Profit: Rs.48000.0
```

Summary:

```
Total Revenue: Rs.775000.0
Total Expenses: Rs.540000.0
Total Profit: Rs.235000.0
Average Monthly Profit: Rs.39166.666666666664
```