

Programming Paradigms

Programming Paradigms Survey

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- 1 Implementation
- 2 Key Features
- 3 Example
- 4 Real-World Projects
- 5 Thank You
- 6 Bibliography



Event-Driven

- Event-driven programming is a programming paradigm in which the flow of the program is determined by external events.
- Program listens for events and then triggers a callback function when one of those events is detected.
- Control flow is determined mainly by events, such as mouse clicks or interrupts including timer

Procedural

- Procedural programming is a programming paradigm containing a series of computational steps to be carried out.
- Any given procedure might be called at any point during a program's execution, including by other procedures or itself.



Key Features

Event-Driven

- Event loop
- Event handlers
- Asynchrony

Procedural

- Scoping
- Sequential
- Functions
- Modularization



```
// RxJS code for handling button click event
import { fromEvent } from 'rxjs';
import { filter } from 'rxjs/operators';

// Get a reference to a button element
const button = document.getElementById('myButton');

// Create an Observable for click events on the button
const clickObservable = fromEvent(button, 'click');

// Subscribe to the click event and react to shift-click
clickObservable.pipe(
  filter(event => event.shiftKey)
).subscribe(() => {
  console.log('Shift-clicked on the button');
});
```

Figure: RxJS Example



```
-- Simple PL/SQL procedure to calculate and display salary
CREATE OR REPLACE PROCEDURE calculate_salary (employee_id NUMBER) IS
    salary NUMBER;
BEGIN
    -- Fetch employee salary from the database
    SELECT emp_salary INTO salary FROM employees WHERE emp_id = employee_

    -- Display the calculated salary
    DBMS_OUTPUT.PUT_LINE('Calculated salary: ' || salary);

EXCEPTION
    WHEN NO_DATA_FOUND THEN
        -- Handle case where employee is not found
        DBMS_OUTPUT.PUT_LINE('Employee not found');

    WHEN OTHERS THEN
        -- Handle other exceptions
        DBMS_OUTPUT.PUT_LINE('Error occurred');
END calculate_salary;
```

Figure: PL/SQL Example



Angular Framework

- Angular is an open-source, JavaScript framework written in TypeScript. Google maintains it, and its primary purpose is to develop single-page applications.
- Angular extensively uses RxJS for handling user interactions, HTTP requests, and managing state through observable services.

Node.js

- Node.js is an asynchronous event-driven JavaScript runtime engine designed for building scalable network applications.
- Many backend applications use RxJS for handling asynchronous operations, such as handling multiple concurrent requests.



Microsoft Dynamics 365

- A cloud-based ERP system helping businesses manage their finances, operations, sales, and customer relationships.
- PL/SQL is often used in ERP systems for managing large datasets and executing business rules within the Oracle database.

Data Warehousing

- Data warehouses are relational environments that are used for data analysis. Organizations use data warehouses to discover patterns and relationships in their data that develop over time.
- PL/SQL plays a crucial role in the transformation phase, where data is cleansed, enriched, and aggregated to meet the analytical requirements of the business.



Thank you for using this.



References

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