

Department of Computer Engineering

Academic Term: First Term 2023-24

Class: T.E /Computer Sem – V / Software Engineering

Practical No:	5
Title:	Data flow analysis of the Project
Date of Performance:	
Roll No:	9539
Team Members:	Crystal Fernandes, Sanika Rozario

Rubrics for Evaluation:

Sr. No	Performance Indicator	Excellent	Good	Below Average	Total Score
1	On time Completion & Submission (01)	01 (On Time)	NA	00 (Not on Time)	
2	Theory Understanding(02)	02(Correct)	NA	01 (Tried)	
3	Content Quality (03)	03(All used)	02 (Partial)	01 (rarely followed)	
4	Post Lab Questions (04)	04(done well)	3 (Partially Correct)	2(submitted)	

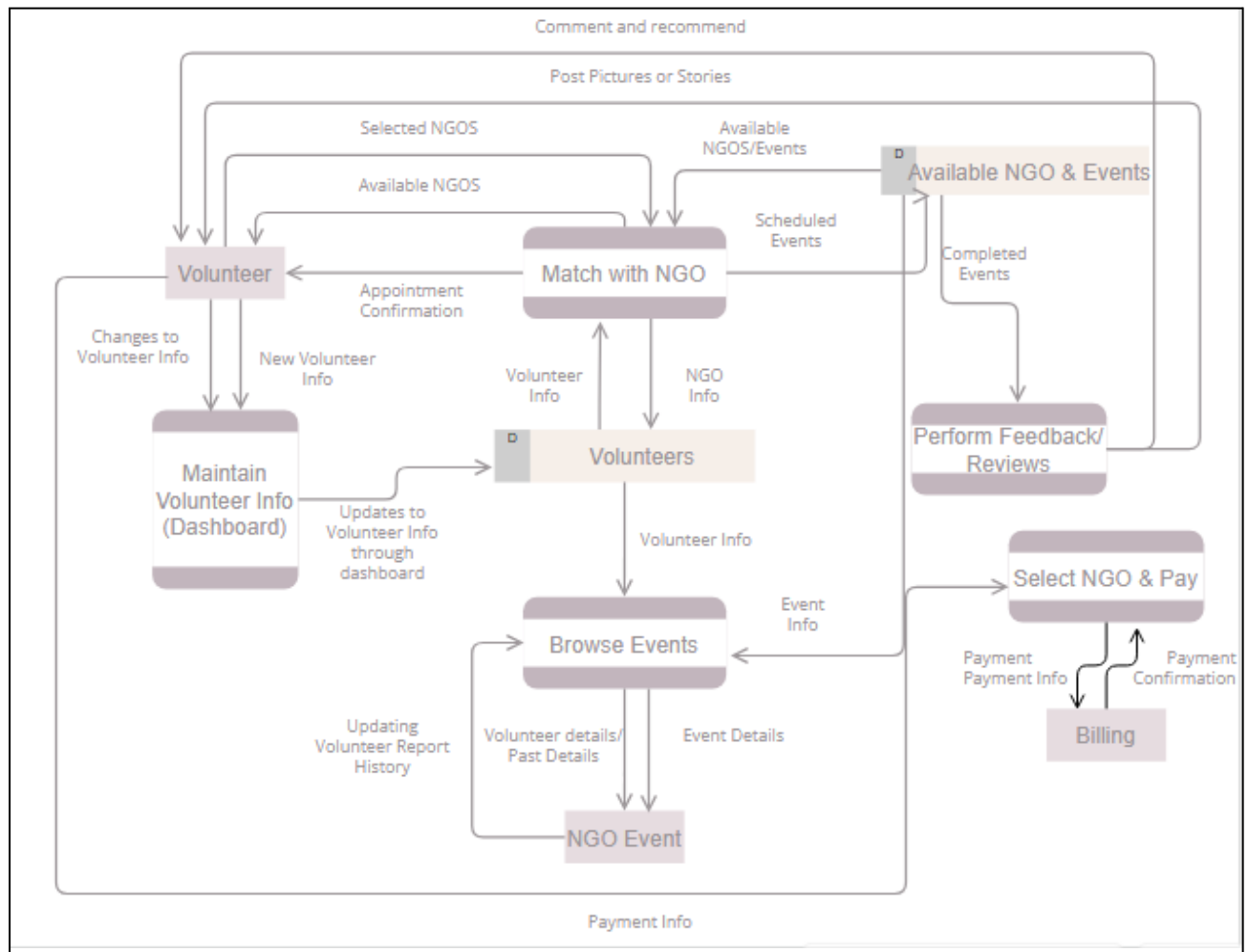
Signature of the Teacher:

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DATA FLOW DIAGRAM OF NGO APPLICATION**EXPLANATION****External Entities**

- **Volunteer:** Represents individuals who interact with the system, providing and updating their information.
- **NGO Event:** Represents events organized by non-governmental organizations (NGOs) that volunteers can participate in.
- **Billing:** Represents a payment processing system or service external to main system.

Data Stores

- **Volunteers:** A data store that stores information about the volunteers, including their personal details and preferences.
- **Available NGO & Events:** A data store containing information about the NGOs and events that volunteers can participate in.

Processes

- **Maintain Volunteer Information:** A process where volunteers can add, update, or modify their personal information within the system.
- **Browse Events:** This process allows volunteers to view available NGO events, pulling data from the "Available NGO & Events" data store.
- **Perform Feedback/Reviews:** Volunteers can provide feedback or reviews after participating in an NGO event, which is stored for reference or analysis.

- **Select NGO and Pay:** A process where volunteers can choose an NGO event, make a payment (handled externally or through the system), and confirm their participation.

POSTLAB

a) Benefits of Using Data Flow Diagrams (DFD)

- **Clarity and Understanding:** DFDs provide a clear and visual representation of how data flows within a system. This helps stakeholders, including developers and non-technical personnel, understand the system's data processing.
- **Identification of Components:** DFDs help identify the main components or modules of a system and how they interact with each other. This aids in breaking down complex systems into manageable parts.
- **Data Dependency Analysis:** DFDs allow for the analysis of data dependencies, showing which components rely on specific data inputs and how data transformations occur between them.
- **Identification of Data Sources and Sinks:** DFDs help identify the sources of data (inputs) and where data is consumed or stored (sinks). This is crucial for understanding data flow and storage.
- **Detecting Anomalies:** DFDs can reveal anomalies or irregularities in data flow, helping in the early detection of potential issues or vulnerabilities.

b) Data Flow Analysis for Identifying Potential Issues

- **Analyze data flow paths:** Examine the DFD to identify areas where data flows through multiple components or undergoes resource-intensive processes.
- **Evaluate data processing times:** Estimate the time it takes for data to traverse through critical paths and compare it to acceptable response times.
- **Identify resource constraints:** Determine if there are limitations in terms of processing power, memory, or network bandwidth that could lead to bottlenecks.
- **Examine data access points:** Identify where sensitive data enters and exits the system (e.g., user inputs, API endpoints).
- **Assess data encryption:** Ensure that data is encrypted when in transit and at rest to prevent unauthorized access.
- **Evaluate authentication and authorization mechanisms:** Check if the system enforces proper user authentication and access control to protect against unauthorized data access.
- **Look for data leakage points:** Identify areas where data might unintentionally leak or be exposed to unauthorized parties.

c) Proposed Improvements to Enhance Efficiency and Reduce Risks

- **Optimize Data Processing:** Identify and optimize resource-intensive data processing components to reduce bottlenecks. This may involve parallel processing, caching, or load balancing.
- **Enhance Security:** Implement stronger encryption methods to protect sensitive data.
- **Strengthen authentication and authorization mechanisms** to ensure data security.
- **Conduct regular security audits and penetration testing** to identify and address vulnerabilities.

- **Data Flow Redundancy:** Eliminate unnecessary data flows to reduce complexity and the risk of data leakage.
- **Monitoring and Alerting:** Implement real-time monitoring and alerting systems to detect unusual data flows or security breaches promptly.
- **Backup and Recovery:** Develop robust data backup and recovery mechanisms to ensure data integrity and availability in case of failures or security incidents.
- **Documentation and Training:** Ensure that system documentation is up-to-date and that personnel are adequately trained on security best practices and data handling procedures.
- **Regular Audits:** Conduct periodic audits and assessments of the system's data flow and security measures to proactively identify and address potential issues.