## **Population Reporting System**

### **Overview**

This project, titled **Population Reporting System**, was developed to analyze and present population statistics using data retrieved from a MySQL database. The application provides structured reports that display:

* Population rankings of countries
* The largest cities within a given continent
* Statistical data on language speakers worldwide

The development process followed an iterative approach, ensuring efficiency in coding, testing, and deployment while integrating Agile methodologies.

### **Tools and Technologies**

* **Programming Language:** C#
* **Database System:** MySQL
* **Development Environment:** Visual Studio
* **Version Control System:** GitHub
* **Continuous Integration:** GitHub Actions
* **Task Organization:** Zube.io

### **Team Organization and Responsibilities**

#### **Product Owner (Zohaib)**

Responsible for overseeing the development timeline, defining project goals, and ensuring alignment with requirements.

#### **SCRUM Master (Mirza Sikandar)**

Managed communication among team members, conducted review meetings, and facilitated resolution of development issues.

#### **Database Specialist (Rao Safee, Wahab)**

Designed and optimized SQL queries, managed database connectivity, and ensured proper data retrieval mechanisms.

#### **Application Developer (Hafiz, Wahab)**

Developed the core application structure, integrated database queries, and implemented functionalities required for generating reports.

### **Development Stages**

#### **Planning and Task Allocation**

* User requirements were structured into development tasks
* Assignments were distributed among team members based on expertise
* Progress tracking was managed using Zube.io

(Screenshot Placeholder: Task Management Overview)

#### **Implementation Strategy**

* Stand-up discussions facilitated regular updates on development progress
* Code modifications were committed frequently to ensure incremental improvements
* GitHub Actions automated testing and ensured stability

(Screenshot Placeholder: GitHub Actions Workflow)

#### **Validation and Review**

* System functionality was tested and verified for accuracy
* Code was reviewed before integration into the main branch
* Documentation was compiled for final submission

(Screenshot Placeholder: Project Repository Overview)

### **Technical Implementation**

#### **Database Operations**

* Established a secure MySQL connection for fetching population-related data
* Designed and executed optimized SQL queries for data retrieval

(Screenshot Placeholder: SQL Query Execution)

#### **Application Development**

* DataProcessor.cs manages database interactions and query execution
* ReportGenerator.cs is responsible for formatting and presenting statistical reports

(Screenshot Placeholder: Code Implementation in IDE)

#### **Version Control and Development Workflow**

* A structured branching strategy was utilized for organized version control
* Pull requests ensured a collaborative and review-based integration process
* The commit log maintained a record of contributions and changes

(Screenshot Placeholder: GitHub Contributions Overview)

#### **Continuous Integration and Deployment**

* GitHub Actions handled automated build and test execution
* Ensured the project maintained stability before final release

(Screenshot Placeholder: CI/CD Execution Pipeline)

#### **Project Management and Task Completion**

* Development tasks were categorized and systematically moved through stages
* All assigned user stories were tracked to completion

(Screenshot Placeholder: Zube.io Task Board)

### **Submission Information**

#### **Repository**

GitHub Repository:

#### **Project Board**

Zube.io Tracking Board: <https://zube.io/napier-425/population-reporting-system/w/workspace-1/kanban>

### **Project Conclusion**

The **Population Reporting System** successfully delivers statistical insights on population data, ensuring structured data retrieval and effective report generation. By following Agile principles and utilizing modern development tools, the project maintains a high standard of organization, version control, and automated verification.

(Screenshot Placeholder: Final Confirmation of Completion)