EPPS6354 Information Management

Research Proposal

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1 Database Purpose

Impact of Online Classes on High School Students' Grades

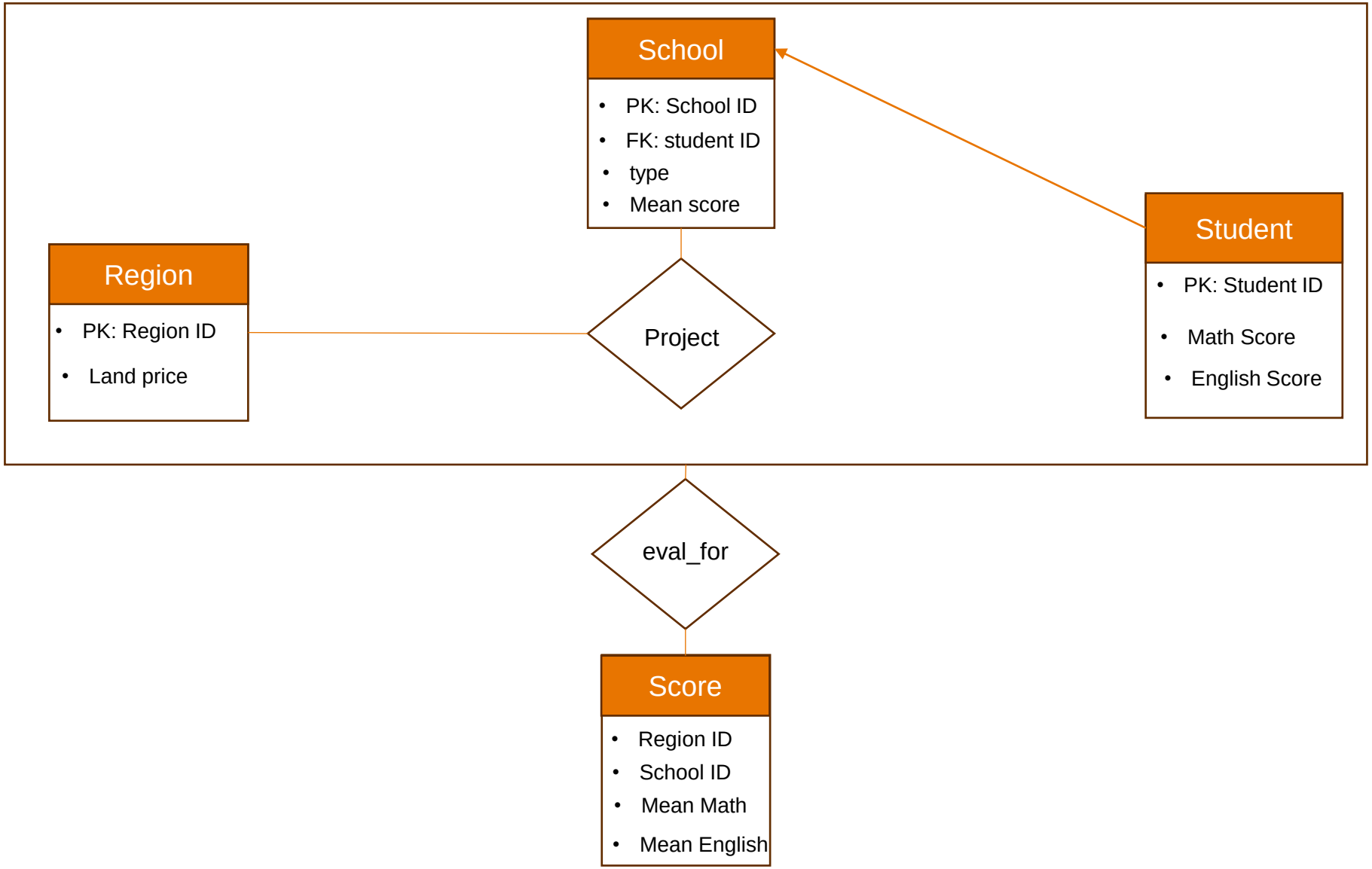
- ***Transition to online classes*** during the pandemic had ***varied effects*** on high school students' grades.
- Impact influenced by financial, organizational, and ***characteristic features of schools***.
- ***Regional differences*** in support for schools also contributed to varying impacts.

1 Database Purpose

Improving Access to Data for Informed Decision-Making

- ***Challenge:*** ***Current data*** on schools and students' grades provided individually, ***making comparisons difficult***.
- ***Solution:*** Research aims to ***create a comprehensive dataset*** allowing easy comparison across schools and regions.
- ***Benefits:*** Enables policymakers, school administrators, parents, and students to ***assess and compare impacts*** of online classes effectively.

2 Schema


School
PK: School ID
FK: student ID
type
Mean score
Region
PK: Region ID
Land price
Project
Student
PK: Student ID
Math Score
English Score
eval_for
Score
Region ID
School ID
Mean Math
Mean English

3 Interface

Example Interface

Region Select

- ☑ Region A
- ☑ Region B
- ☐ Region C
- ☐ Region D

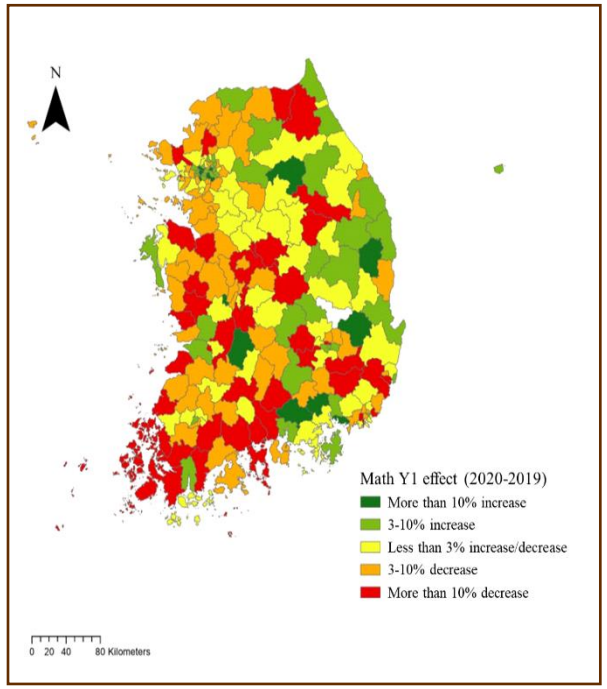
School Select

- ☑ School A
- ☐ School B
- ☑ School C
- ☐ School D

Region Filters

School Filters

Time select



4 Method

Utilizing ***R Shiny*** for SQL Database Management

- Integration with SQL Database: R Shiny can be utilized to create user-friendly interfaces for managing SQL databases, providing a dynamic and interactive environment for database administration.

Advantages:

- ***Real-Time Visualization***: R Shiny enables real-time visualization of SQL data, facilitating quick insights and decision-making.
- ***Flexibility and Customization***: R Shiny provides flexibility in designing the interface according to specific user requirements, allowing for customization of features and functionalities.

Challenges:

- ***Performance Considerations***: As R Shiny applications run on a server, performance may be impacted by factors such as server capacity and network speed.

4 Method

1) Data Insertion (***INSERT***)

- Purpose: ***To insert new data*** into the student grade dataset, school information dataset, and regional information dataset.

2) Data Select (***SELECT***)

- Purpose: ***To select data that meets specific conditions***. For example, one could look up the average grades of schools in a particular region or compare grade changes before and after the pandemic.

3) Conditional Retrieval (***WHERE***)

- Purpose: ***To filter data according to certain conditions***, such as comparing grades before and after the pandemic or querying the grades of schools in a specific region.

4 Method

4) Joining (***JOIN***)

- Purpose: ***To combine school information and student grade data*** to analyze grades by school or by region.

5) Subqueries and Aggregate Functions (***SUBQUERY & AGGREGATE FUNCTIONS***)

- Purpose: For complex analyses, ***to use the results of another query within a query*** or to ***perform calculations such as average***, maximum, and minimum using aggregate functions.

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THANK YOU