

Database Data Dictionary

For

Goodness and Mercy School, Kaduna, Nigeria

The data warehouse dictionary provides detailed information about our data warehouse design, including database, schema, tables, relationships, data types etc.

A) Tables

The database is made up of nine tables namely:

i. class_resources_table

Column Name	Data Type	Field Size (bytes)	Description	Example
Class_ID	VARCHAR(20)	20	Primary key, unique identifier for each class	SS1 Class A
Number_of_Students	SMALLINT	2	Number of students in the class	60
Number_of_Teachers	SMALLINT	2	Number of teachers assigned to the class	82
Weekly_Teaching_Hours	SMALLINT	2	Total teaching hours per week for the class	40
Weekly_Library_Time	SMALLINT	2	Hours per week spent in the library	5
Weekly_Computer_Training_Time	SMALLINT	2	Hours per week spent on computer training	3
Weekly_Lab_Hours	SMALLINT	2	Hours per week spent in the laboratory	4

Chalkboard	SMALLINT	2	Quantity or condition of chalkboards	2
Basic_Textbooks	SMALLINT	2	Quantity or availability of basic textbooks	25
Chairs_Desks	SMALLINT	2	Quantity or condition of chairs and desks	60
Functional_Fans	SMALLINT	2	Number of functional fans in the classroom	3

ii. student_table

Column Name	Data Type	Field Size	Description	Example
Student_ID	VARCHAR(100)	100	Primary key, unique identifier for each student	ccf3a17156dc4907ba6c34ab6712303a
Class_ID	VARCHAR(20)	20	Foreign key referencing class_resources_table	SS3 Class F
First_Name	TEXT	Variable	Student's first name	"Okorie"
Family_Name	TEXT	Variable	Student's family name	"Dubem"
Gender	TEXT	Variable	Student's gender	"Male"
Date_of_Birth	DATE	3 bytes	Student's date of birth	"2005-07-15"

State_of_Origin	TEXT	Variable	Student's state of origin	"Lagos"
engagement_in_class	TEXT	Variable	Level or description of student's engagement in class	Unactive
health_condition	TEXT	Variable	Description of student's health condition	"None"
Class_Spec	TEXT	Variable	Specific class or stream the student belongs to	"Science"

iii. parent_table

Column Name	Data Type	Field Size	Description	Example
Student_ID	VARCHAR(100)	100	Primary key and foreign key referencing student_table	ccf3a17156dc4907ba6c34ab6712303a
Fathers_Name	TEXT	Variable	Name of the student's father	"Michael"
Mothers_Name	TEXT	Variable	Name of the student's mother	"Silver"
Family_Name	TEXT	Variable	Family name of the parents	"Mbawike"
Father_Education	TEXT	Variable	Educational level	Tertiary

		le	of the father	
Mother_Education	TEXT	Variab le	Educational level of the mother	Secondary
Father_Occupation	TEXT	Variab le	Occupation of the father	“Engineer”
Mother_Occupation	TEXT	Variab le	Occupation of the mother	“Teacher”
Annual_Household_Income_NGN	TEXT	Variab le	Annual household income in Nigerian Naira	400,000-600,000
Household_Size	INTEGER	4 bytes	Number of people in the household	5
Involvement_in_Kids_Education	TEXT	Variab le	Level or description of parental involvement in child’s education	Very Involved

iv. extracurricular_activity

Column Name	Data Type	Field Size	Description	Example
Student_ID	VARCHAR(100)	100	Primary key and foreign key referencing student_table	ccf3a17156dc4907ba6c34ab6712303a
Extracurricular_Activity	TEXT	Variable	Name or type of extracurricular activity	“Chess Club”
Weekly_Hours	INTEGER	4 bytes	Hours per week spent on the activity	6

v. student_performance

Column Name	Data Type	Field Size	Description	Example
Student_ID	VARCHAR(100)	100	Primary key and foreign key referencing student_table	ccf3a17156dc4907ba6c34ab6712303a
Mathematics	INTEGER	4 bytes	Student's score in Mathematics	85
English_Language	INTEGER	4 bytes	Student's score in English Language	78
Civic_Education	INTEGER	4 bytes	Student's score in Civic Education	90
Economics	INTEGER	4 bytes	Student's score in Economics	82
CRS_Islam	INTEGER	4 bytes	Student's score in Christian Religious Studies or Islamic Studies	88
Physics	FLOAT	4 bytes	Student's score in Physics	76.5
Chemistry	FLOAT	4 bytes	Student's score in Chemistry	81.0
Biology	FLOAT	4 bytes	Student's score in Biology	79.5
Geography	FLOAT	4 bytes	Student's score in Geography	85.0
Computer_Science	FLOAT	4 bytes	Student's score in Computer Science	92.5
Government	FLOAT	4 bytes	Student's score in Government	88.0
Commerce	FLOAT	4 bytes	Student's score in Commerce	77.5

Literature	FLOAT	4 bytes	Student's score in Literature	83.0
History	FLOAT	4 bytes	Student's score in History	86.5
Accounting	FLOAT	4 bytes	Student's score in Accounting	80.0

vi. attendance_table

Column Name	Data Type	Field Size	Description	Example
Student_ID	VARCHAR(100)	100	Primary key and foreign key referencing student_table	ccf3a17156dc4907ba6c34ab6712303a
Days_Attended	INTEGER	4 bytes	Number of days the student attended	90
Days_Missed	INTEGER	4 bytes	Number of days the student missed	5
Absence_Reason	TEXT	Variable	Reason for student's absence	"Illness"

vii. ss3_student_survey

Column Name	Data Type	Field Size	Description	Example
Student_ID	VARCHAR(100)	100	Primary key and foreign key referencing student_table	ccf3a17156dc4907ba6c34ab6712303a
Reason_For_Performance	TEXT	Variable	Student's	"Regular study and

		e	explanation for their academic performance	parental support”
Access_To_Resources	TEXT	Variable	Description of student’s access to educational resources	“Good access to textbooks and internet”
Study_Hours_Per_Week	INTEGER	4 bytes	Number of hours spent studying per week	20
Health_Issues	TEXT	Variable	Description of any health issues affecting studies	“None”
Teacher_Support	INTEGER	4 bytes	Level of support received from teachers (likely a scale)	8
Parental_Support	INTEGER	4 bytes	Level of support received from parents (likely a scale)	9
Stress_Level	TEXT	Variable	Description of student’s stress level	“Moderate”
Peer_Influence	TEXT	Variable	Description of peer influence on academic performance	“Positive”
Additional_Tutoring	TEXT	Variable	Information about any additional tutoring received	“Math tutor twice a week”

Use_Of_Study_Groups	TEXT	Variable	Information about participation in study groups	“Weekly science study group”
Exam_Anxiety	TEXT	Variable	Description of student’s exam anxiety level	“Low”
Jamb_Scores	SMALLINT	2 bytes	Student’s JAMB (Joint Admissions and Matriculation Board) scores	280
Num_Credit_Passes_WAEC	SMALLINT	2 bytes	Number of credit passes in WAEC (West African Examinations Council) exams	7
Verdict	Text	Variable	Pass or Fail based on getting above 200 and above 5 in Jamb and WAEC respectively	Pass

viii. staff_table

Column Name	Data Type	Field Size	Description	Example
Staff_ID	VARCHAR(100)	100	Primary key, unique identifier for each staff member	bdd640fb06674ad19c80317fa3b1799d

Name	TEXT	Variable	Name of the staff member	“Alice Johnson”
Gender	TEXT	Variable	Gender of the staff member	“Female”
Position	TEXT	Variable	Position or role of the staff member	“Teacher”
Monthly_Pay	INTEGER	4 bytes	Monthly salary of the staff member	150000
Years_of_Experience	INTEGER	4 bytes	Number of years of work experience	8
Education_Level	TEXT	Variable	Highest level of education attained	“Master’s”
Date_of_Hire	TEXT	Variable	Date when the staff member was hired	“2015-09-01”
Full_time	BOOLEAN	1 byte	Indicates whether the staff member is full-time (true) or part-time (false)	true

ix. teachers_table

Column Name	Data Type	Field Size	Description	Example
Teacher_ID	VARCHAR(100)	100	Primary key, unique identifier for each teacher	anf476539s674ad19c80317fa334g9f
Staff_ID	VARCHAR(100)	100	Foreign key referencing staff_table	bdd640fb06674ad19c80317fa3b1799d

Name	TEXT	Variable	Name of the teacher	"Alice Johnson"
Teacher_Type	TEXT	Variable	Type or category of teacher	"Senior Teacher"
Subject_specialization	TEXT	Variable	Subject area of specialization for the teacher	"Mathematics"

B) Database diagram

This diagram is a visual representation of the database schema. It acts as a guide to help people understand the structure of the database and how its different parts relate to each other.

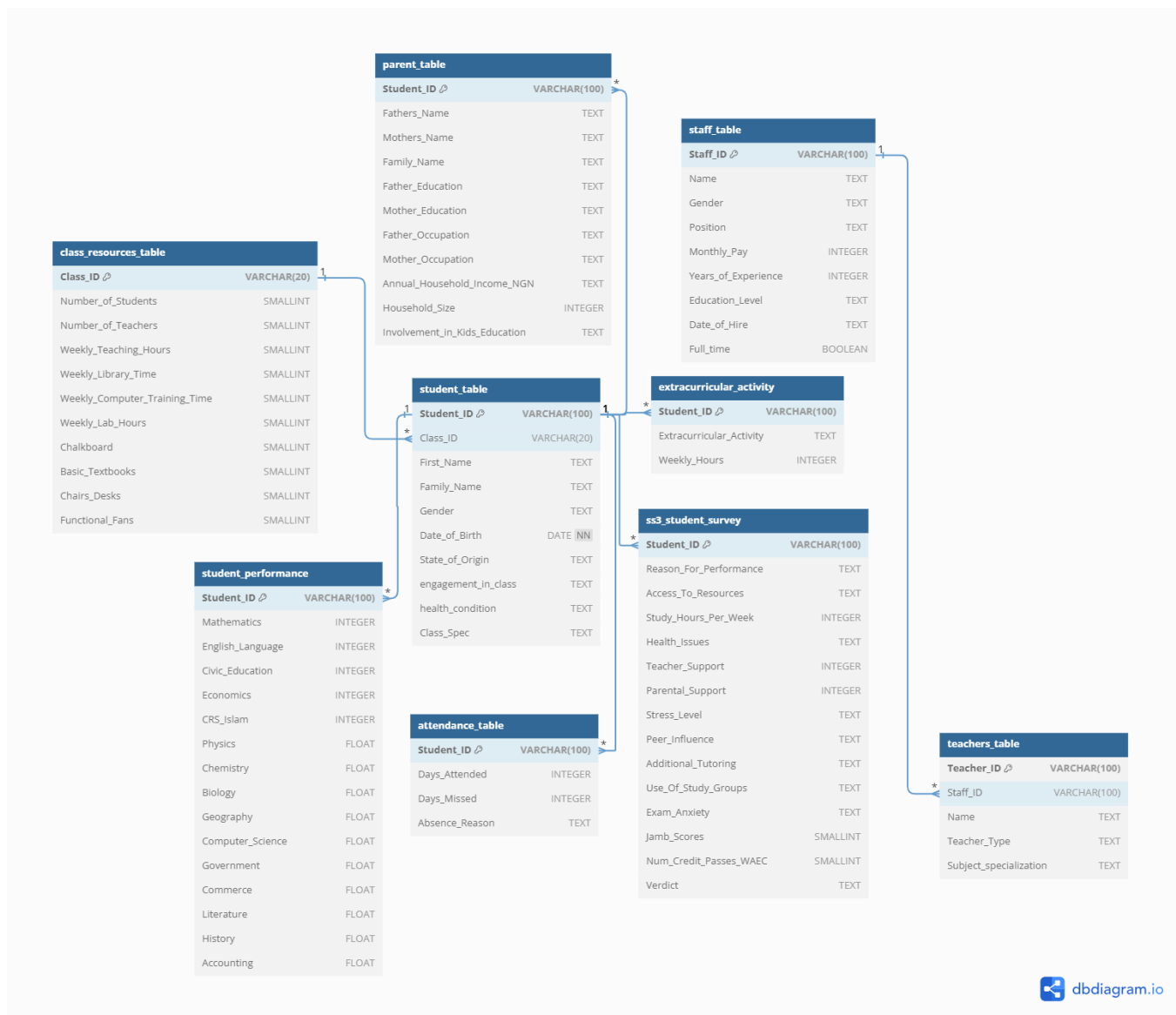


Figure 1: Database diagram

C) Data Quality Checks for School Database

This refers to a set of processes or steps aimed at ensuring the accuracy, consistency, and reliability of data stored in the school database. These checks are essential to maintaining the integrity of the database and ensuring that the data can be trusted for decision-making, analysis, and reporting

1. Attendance Table

- Check for null values in all columns
- Ensure Student_ID is unique and matches with student_table
- Verify Days_Attended and Days_Missed are non-negative
- Check if Days_Attended + Days_Missed equals the total number of school days
- Ensure Absence_Reason is filled for all records where Days_Missed > 0

2. Class Resources Table.csv

- Check for null values in all columns
- Ensure Class_ID is unique
- Verify all numeric columns have non-negative values
- Check if Number_of_Students and Number_of_Teachers are reasonable (e.g., not too high or low)
- Ensure Weekly_Teaching_Hours is within a realistic range (e.g., 20-50 hours)

3. Extracurricular Activity Table

- Check for null values in all columns
- Ensure Student_ID exists in student_table
- Verify Weekly_Hours is non-negative and within a realistic range (e.g., 0-20 hours)

4. Parent Table

- Check for null values in all columns
- Ensure Student_ID is unique and matches with student_table
- Verify Household_Size is positive and within a realistic range
- Check if Annual_Household_Income(NGN) is numeric and in these ranges ['Below 200,000', '200,000-400,000', '400,000-600,000', 'Above 600,000']
- Ensure Father_Education, Mother_Education, Father_Occupation, Mother_Occupation, and Involvement_in_Kids_Education have consistent categories

5. Student Survey Table

- Check for null values in all columns
- Ensure Student_ID is unique and matches with student_table
- Verify Study_Hours_Per_Week is non-negative and within a realistic range
- Check if Teacher_Support and Parental_Support are within a specific range (e.g., 1-5)
- Ensure Stress_Level has consistent categories
- Verify Jamb_Scores and Num_Credit_Passes_WAEC are within expected ranges
- Check if verdict has consistent categories

6. Staff Table

- Check for null values in all columns
- Ensure Staff_ID is unique
- Verify Monthly Pay and Years of Experience are non-negative

- Check if Date of Hire is in a consistent date format and not in the future
- Ensure Gender, Position, and Education Level have consistent categories

7. Student Performance Table

- Check for null values in all columns
- Ensure Student_ID is unique and matches with student_table
- Verify all subject scores are within the expected range (e.g., 0-100)
- Check for any outliers in the scores
- Ensure consistency in the number of decimal places for float64 columns

8. Student Table

- Check for null values in all columns
- Ensure Student_ID is unique
- Verify Class_ID exists in class_resources_table
- Check if Date_of_Birth is in a consistent date format and makes sense for a student
- Ensure Gender, State of Origin, engagement_in_class, health_condition, and Class Spec have consistent categories

9. Teachers Table

- Check for null values in all columns

- Ensure Teacher_ID is unique
- Verify Staff_ID exists in staff_table
- Ensure Teacher Type and Subject specialization have consistent categories