G.C.E. O/L Grade 10 ICT · Lesson 9

9.2 Creating a Simple Database Table: Fields, Data Types and Field Size

Before you open a DBMS, plan the table on paper. Decide the **purpose**, the **field names**, a **unique field** (primary key), the **data type** of each field and its **field size**. A good plan saves time and stops mistakes. In this note we plan a single table, **tblBook**, for the school library.

1. Steps to design a table

- **Purpose** – what information is needed? (e.g. 'Which books are in the library, their price and number of copies?')
- **Field names** – short, meaningful, no spaces is best: BookID, Title, Author, Category, Price, Copies.
- **Unique field** – choose the primary key: BookID (accession number) – no two books share it.
- **Data type** – the kind of data each field holds.
- **Field size** – the maximum length (text) or range (number).
- **Sample data** – test the plan with a few real records.

2. Data types

Data type (Access)	LibreOffice Base	Stores	School example
Short Text	Text [VARCHAR]	Letters, or numbers not used in calculations – up to 255 characters	StudentName, ClassID, phone number
Long Text (Memo)	Memo [LONGVARCHAR]	Long text – remarks, descriptions	Teacher's remarks
Number	Integer / Decimal	Numbers used in calculations	ICTMarks, Copies, Room
Date/Time	Date	Dates and times	DateOfBirth, DateBorrowed
Currency	Decimal (Currency format)	Money values (Rs.)	Book Price, facility fee
Yes/No	Yes/No [BOOLEAN]	Only two values: Yes/No, True/False	Prefect, Returned
AutoNumber	Integer + AutoValue	A number added automatically (1, 2, 3 ...), unique	BorrowID

💡 A **telephone number** (e.g. 0712345678) or **NIC number** (e.g. 200912345678) is stored as **Short Text** – we never add phone numbers, and a leading 0 must be kept.

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3. Field size

For **Short Text**, the field size is the **maximum number of characters** (1–255; default 255). For **Number**, it is the kind of number: **Byte** (0–255), **Integer** (−32,768 to 32,767), **Long Integer** (about ±2.1 billion), **Single/Double** (decimals). A small, suitable size saves space and stops wrong data – e.g. ClassID size 3 accepts '10A' but not '10A-Science'.

4. The plan for tblBook

Field name	Data type	Field size	Description
BookID	Short Text	4	Accession number, e.g. B001 (primary key)
Title	Short Text	60	Book title
Author	Short Text	40	Author
Category	Short Text	15	Novel, Reference …
Price	Currency	Rs.	Price in rupees
Copies	Number	Integer	Copies in the library

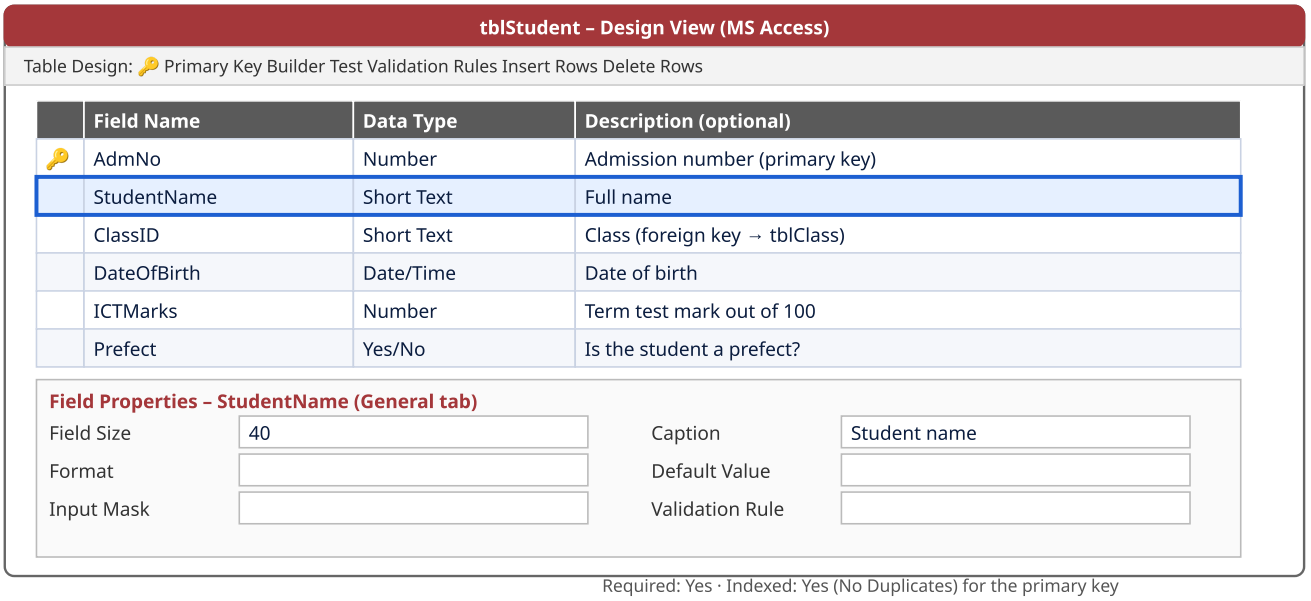


Figure 9.2: The plan typed into Access Design View (tblStudent). Each field has a name, a data type and properties such as Field Size.

💡 Sample record: **B001 | Madol Doova | Martin Wickramasinghe | Novel | Rs. 750 | 3**. Check: does every value fit its type and size? 'Madol Doova' has 11 characters ≤ 60 ✔.

NEW 2026 **2026: AI as a helper, not a replacement.** You can ask an AI chatbot to suggest fields and data types for a 'school sports meet' table, but **you must check** every suggestion (e.g. it may make a phone number a Number field) and **never paste real student personal data** into a public AI tool.

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Key Words

Field name – The name given to a field, e.g. StudentName.

Data type – The kind of data a field can hold.

Short Text – Text up to 255 characters; also numbers not calculated.

Long Text – Long text such as remarks (Memo).

Number – Numeric data used in calculations.

Currency – Money values.

Date/Time – Dates and times.

Yes/No – Only two possible values.

AutoNumber – A unique number given automatically to each new record.

Field size – Maximum length or numeric range of a field.

Unique field – A field with no repeated values; the primary key.

Purpose – What information the table must give.

Sample Q&A

1. List the steps in planning a table.

> **Answer:** Purpose, field names, unique field (primary key), data types, field sizes, sample data.

2. Which data type is used for a book's price?

> **Answer:** Currency.

3. Why is a phone number stored as Short Text?

> **Answer:** It is not used in calculations and the leading 0 must be kept.

4. Give a field suitable for Yes/No.

> **Answer:** Prefect, Returned, FeesPaid.

5. What is field size for a Short Text field?

> **Answer:** The maximum number of characters (1–255).

6. What does AutoNumber do?

> **Answer:** Gives every new record a unique number automatically.

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MCQ

1. The best data type for StudentName is…

A. Number
B. Short Text
C. Yes/No
D. Currency

2. The best data type for ICTMarks is…

A. Short Text
B. Long Text
C. Yes/No
D. Number

3. Book price in rupees should be…

A. Currency
B. Yes/No
C. Date/Time
D. AutoNumber

4. A 'Prefect' field with only Yes or No uses…

A. Short Text
B. Yes/No
C. Long Text
D. Number

5. DateOfBirth should be…

A. Date/Time
B. Currency
C. Short Text
D. Number

6. A mobile number such as 0712345678 should be stored as…

A. AutoNumber
B. Currency
C. Short Text
D. Number

7. A field that numbers new loans 1, 2, 3… automatically is…

A. AutoNumber
B. Yes/No
C. Date/Time
D. Number

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8. A teacher's long remarks about a student need...

A. Currency
B. Yes/No
C. Short Text size 3
D. Long Text

9. The maximum field size of a Short Text field in Access is...

A. 50
B. 255
C. 100
D. 65535

10. ClassID values are like '10A'. A suitable field size is...

A. 3
B. 1
C. 255
D. Long Integer

11. The Number field size that holds 0 to 255 only is...

A. Long Integer
B. Integer
C. Byte
D. Double

12. The first step in planning a table is to decide its...

A. report colour
B. password
C. purpose
D. font

13. Which field is the unique field in tblBook?

A. Author
B. BookID
C. Price
D. Category

14. In LibreOffice Base, the equivalent of Access 'Short Text' is...

A. BOOLEAN
B. DATE
C. INTEGER
D. Text [VARCHAR]

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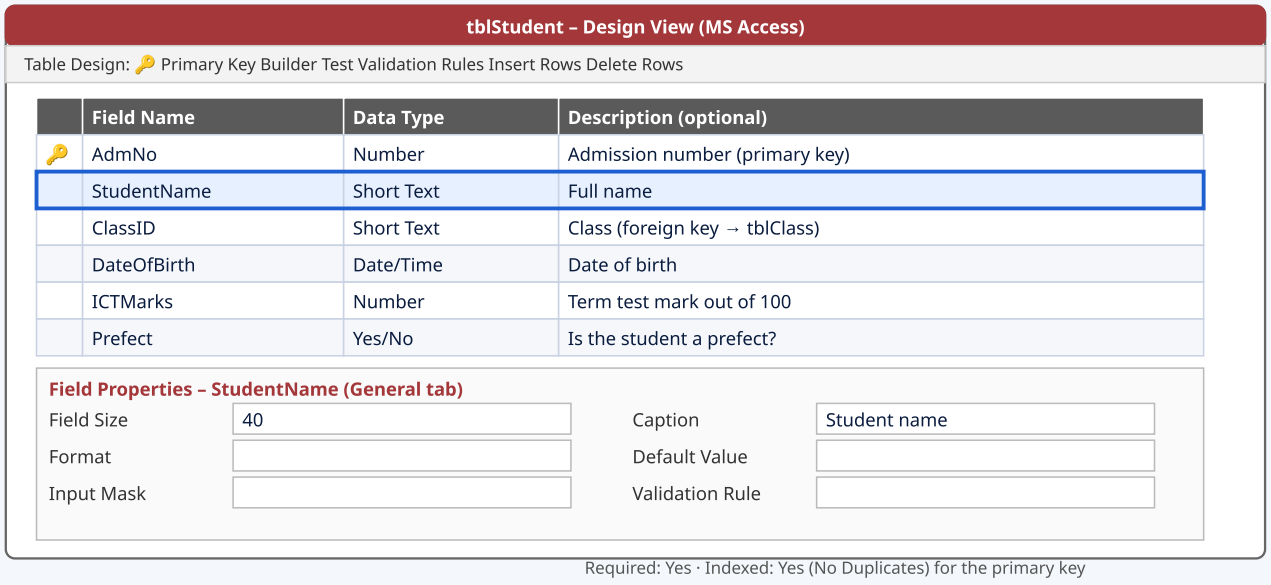
15. When using an AI chatbot to suggest table fields, you should…

A. accept all suggestions
B. paste the full student register
C. check every suggestion and not paste real personal data
D. let it set the passwords

Structured Questions

1. Plan a table tblStudent: give five field names with a suitable data type for each. (5 marks) *(5 marks)*

AdmNo – Number; StudentName – Short Text; ClassID – Short Text; DateOfBirth – Date/Time; ICTMarks – Number (or Prefect – Yes/No).



Model answer

2. (i) What is field size? (1 mark)
(ii) Suggest a field size for ClassID and for StudentName. (2 marks) *(3 marks)*

(i) The maximum length/range of data a field can hold. (ii) ClassID – 3; StudentName – 40.

3. Explain why NIC number should not be a Number field. (2 marks) *(2 marks)*

It is not used in calculations, old NICs contain the letter V/X (e.g. 951234567V), and leading zeros must be kept – so Short Text.

4. Name the data types for: (a) Price (b) Returned (c) BorrowID (d) DateBorrowed. (4 marks) *(4 marks)*

(a) Currency (b) Yes/No (c) AutoNumber (d) Date/Time.

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5. State three steps to plan a single table before using a DBMS. (3 marks) *(3 marks)*

> Decide the purpose; choose field names and the unique field; choose data types and field sizes (and test with sample data).

Summary

- Plan on paper first: purpose, fields, key, types, sizes.
- Short Text ≤ 255 chars; Long Text for remarks.
- Number for calculations; Currency for money.
- Date/Time for dates; Yes/No for two values.
- AutoNumber gives unique numbers automatically.
- Phone and NIC numbers → Short Text.
- Field size: text length or Byte/Integer/Long Integer.
- Check AI suggestions; never share real personal data.

MCQ answer key – 9.2

1. **B** – Text.
2. **D** – Calculated.
3. **A** – Money.
4. **B** – Two values.
5. **A** – Dates.
6. **C** – Keep leading 0.
7. **A** – Auto.
8. **D** – Memo.
9. **B** – 255 characters.
10. **A** – 3 characters.
11. **C** – Byte.
12. **C** – Purpose first.
13. **B** – Accession number.
14. **D** – VARCHAR.
15. **C** – Responsible AI.

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