Grade 11 Computer Studies

Term 3 - 64 complete lesson plans

Ready to teach, in the KICD lesson-plan format | 40-minute lessons | PDF and editable Word

ABOUT THIS PACK

64 complete, ready-to-teach Grade 11 Computer Studies lesson plans for Term 3, covering relational database fundamentals, structured query language (SQL) and web development fundamentals.

TOPICS IN THIS PACK

Topic	Name	Lessons
3.3	Relational Database Fundamentals	12
3.4	Structured Query Language (SQL)	26
3.5	Web Development Fundamentals	26

INSIDE EVERY LESSON PLAN

- The specific learning outcomes, key inquiry question, core competencies, values and PCIs, and the resources needed.
- A timed lesson flow: what the teacher does and what the learners do, from introduction to summary.
- The key content (a worked example, notes or a practical with its expected results), then four practice questions with the answers for the teacher.
- The common mistake to watch for, and ideas for learners who need support and for those ready for more.
- A four-level CBC assessment rubric (EE, ME, AE, BE), homework, and a blank reflection space to fill in after teaching.

A TASTE OF LESSON 1

Data, information, metadata and data dictionary

By the end of the lesson, the learner should be able to: a) define the basic terms used in databases; b) distinguish data from information

> **Basic terms**
> DATA: raw facts with no context, such as 72, Amina, Form 3.
> INFORMATION: data processed so that it has meaning, such as "Amina scored 72 in Mathematics, the top mark in her class".

You also receive this pack as an editable Word file, so you can change any lesson to suit your class before you print it. Lessons follow the order of the KICD curriculum design.

CONTENTS

No.	Lesson	Topic	Page
1	Data, information, metadata and data dictionary	3.3 Relational Database Fundamentals	6
2	Components of a database	3.3 Relational Database Fundamentals	9
3	Database management systems and their components	3.3 Relational Database Fundamentals	12
4	Database models: hierarchical and network	3.3 Relational Database Fundamentals	15
5	Database models: relational and object-oriented	3.3 Relational Database Fundamentals	18
6	Entities and attributes; data types	3.3 Relational Database Fundamentals	21
7	Key fields	3.3 Relational Database Fundamentals	24
8	Relationships between entities	3.3 Relational Database Fundamentals	27
9	Entity relationship diagrams	3.3 Relational Database Fundamentals	30
10	Designing a database for a real-life task	3.3 Relational Database Fundamentals	33
11	Debate: DBMS versus conventional methods of data storage	3.3 Relational Database Fundamentals	36
12	Review of relational database fundamentals	3.3 Relational Database Fundamentals	39
13	Meaning of SQL and SQL applications	3.4 Structured Query Language (SQL)	42
14	Types of SQL statements: DDL, DML and DQL	3.4 Structured Query Language (SQL)	45
15	Starting MySQL and creating a database	3.4 Structured Query Language (SQL)	48
16	SQL data types	3.4 Structured Query Language (SQL)	51
17	Creating a table	3.4 Structured Query Language (SQL)	54
18	Constraints: AUTO_INCREMENT, NOT NULL, UNIQUE and DEFAULT	3.4 Structured Query Language (SQL)	57
19	Altering a table	3.4 Structured Query Language (SQL)	60
20	Renaming and dropping tables	3.4 Structured Query Language (SQL)	63

Elimu254 Learn • Grow • Build Tomorrow

21	Creating a one-to-many relationship	3.4 Structured Query Language (SQL)	66
22	Creating a one-to-one relationship	3.4 Structured Query Language (SQL)	69
23	Inserting data	3.4 Structured Query Language (SQL)	72
24	Inserting related data	3.4 Structured Query Language (SQL)	75
25	Viewing and correcting data entry	3.4 Structured Query Language (SQL)	78
26	Updating data	3.4 Structured Query Language (SQL)	81
27	Deleting data	3.4 Structured Query Language (SQL)	84
28	Retrieving data with SELECT	3.4 Structured Query Language (SQL)	87
29	Filtering rows with WHERE	3.4 Structured Query Language (SQL)	90
30	Sorting and searching: ORDER BY, LIMIT and LIKE	3.4 Structured Query Language (SQL)	93
31	Aggregate functions	3.4 Structured Query Language (SQL)	96
32	Grouping with GROUP BY	3.4 Structured Query Language (SQL)	99
33	Filtering groups with HAVING	3.4 Structured Query Language (SQL)	103
34	Querying related tables with JOIN	3.4 Structured Query Language (SQL)	107
35	Project: planning a community database	3.4 Structured Query Language (SQL)	111
36	Project: building the community database	3.4 Structured Query Language (SQL)	114
37	Project: reports, and showing how SQL helps the community	3.4 Structured Query Language (SQL)	118
38	Review of SQL	3.4 Structured Query Language (SQL)	122
39	Web terminology	3.5 Web Development Fundamentals	126
40	The client-server model; static and dynamic web pages	3.5 Web Development Fundamentals	129
41	Client side and server side scripting	3.5 Web Development Fundamentals	132

Elimu254 Learn • Grow • Build Tomorrow

42	Structure of an HTML document	3.5 Web Development Fundamentals	135
43	Tags, elements and attributes	3.5 Web Development Fundamentals	139
44	Links and images	3.5 Web Development Fundamentals	142
45	HTML tables	3.5 Web Development Fundamentals	145
46	HTML forms: text fields and buttons	3.5 Web Development Fundamentals	149
47	HTML forms: choices and longer text	3.5 Web Development Fundamentals	153
48	Designing a web application: site maps	3.5 Web Development Fundamentals	157
49	Designing a web application: wireframes and prototypes	3.5 Web Development Fundamentals	160
50	Resource person: designing a web page	3.5 Web Development Fundamentals	163
51	Meaning and importance of HTML, CSS and PHP	3.5 Web Development Fundamentals	166
52	Inline CSS	3.5 Web Development Fundamentals	169
53	Internal CSS	3.5 Web Development Fundamentals	172
54	External CSS	3.5 Web Development Fundamentals	176
55	Improving a page with CSS: the box model and layout	3.5 Web Development Fundamentals	180
56	Client side scripting: first JavaScript	3.5 Web Development Fundamentals	184
57	JavaScript: variables, calculation and a dynamic page	3.5 Web Development Fundamentals	188
58	JavaScript: checking a form before sending	3.5 Web Development Fundamentals	192
59	Setting up a local server and first PHP	3.5 Web Development Fundamentals	196
60	Handling a form with PHP	3.5 Web Development Fundamentals	200
61	Preparing the database for the web application	3.5 Web Development Fundamentals	204
62	Linking an HTML form to a database with PHP	3.5 Web Development Fundamentals	208

Elimu254 Learn • Grow • Build

63	Showing database records on a page	3.5 Web Development Fundamentals	212
64	Project and review: a community web application	3.5 Web Development Fundamentals	216

Elimu254
Learn • Grow • Build Tomorrow

Data, information, metadata and data dictionary

Strand 3.0 Software Development > Sub-strand 3.3 Relational Database Fundamentals | Lesson 1 of 12 | 40 minutes

SCHOOL	TEACHER	DATE
CLASS / STREAM	TIME	ROLL (B / G)

SPECIFIC LEARNING OUTCOME(S)

By the end of the lesson, the learner should be able to: a) define the basic terms used in databases; b) distinguish data from information

KEY INQUIRY QUESTION(S)

- What could be the challenges of using DBMS?
- How are relational database applications applied in real life situations?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Communication and collaboration**	Learners explain their thinking to a partner and report their findings to the group.
COMPETENCY	**Learning to learn**	Learners say what they found easy or hard and decide their next step.
VALUE	**Peace**	Learners settle differences calmly during group work.
VALUE	**Respect**	Learners listen while others explain and accept correction politely.
PCI	**Self-management skills**	Developed through the activities in this lesson.

LEARNING RESOURCES

Charts of database models and ERD symbols | Videos on database models and ERDs | Sample paper registers and receipt books | Resource person (database administrator or ICT officer), if available

ORGANISATION OF LEARNING

Groups of four analyse real records and draw ERDs; pairs at computers; whole class debate, with respect for different views.

KEY WORDS

data | information | metadata | data dictionary | database | table | record | field | DBMS | entity | attribute | data type | primary key | foreign key | composite key | secondary key | relationship | cardinality | ERD

THE LESSON AT A GLANCE

Introduction	Teacher models	Guided practice	On their own	Wrap-up
6 min	9 min	10 min	9 min	6 min

LESSON FLOW

Stage	Minutes	The teacher	The learners
Introduction	6	Greet the class and ask: "The number 72 alone tells you little. What makes it useful?" Take two or three answers, link them to earlier work, then state today's outcome.	Answer the starter question, recall what they already know and read the outcome aloud.
Step 1: Teacher models	9	Take learners through "Basic terms" (key ideas on the next page), explaining as you go. Use charts of database models and ERD symbols, videos on database models and ERDs, sample paper registers and receipt books. Ask learners to predict what comes next before you show it.	Watch, predict the next step, ask questions and note the key steps in their exercise books.
Step 2: Guided practice	10	Give questions 1 and 2. Move round the groups, ask "How do you know?" and correct errors kindly on the spot.	Work in pairs or small groups, explain each step to a partner and check one another's answers.
Step 3: Independent practice	9	Set questions 3 and 4 for individual work. Mark as you walk round and note who needs help in the next lesson.	Work on their own, then swap books with a partner to check.
Summary and conclusion	6	Ask two or three learners to state the key idea in their own words. Give this exit question and check the answers: "Give an example of a database in daily life."	Say the key idea in their own words and answer the exit question in the exercise book.

KEY IDEAS

Basic terms

DATA: raw facts with no context, such as 72, Amina, Form 3.

INFORMATION: data processed so that it has meaning, such as "Amina scored 72 in Mathematics, the top mark in her class".

METADATA: data about data, such as a photo's date and size, or the fact that the field "mark" holds a whole number.

DATA DICTIONARY: a record of what each field in a database means: its name, type, size and rules.

DATABASE: an organised collection of related data stored so that it can be found, changed and shared easily.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	What is the difference between data and information?	**Data is raw facts; information is data processed to have meaning.**
2	What is metadata?	**Data about data.**
3	What is a data dictionary?	**A record of each field's name, type, size and rules.**
4	Give an example of a database in daily life.	**For example: a phone's contacts or a school's records.**

WATCH OUT FOR

Learners think any computer file is a database. A database is organised and related.

ASSESSMENT RUBRIC - THE FOUR CBC LEVELS

Level	What the learner can do
Exceeds expectations (EE)	Can define the basic terms used in databases confidently and accurately, explain the method used, and apply the idea to new or unfamiliar problems.
Meets expectations (ME)	Can define the basic terms used in databases accurately in familiar situations; notices and corrects slips without help.
Approaches expectations (AE)	Can partly define the basic terms used in databases, or does so with prompts from the teacher or a partner; makes some errors.
Below expectations (BE)	Cannot yet define the basic terms used in databases without direct help; needs the idea taught again with concrete objects.

SUPPORT AND EXTENSION

Learners who need support	Sort cards into data and information.
Learners ready for more	Give two items of metadata for a song file. (Answer: For example: artist name and length)
Inclusion	Seat learners with low vision near the board and read aloud whatever you write; use large, clear, tactile materials; allow extra time; pair with a patient partner; use gestures or Kenyan Sign Language for the key words.

HOMEWORK AND FOLLOW-UP

Redo questions 3 and 4 neatly in the exercise book. Then tell someone at home what you learned about "data, information, metadata and data dictionary" and bring one question of your own to ask next lesson.

TEACHER SELF-CHECK

- Did every learner get a turn to handle materials or explain their thinking?
- Did most learners meet the outcome? Write down the names of those who did not.
- Was the pace right — did any step take too long or too short a time?
- Which competency and value did I see learners showing?
- What will I change the next time I teach this lesson?

REFLECTION ON THE LESSON / SELF-REMARKS

Write this after teaching - what worked, what to change, which learners need follow-up.