



*Dr. Bhasa Science*

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## A-level ICT

### SENIOR Six term 2

### TOPIC 1/1: Electronic Databases

**Competency:** The learner creates and manages electronic databases to ensure efficient data organisation, storage, and retrieval.

#### Electronic Databases

An **electronic database** is a structured collection of information stored digitally, which can be accessed, searched, and managed using computers and online systems. They are widely used in education, business, healthcare, and research to organize and retrieve large amounts of data efficiently.

#### Features of Electronic Databases

- **Structured organization** – data is arranged in tables, records, and fields.
- **Searchability** – users can quickly find information using keywords or filters.
- **Accessibility** – available online or through specialized software.
- **Security** – controlled access with passwords, encryption, and user permissions.
- **Scalability** – can store massive amounts of data.
- **Interactivity** – allows updates, queries, and reports in real time.

#### Uses of Electronic Databases

- **Education & research** – access to scholarly articles, journals, and e-books.
- **Business** – customer records, inventory management, financial analysis.
- **Healthcare** – patient records, medical research data.
- **Government** – census data, legal records, public archives.
- **Personal use** – storing contacts, photos, or personal documents.

## Advantages databases

- Fast access to large volumes of information.
- Easy to update and maintain.
- Supports remote access via the internet.
- Reduces physical storage needs.

## Challenges of databases

- Requires reliable internet and devices.
- Subscription costs for premium databases.
- Risk of data breaches if not secured.
- Need for training to use advanced search tools.

## Desktop Database Softwares

Desktop database software is designed to run on a single computer or workstation, enabling individuals or small teams to **store, organize, and analyze data locally**. Unlike cloud databases, these tools don't require internet access and are often easier to set up for beginners or small businesses.

## Examples of desktop database software

Microsoft Access, SQLite, LibreOffice Base

**Task: perform the following numbers for your practice using any desktop Database software**

1. The table below shows part of the database of employees of Bright Bottling company in Uganda

EMP No.	Name	Sex	Department	D.O.B	SALARY
P001	Musubika E	F	Human resource	2/23/1975	800,000
P002	Baali M	M	Accounts	3/17/1979	600,000
P003	Mulumba R	M	Computer	12/30/1987	550,000
P004	Kafero J	M	Accounts	5/18/1973	450,000
P005	Mukeera S	F	Computer	11/24/1995	650,000

P006	Nalubwama A	F	Human resource	8/17/1990	650,000
P007	Namuwona S	F	Computer	3/22/1989	700,000

- Using a suitable database software, create a database and save it as your name and personal number (01 marks)
- Design a table named employee table with appropriate data type in design view, using the given information. (03marks)
- Enter the data given in the table (03marks)
- Create a query with all fields to filter female employees in computer department and save it as computer dep. (02marks)
- Create another query to calculate the ACTUAL SALARY if all employees are registered with NSSF and 15% is deducted. Save it as **Actual Salary**. (03marks)
- Create a report from Actual Salary query with all the fields and save it as **Query Report**. (02marks)
- Create a form with a light background colour to show the fields EMPNO, NAME, DEPARTMENT and SALARY. Save it as Salary Form. (03marks)
- Insert your name and personal number as footer in **Salary form**. (01marks)
- Save and print all your work

2. The table below gives information about some students in XY Secondary School

Reg. No.	Names	Class	Age	Sex	House
001	Gadibe G	S5	18	M	Nasser
002	Nabakiibi J	S1	13	F	Kenyatta
003	Bbale B	S2	15	M	Mandela
004	Dungu W	S3	16	M	Lubega
005	Agwanga F	S1	14	F	Mwanga
006	Opeta T	S3	16	M	Mandela
007	Kapere R	S5	19	M	Mwanga
008	Cossy K	S5	20	M	Kenyatta
009	Mpuuta V	S3	18	M	Kenyatta
010	Nampa T	S1	12	F	Lubega

- Create a database and save it as your name (01mark)

- (b) Design a table with appropriate data types and enter the given data. Name it as Registration Table. (07mark)
- (c) Design a query to extract all male students above 18 years of age and name it **Mature**. (03marks)
- (d) Create a form which will display record in the table. Name it **Registration form**. (04marks)
- (e) Create a report to display students' details with the names arranged in alphabetic order. Name it **Registration Report**. (03 marks)
- (f) Print all your work. (02marks)

3. A medical center wishes to computerize all its patients' records

- (a) Create a database for the center and save it as your name and personal number. (01 mark)
- (b) In Design View, create a Table with the following properties and save it as **Patient Bio Table**

Field name	Properties
Patient Name	Text (20)
Sex	Text (1)
Residence	Text (25)
Patient Code	Text (4)
Date of Visit	Date/time(short date)
Diagnosis	Text (25)

- (c) Create a form for **Patient BIO Table** and enter the records below, save as **Patient Bio Form**. (03marks)

Patient name	Sex	Residence	Patient Code	Date of Visit	Diagnosis
Adriko Sam	M	Kasese	ADS009	3/4/2006	Malaria
Akech Sally	F	Bulamu	ADS010	13/01/2006	Septic wound
DdumbaZAm	F	Rubaga	ADS011	21/11/2005	Infection in chest
Taemwa Steve	M	Kasawo	ADS012	3/10/2005	Malaria
Sango Dan	M	Bulenga	ADS013	13/03/2006	Inflamed joints

(d) In *Design View*, create another table with the following properties and save it as **Patient Billing Table**

Field name	Properties
Patient code	Text (4), Primary Key
Prescription	Memo
Consult_fee	Number
Treat_fee	Number
Medical*	Number

\*Medical is calculated field which is Consult\_fee + Treat\_fee

(e) Populate the Patient Billing Table with the following data. (03marks)

Patient code	Prescription	Consult_fee	Treat_fee	Medical bill
ADS009	Dualcortem	15,000	25,000	
ADS010	Tetanus vaccine, daily dressing	15,000	20,000	
ADS011	Ciproflaxin tabs, PPF injection	15,000	15,000	
ADS012	Chloroquine injection	15,000	30,000	
ADS013	Referred to sickle Cell clinic-Mulago	15,000	5,000	

- (f) Create a one – to – one relationship between the **Patient Bio Table** and the **Patient Billing Table**. (01 mark)
- (g) Create query which extracts from Patient Bio Table only those patients who were not diagnosed with Malaria. Save it as **Ant-malaria**. (02 marks)
- (h) (i) Create a report showing Name, residence, prescription and medical Bill. Save it as **Clinic Report**. (01mark)
- (ii) Include a report footer of your name and personal number. (01mark)
- (i) Print your work. (01mark)

4. ARIS Bookshop keeps records of books on sale in their shop as shown in the Book table.

**Book Table**

BookNo	BookTitle	AuthorID	Publisher	Year	Quantity	Each Cost (Shs)
ARIS-005	Physical Geography in Diagram or Africa	595	Longman	1999	20	35,000
ARIS-006	Advanced Level Statistics	594	Nelson Thomas Ltd	2002	15	64500
ARIS-007	Pure Mathematics 1	593	Longman	1984	3	50,000
ARIS-008	Pure Mathematics 2	593	Longman	1984	60	50,000
ARIS-009	Introduction to ICT	592		2007	10	30,000

**Author Table**

AuthorID	Author Name
592	Katongole
593	J.K Backhouse
594	J.Crawshaw
595	R.B Bunnet

Required:

- i. Using any available database management system applications, design a database called ARIS using book and author tables. **(01 mark)**
- ii. Create author and Book tables with appropriate names, data types and primary keys. **(10 marks)**
- iii. Create the relationship between book and author tables. **(02 marks)**
- iv. Create forms for author and book tables and named them author and book respectively.
- v. Enter all the records using author and book forms respectively. **(09 marks)**
- vi. Use query to calculate the total cost of each types of books available in the bookshop. Save it with file name **querytotal**. **(02 marks)**
- vii. Create a query that can filter BookNo, AuthorName, each cost and Total cost, save the file as **summary** **(02 marks)**
- viii. Create a query that can filter books that are not published by Longman save it as **notlongman** **(02 marks)**
- ix. Create a report for notlongman query and print it. Give the file name notlongman **(02 marks)**

5. The Director of studies (DOS) of a school wishes to improve efficiency in his office by designing a database for students.

(a) Use Database Management software to design the student database and save it as your name and personal number. (01 mark)

(b) Create the table below and save it as Student Data Table. (05marks)

Reg. No.	Name	Sex	Date-birth	Class	Co-curricular
RGS003	Nambi Tina	F	1/23/1996	6A	CHAPEL
RGS006	Guma Fred	M	9/11/1995	6B	SPORTS
RGS009	Okell Dan	M	4/22/1996	6A	MMD
RGS010	Busingye Bob	M	7/10/1996	6C	NONE
RGS011	Sonia Patel	F	12/1/1995	6A	SPORTS
RGS014	Achol Faith	F	1/13/1996	6B	CHAPEL
RGS017	Said Ali	M	2/11/1997	6C	MMD

(c) Create another table with the data below and save it as Student Clearance Table (04marks)

Reg. No.	Lib-Status	Fees-Bal	Oth-Debts	TOT-Bal
RGS003	CLEARED	0	12,000	
RGS006	CLEARED	140,000	0	
RGS009	CLEARED	52,000	10,000	
RGS010	CLEARED	0	21,000	
RGS011	DEFAULTER	100,000	0	
RGS014	DEFAULTER	22,000	0	
RGS017	DEFAULTER	0	0	

(d) Create **one-to-one** relationship between the two table (01mark)

(e) Create a form for **Student Data Table**, include a form header "Students' Entry form". Save it as **Student Data form**. (02marks)

(f) Create a report showing **Name, class, Lib-status and Fees-Bal**. Save it as **Clearance Report**.

- (i) Group your records by class
- (ii) Arrange records in ascending order of Names
- (iii) Include a report footer of your name and personal number. (04marks)
- (g) Create a query for **Student Clearance Table** and in it, calculate the **TOT-Bal** which is the sum of **Fees-Bal** and **Oth-Debts**. Save it as total Debts Query. (02 marks)
- (h) Print all your work. (01 mark)

**Thank You**

**Dr. Bbosa Science**