G.C.E. O/L Grade 10 ICT · Lesson 1

1.2 The Computer as a System: Data to Information

A computer takes in raw facts (data), works on them, and gives us useful results (information). In this note you will learn what a system is, the difference between data and information, and how processing changes data into information – with examples from apps, sensors and the cloud.

1. What is a system?

A **system** is a group of parts that **work together to reach a goal**. Every system has three main parts: **Input** → **Process** → **Output**.

> 💡 Think of it like making **kiribath**: rice, coconut milk and salt go in (**input**), you cook them (**process**), and you get kiribath (**output**).

System	Input	Process	Output
Rice cooker	Rice, water, electricity	Heating and cooking	Cooked rice
ATM	Card, PIN, amount	Checks PIN and balance	Cash and a receipt
School report	Marks of each subject	Total, average, rank	Report card
Smart farm (IoT)	Soil moisture sensor reading	Is the soil too dry?	Pump ON + alert on the phone

Many systems also have **storage** (keeping data to use later) and **feedback** (using the output to adjust the next input), e.g. a fridge thermostat switches the cooling on and off by checking the temperature again and again.

2. Data and information

Data
Raw facts with no clear meaning yet: numbers, words, pictures, sounds. Example: 65, 78, 42, 90.

Information
Processed data that has meaning and helps us decide. Example: “Nimal’s average is 68.75 and he is 5th in the class.”

Data (input)	Information (output)
Temperature readings every hour: 29, 31, 33 °C	“Today will be hot – drink water” on a weather app
GPS positions of many phones on a road	Red line on Google Maps: traffic jam ahead
Steps counted by a smart watch	“You walked 6,500 steps today”
Each item price scanned at a supermarket	Bill with total amount

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💡 Easy test: if it answers a question and helps you decide something, it is **information**. If it is just a list of facts, it is **data**. The information from one system can become the data for another.

3. Processing: turning data into information

Processing is the work done on data to give information. Common ways:

Calculating
Total, average, percentages.

Sorting
Putting in order, e.g. marks highest to lowest.

Classifying
Grouping, e.g. pass / fail, A–W grades.

Comparing and searching
Finding a name, checking a PIN.

Summarising
Charts and short reports.

NEW 2026 Modern example (2026 syllabus): a **smart watch** (IoT device) collects heart-rate data → sends it over the Internet to the **cloud** → cloud servers (sometimes using **AI**) process it → the **app** on your phone shows "Your heart rate is normal". Input, process, storage and output can now happen in different places.

4. The computer as a system

Part	Job	Examples
Input	Brings data in	Keyboard, touch screen, microphone, camera, sensors, QR scanner
Process	Works on data	CPU (processor) in the computer or phone; cloud servers
Output	Gives results	Screen, speaker, printer, phone notification
Storage	Keeps data and results	SSD, memory card, cloud storage (Google Drive)

5. Parts of an information system

An **information system** collects, processes, stores and shares information for people. Example: the school exam results system or a bank's mobile app. It has these parts:

- **Hardware** – the physical devices (computers, phones, servers).
- **Software** – programs and apps that tell hardware what to do.
- **Data** – the raw facts that go into the system.
- **People** – users and staff who enter data and use the information.
- **Procedures** – the rules and steps for using the system.
- **Network** – connects everything (Internet, Wi-Fi, mobile data).

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6. Good information

Information is useful only if it is **accurate** (correct), **timely** (on time), **relevant** (to the point), **complete** and **easy to understand**. Wrong data in gives wrong information out – this is called **GIGO: Garbage In, Garbage Out**.

Key Words

System – Parts working together to reach a goal.	**Input** – Data or instructions that go into a system.
Process – Work done on data to change it into information.	**Output** – The result that comes out of a system.
Storage – Keeping data and information for later use.	**Feedback** – Using the output to control or adjust the next input.
Data – Raw facts without a clear meaning.	**Information** – Processed data that is meaningful and useful.
Sensor – A device that measures things like heat, light or moisture and sends the data.	**Information system** – Hardware, software, data, people, procedures and network working together to give information.
GIGO – Garbage In, Garbage Out – wrong input gives wrong output.	**Cloud processing** – Data processed on Internet servers instead of only on your device.

Sample Q&A

1. What are the three main parts of a system?

> **Answer:** Input, process and output. Example: in a rice cooker, rice and water are input, cooking is the process, and rice is the output.

2. Is “45, 67, 89” data or information? Why?

> **Answer:** Data. They are only numbers with no clear meaning. If we say “the class average is 67”, that is information.

3. Give two examples of processing.

> **Answer:** Calculating an average and sorting names in alphabetical order. Both change data into something useful.

4. How is a sensor used as an input device?

> **Answer:** A sensor measures something (like soil moisture or temperature) and sends that reading into the system as data.

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5. What does GIGO mean?

> **Answer:** Garbage In, Garbage Out. If you enter wrong data, the computer gives wrong information.

6. Name the parts of an information system.

> **Answer:** Hardware, software, data, people, procedures and network.

MCQ

1. A system is best described as:

A. A single computer part
B. Any random list of numbers
C. Only a printed report
D. A group of parts working together to reach a goal

2. What is the correct order in a system?

A. Input → Process → Output
B. Input → Output → Process
C. Output → Input → Process
D. Process → Output → Input

3. In an ATM, the PIN number you type is the:

A. Feedback only
B. Input
C. Process
D. Output

4. Which of these is data?

A. “Kamal came first in the class”
B. “The class average is 70”
C. “Most students passed Maths”
D. A list of marks: 56, 72, 81

5. Information is:

A. A type of input device
B. Processed data that has meaning
C. Only pictures and sounds
D. Raw facts that are not processed

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6. Finding the average of a student’s marks is an example of:

A. Processing (calculating)
B. Storage
C. Output device
D. Input

7. Arranging students’ names in alphabetical order is:

A. Sorting
B. Printing
C. Scanning
D. Typing

8. In a smart farm, a soil moisture sensor works as the:

A. Output
B. Input
C. Processor
D. Printer

9. A fitness app showing “You walked 6,500 steps today” is giving:

A. Information
B. Hardware
C. Input
D. Raw data only

10. Saving your photos in Google Drive so you can open them later is an example of:

A. Sorting
B. Input
C. Cloud storage
D. Feedback

11. A fridge thermostat checks the temperature and switches cooling on again. This shows:

A. Sorting
B. Phishing
C. Feedback
D. Printing

12. Which is NOT a part of an information system?

A. People
B. Weather
C. Software
D. Procedures

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13. GIGO means:

A. Good Input, Good Output
B. Go In, Go Out
C. General Input, General Output
D. Garbage In, Garbage Out

14. Information given after the exam is over, when it is no longer useful, is NOT:

A. Stored
B. Printed
C. Timely
D. Digital

Structured Questions

1. (i) What is a system? (2 marks)
(ii) Name the input, process and output of a rice cooker. (3 marks) *(5 marks)*

> (i) A group of parts that work together to achieve a common goal.
> (ii) Input: rice, water, electricity. Process: heating / cooking. Output: cooked rice.

2. (i) Write one difference between data and information. (2 marks)
(ii) Classify these as data or information: (a) 32, 30, 35 °C (b) "Tomorrow will be rainy" (c) a list of names (d) "Ruwan has the highest marks". (4 marks) *(6 marks)*

> (i) Data are raw, unprocessed facts without clear meaning; information is processed data that is meaningful and helps decisions.
> (ii) (a) data (b) information (c) data (d) information.

3. A school uses a computer to prepare term test reports.
(i) Write two data items used as input. (2 marks)
(ii) Write two processing steps. (2 marks)
(iii) Write one output. (1 mark) *(5 marks)*

> (i) Student name / index number, marks of each subject.
> (ii) Calculating total and average; sorting to find the rank; classifying grades.
> (iii) Printed report card / class merit list.

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4. A smart watch measures heart rate and an app on the phone shows a health message.
(i) What is the input device here? (1 mark)
(ii) Where can the data be processed and stored? (2 marks)
(iii) What is the output? (1 mark)
(iv) Why is this an IoT system? (2 marks) *(6 marks)*

> (i) The heart-rate sensor in the smart watch.
> (ii) In the phone/app and on cloud servers (cloud storage).
> (iii) The health message / chart shown on the phone.
> (iv) An everyday device with a sensor is connected to the Internet and shares data automatically.

5. (i) Name four parts of an information system. (4 marks)
(ii) Explain the role of "people" in an information system. (2 marks) *(6 marks)*

> (i) Any four: hardware, software, data, people, procedures, network.
> (ii) People enter data, operate the system and use the information to make decisions.

6. (i) Write three qualities of good information. (3 marks)
(ii) What is GIGO? Give an example. (2 marks) *(5 marks)*

> (i) Any three: accurate, timely, relevant, complete, easy to understand.
> (ii) Garbage In, Garbage Out – wrong input gives wrong output. Example: typing 9 instead of 90 for a mark gives a wrong average.

Summary

- A system is a set of parts working together for a goal: Input → Process → Output.
- Many systems also use storage and feedback.
- Data are raw facts; information is processed, meaningful data.
- Processing methods: calculating, sorting, classifying, comparing/searching, summarising.
- Modern systems: IoT sensors give input, the cloud processes and stores, apps show output.
- An information system = hardware, software, data, people, procedures, network.
- Good information is accurate, timely, relevant and complete. GIGO: wrong in, wrong out.

MCQ answer key – 1.2

1. **D** – Parts + working together + a goal = a system.
2. **A** – Data goes in, is processed, then results come out.
3. **B** – You give the PIN to the system, so it is input.
4. **D** – Raw numbers without meaning are data; the others are processed results.
5. **B** – Information = data + processing + meaning.
6. **A** – Calculating is a processing method.
7. **A** – Putting items in order is sorting.
8. **B** – The sensor measures and sends data into the system – input.

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9. **A** – The step readings were processed into a meaningful message.
10. **C** – Keeping data on Internet servers is cloud storage.
11. **C** – Output (temperature) is used to adjust the system – feedback.
12. **B** – Parts are hardware, software, data, people, procedures and network.
13. **D** – Wrong data in → wrong information out.
14. **C** – Good information must arrive on time – it must be timely.

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