

WELCOME TO:

Build & Break: Information Systems 101



Workshop Outline

1) Introduction to Information Systems

2) Automation with Google Apps Script

3) Storing with MySQL Database

4) Securing with hashing and encryption



Google Apps Script



Program Tentative

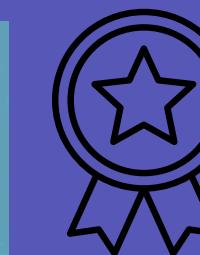
| Time | Activity |
|-------------------|--|
| 10.30AM - 10.35AM | Welcoming Speech + Ice Breaking |
| 10.35AM - 10.40AM | Kickoff + introduction to topic |
| 10.40AM - 11.00AM | Automation: How IS enhanced efficiency |
| 11.00AM - 11.35AM | SQL Hands-on: Building a Simple Database |
| 11.35AM - 11.45AM | Short Break |
| 11.45AM - 12.20PM | Encryption Hands-on: Securing your data |
| 12.20PM - 12.25PM | Survey form collection + QnA |
| 12.25PM - 12.30PM | Photography session + Closing ceremony |

Introduction to Speaker



CHOON YI KEITH

YEAR 2 INFORMATION SYSTEM STUDENT



Notable Achievements:

- DevMatch Blockchain Hackathon APU 2025- Champion
- UM Hackathon 2025- Quant Trading Third place
- EmbeddedLLM-Finalist

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What is an Information System?

A combination of people, technology, data, and processes working together to collect, store, and deliver information that supports decision-making.

- Management Information System
- Decision Support System
- Transaction Processing System
- Executive Support System
- Customer Relationship Management
- Knowledge Management System

Real world use cases:

1. FINANCE

- *online banking system (M2U)*
- *e-wallet (TNG)*

2. HEALTHCARE

- *Hospital Management System*
- *MySejahtera*

3. BUSINESS

- *internal CRM, ERP (Enterprise Resource Planning)*
- *E-commerce platform (Shopee)*

4. EDUCATION

- *Google classroom, Spectrum UM*



Why Information Systems?



#Increase efficiency & productivity

#Improve data management & security

#Enhance communication & collaboration

#Reduce costs

#Support better decision-making

#Gain competitive advantages





2

Google Apps Script Automation

Have you ever wonder how automated emails are generated?



Requirements:

- Create and publish a Google Form that has a field that records Email address.

Demo:

- Showcase how to use Google Apps Script to code out an automated sendEmail() function.



Google Forms

MySQL Database

Have you ever wondered where all the data from an information system goes – your login info, submitted forms, or stored records?

Requirements:

- MySQL
- JDBC (MySQL Connector/J)

Demo:

- Showcase how programmers interact with databases using MySQL workbench
- Showcase how Java applications connect and interact with MySQL database



A bit clarification before we continue....

Database ≠ DBMS ≠ SQL (see next slide)

3

Some database info

>You (Developer) → (SQL Commands) → DBMS (MySQL) → Database (Data Stored)

Database

- A place where data is stored
- Two main types: SQL (relational) & NoSQL (non-relational)

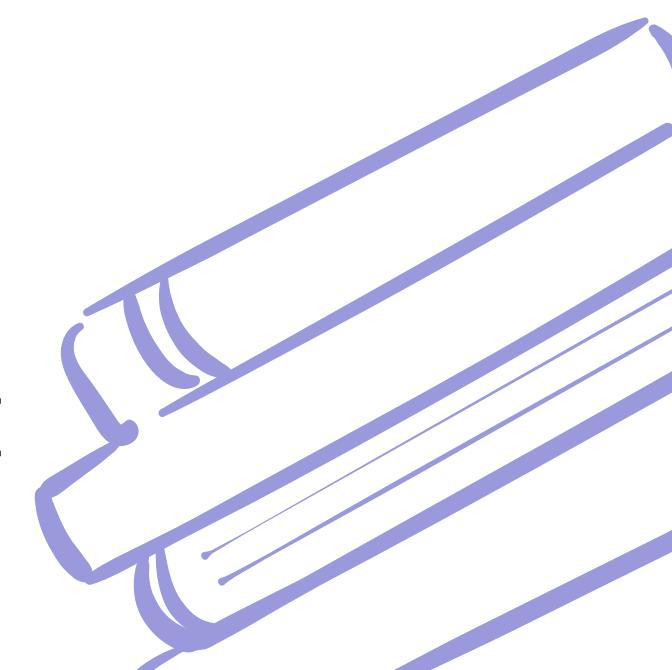


DBMS

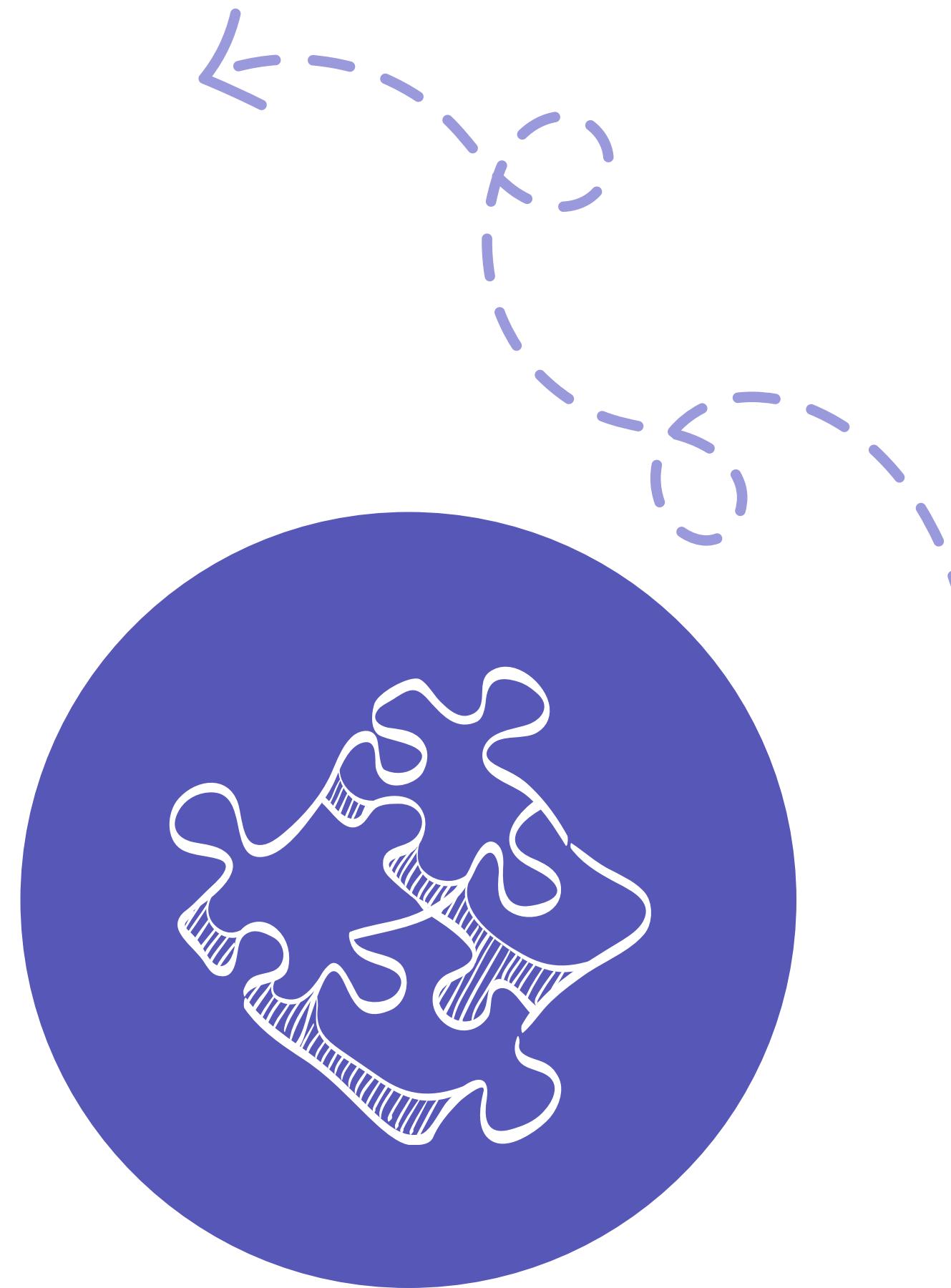
- AKA Database Management System
- Software that manages and controls access to databases
- Handles storing, updating, and retrieving data
- Examples: MySQL, Oracle, PostgreSQL, MongoDB

SQL

- Language used to communicate with a DBMS
- Used to create, read, update, and delete data (CRUD)
- Common commands: SELECT, INSERT, UPDATE, DELETE



BUILDING FSKTTM MINI MARKET SYSTEM



BEFORE SQL, ASK YOURSELF

1.What is the organizational structure/architecture?

If not...

If not... you are cooked lil bro



2.What are the bricks(components) framed within it?

If not... no direction what data your system should even store



3. What are the characteristics of each component?

If not... missing the details that actually describe your data

4. What are the relations between different component?

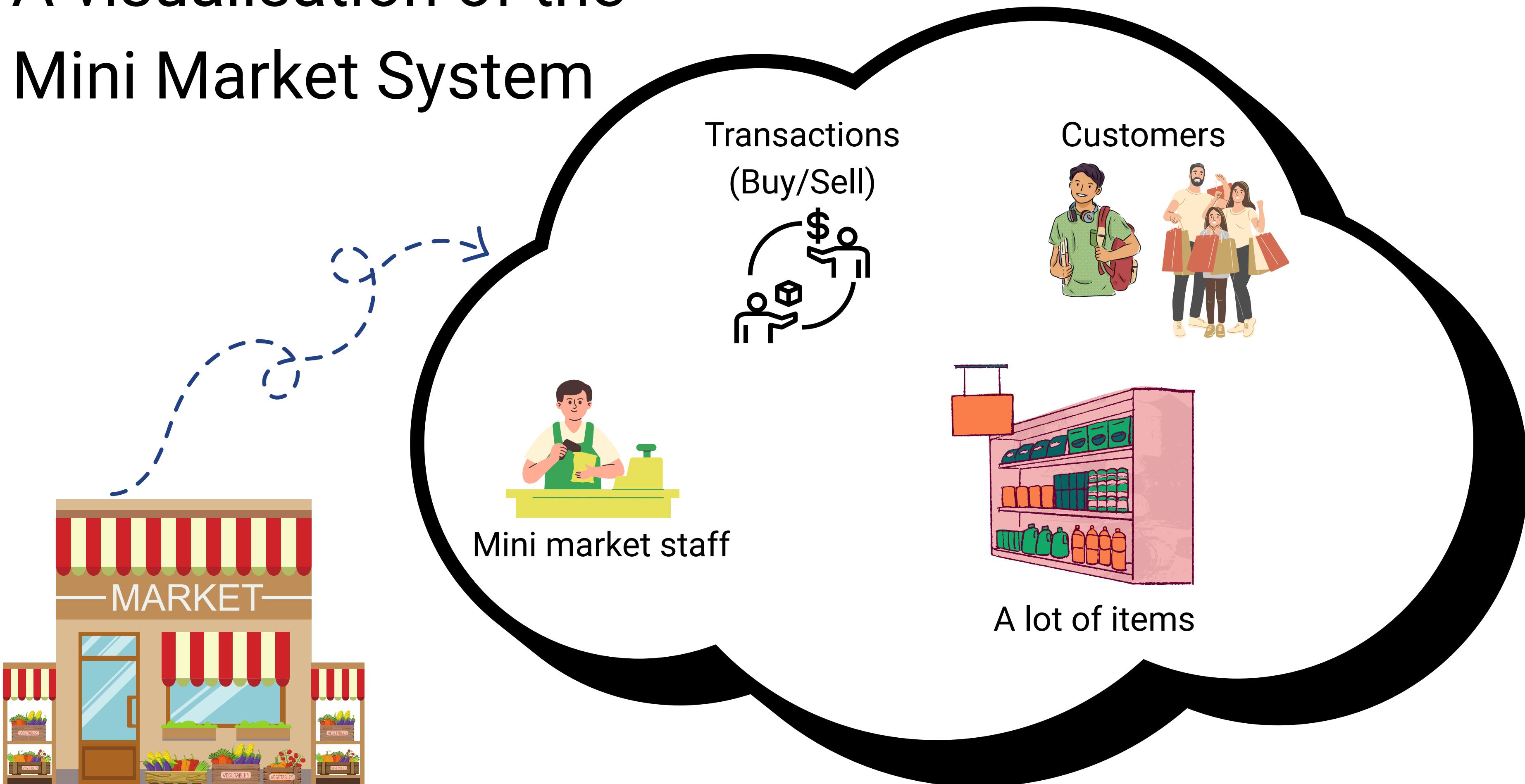
If not... components don't connect logically

5. What are some possible actions of each component?

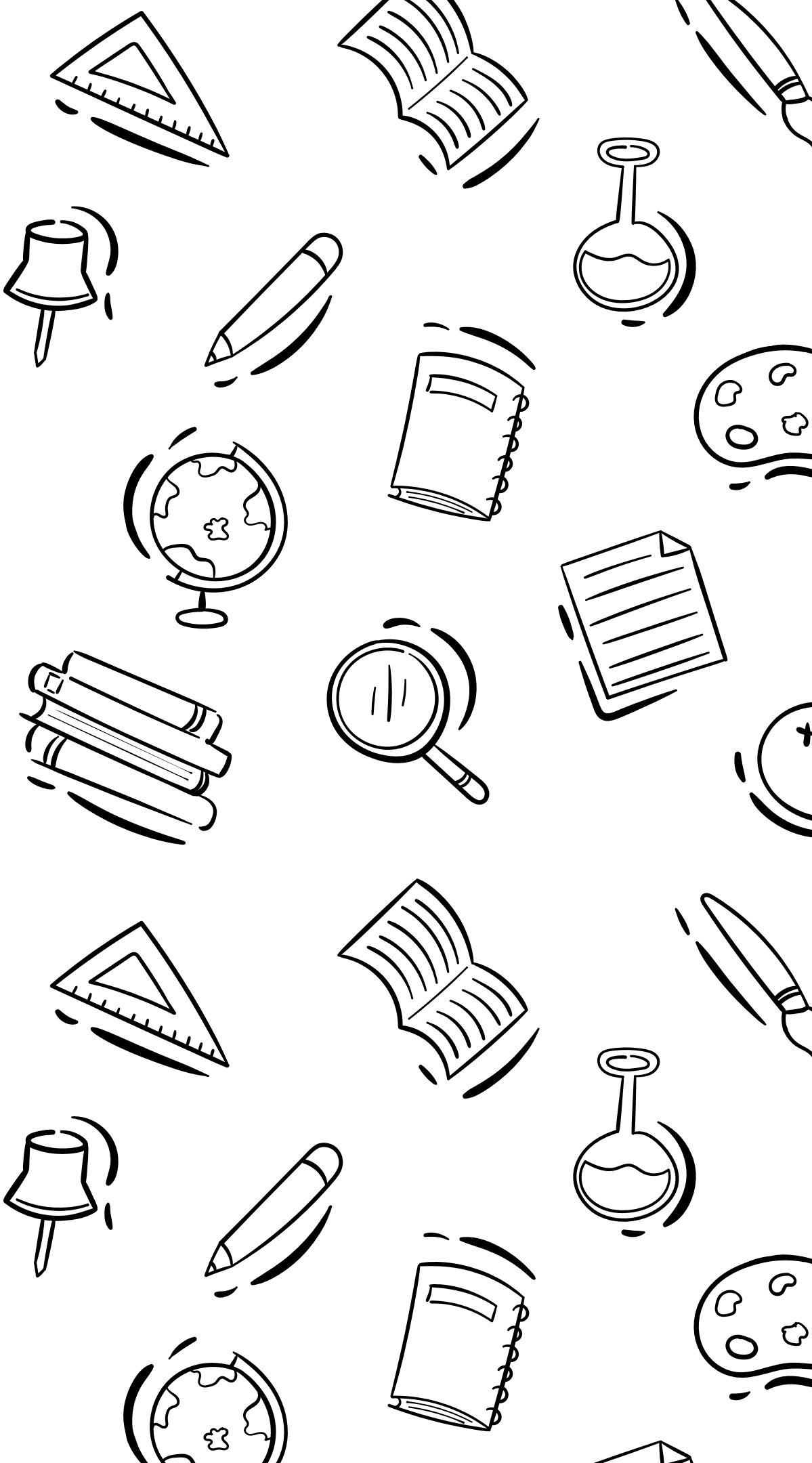
Not focused today, realised through Java



A visualisation of the Mini Market System



Scan QR to get notes for Hands On Session!





Short Break
for 10 minutes

**HOLD UP,
WE'LL BE
RIGHT
BACK**



4

Encryption to secure

Would you mind that your personal information like house address breached by a stranger?



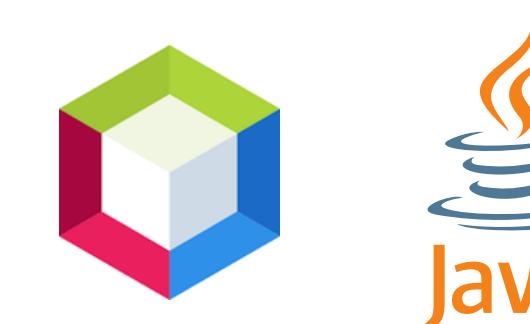
This workshop will be covering only on two algorithms:

Caesar Cipher (Shift Cipher) and SHA-256 hashing.

However students are encouraged to explore more on other algorithms like SHA-1, SHA-512, Advanced Encryption Standard (AES), Rivest-Shamir-Adleman (RSA)

Requirements:

- Apache Netbeans IDE
- Java



Demo:

- Showcase how encryption and hashing works in securing data

Caesar Cipher vs SHA-256



Caesar Cipher (Shift Cipher)

- simple encryption of text (shifting letters using ASCII)
- reversible (can be decrypted)
- key: shift amount (integer)
- input: only alphabets
- output: letters shifted
- security: weak (only used in small demo)

Example: "HELLO" shift by 3 → "KHOOR"

SHA-256 Hashing

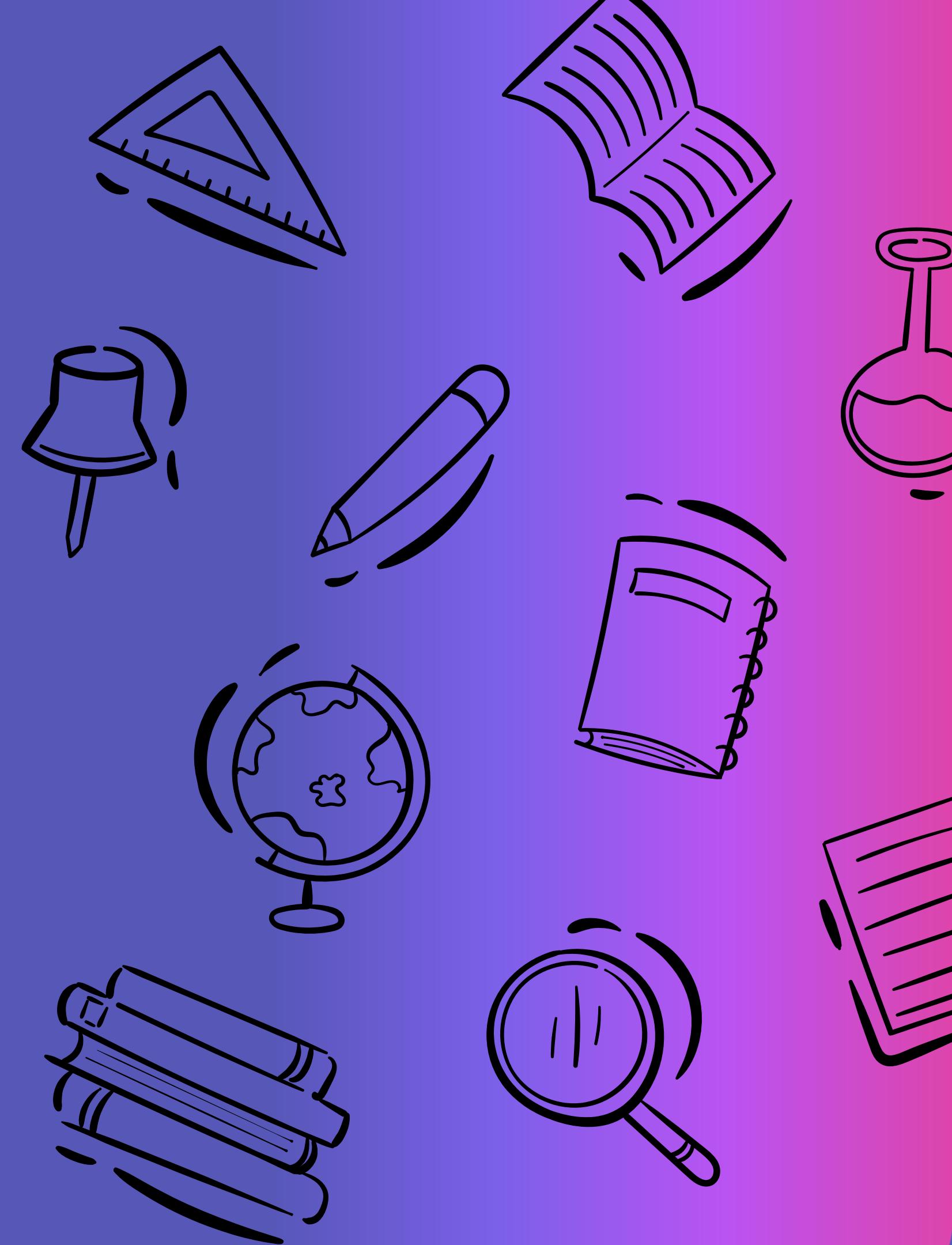
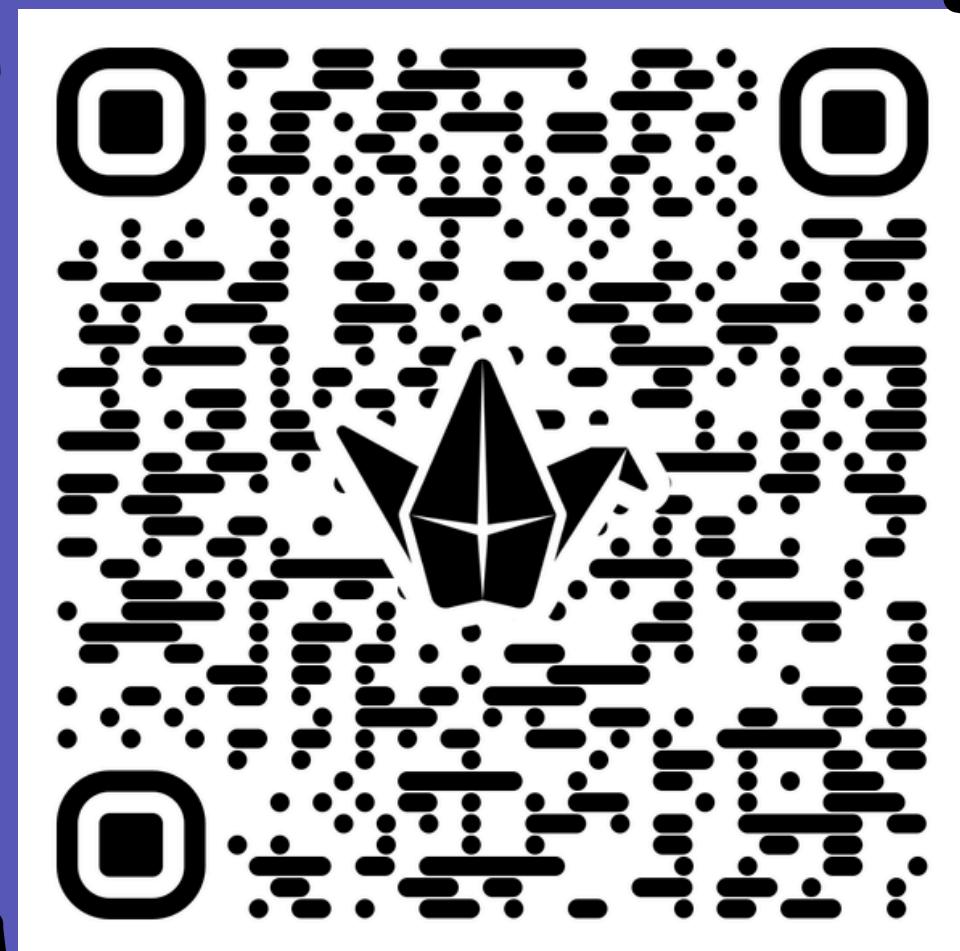
- one-way hash: convert input into fixed-size digest
- non-reversible
- generally doesn't use key
- input: any characters
- output: 64 hexadecimal characters (256 bits)
- security: strong (use in password storage)

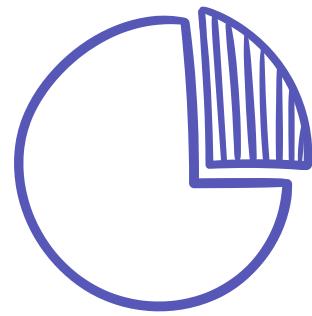
Example: "hello" → Hash: e3b0c442...

QNA Session

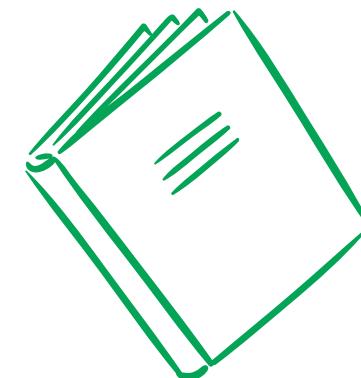
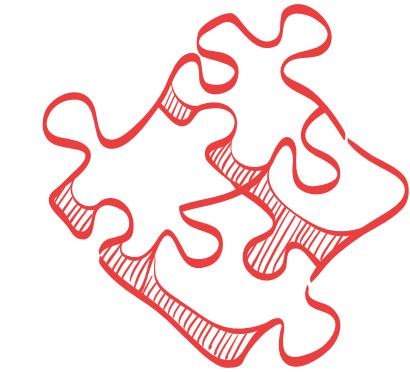
Ask us anything related to today's topic

SCAN ME!





PEKOM



**Thanks for
joining us
today!!!**

We would like to hear from you.



Please help us to
answer a short survey
by scanning this QR.

