

## Assignment 1

### 1. Types of ROMs in computers

Read-Only Memory (ROM) is non-volatile memory that retains data even after the power is turned off. There are different types of ROMs:

Mask ROM (MROM): Produced with data already stored in it during chip manufacturing. Once the data is written to the mask ROM chip, it cannot be changed.

Programmable Read-Only Memory (PROM): Users can write data into this type of ROM using a special device called a PROM programmer. However, it is a one-time programmable memory. Once the data is programmed, it cannot be changed.

Erasable Programmable Read-Only Memory (EPROM): Allows multiple erase and write cycles. To program an EPROM, a special tool is used that exposes the memory chip to ultraviolet light, which erases the contents and allows it to be reprogrammed.

Electrically Erasable Programmable Read Only Memory (EEPROM): This ROM can be erased and reprogrammed electrically, without the need for UV light. It allows more flexibility in overwriting data and is commonly used in computer systems to store BIOS and firmware settings.

Flash Memory: This is a type of EEPROM, but allows for faster erasing and reprogramming. Flash memory is commonly used in USB drives, SSDs, memory cards and BIOS chips in computers.

### 2. Sourcing Student Management System Software

#### Freeware/Open Source vs. Off-the-Shelf Software

##### Freeware/Open Source Software:

Cost: Freeware is free, and open source software often has no upfront cost, but may include support fees or customization costs.

Customization: Open-source allows customization according to specific needs.

Community Support: Open source software benefits from a community of developers and users who can provide support and updates.

Security and reliability: In general, open source software can be more secure due to community oversight and faster updates.

Common software from Software Houses:

Price: Initial purchase price and sometimes ongoing licensing fees.

Features and Support: Often offers dedicated support, regular updates, and a wide range of features that can meet general needs.

Customization: Limited scope for customization compared to open source solutions.

Reliability: Generally reliable and well tested.

The choice depends on the specific needs, available resources, desired features and the level of customization required by KCA University.

### 3. Von Neumann computer architecture

The Von Neumann architecture consists of the following components:

CPU (Central Processing Unit): Responsible for executing instructions. Example: Intel Core i7.

Controller: Controls the execution of instructions. Example: Intel 8086.

ALU (Arithmetic Logic Unit): Performs arithmetic and logical operations. Example: ALU AMD Ryzen.

Memory: It is divided into two parts:

RAM (Random Access Memory): Temporary storage for data and instructions. Example: DDR4 RAM.

ROM (Read Only Memory): Permanent storage for firmware and instructions.

Input/Output Devices: Connect your computer to an external environment. Examples: keyboard, mouse, monitor.