Hardware and Virtual Machines

A-Level Computer Science · Vocabulary in context

Word	Example
motherboard /ˈmʌðəbɔːd/	The **motherboard** connects the processor and the memory.
CISC /sɪsk/	A **CISC** processor has many complex instructions.
RISC /rɪsk/	Most phones use a **RISC** processor, which has a small set of simple instructions.
register /ˈredʒɪstə/	The processor keeps the number it is using in a **register**.
interrupt /ˈɪntərʌpt/	Pressing a key sends an **interrupt** to the processor.
pipeline /ˈpaɪplaɪn/	In a **pipeline**, the CPU fetches the next instruction while it runs this one. CPU
ALU /ˌeɪ el ˈjuː/	The **ALU** does the sums.
hazard /ˈhæzəd/	A **hazard** stops the pipeline for a moment.
throughput /ˈθruːpʊt/	**Throughput** is the number of instructions done each second.
heat-sink /hiːt sɪŋk/	The **heat-sink** keeps the processor cool.
Flynn's taxonomy /flɪnz tækˈsɒnəmi/	**Flynn's taxonomy** sorts computers by their instructions and data.
SIMD /ˈsɪmdiː/	**SIMD** does one instruction on many pieces of data at once.

exercises.lol exercises.com.cn

Word	Example
MIMD /ˈmɪmdiː/	**MIMD** runs different instructions on different data at once.
graphics card /ˈgræfɪks kɑːd/	A **graphics card** draws pictures for games.
massively parallel /ˈmæsɪvli ˈpærəlel/	A **massively parallel** computer uses thousands of processors.
distributed memory /ˈdɪstrɪbjuːtɪd ˈmeməri/	In **distributed memory**, each processor has its own memory.
machine learning /məˈʃiːn ˈlɜːnɪŋ/	**Machine learning** lets a computer learn from examples.
supercomputers /ˌsuːpəkəmˈpjuːtəz/	**Supercomputers** forecast the weather.
server /ˈsɜːvə/	The **server** stores the school's files.
data centre /ˈdeɪtə ˈsentə/	A **data centre** is a building full of servers.
virtual machine /ˈvɜːtʃuːəl məˈʃiːn/	The **virtual machine** runs the bytecode.
hypervisor /ˌhaɪpəˈvaɪzə/	A **hypervisor** runs several virtual machines.
sandboxing /ˈsændbɒksɪŋ/	**Sandboxing** keeps an unsafe program away from the rest of the system.
bytecode /ˈbaɪtkəʊd/	Java code is first turned into **bytecode**. Java
just-in-time compilation /dʒʌst ɪn taɪm ˌkɒmpɪˈleɪʃn/	**Just-in-time compilation** turns code into machine code as it runs.

Word	Example
host operating system /həʊst ˈɒpəreɪtɪŋ ˈsɪstəm/	The **host operating system** runs on the real computer.
guest operating system /gest ˈɒpəreɪtɪŋ ˈsɪstəm/	The **guest operating system** runs inside the virtual machine.
Boolean algebra /ˈbuːlɪən ˈældʒɪbrə/	**Boolean algebra** simplifies logic expressions.
Boolean /ˈbuːlɪən/	A **Boolean** value is either TRUE or FALSE. TRUE FALSE
truth tables /truːθ ˈteɪblz/	**Truth tables** list every possible input.
De Morgan's laws /də ˈmɔːgənz lɔːz/	**De Morgan's laws** change AND into OR. AND OR
absorption /əbˈsɔːpʃn/	By **absorption**, A OR (A AND B) is just A. A OR (A AND B) A
sum-of-products /sʌm ɒv ˈprɒdʌkts/	A **sum-of-products** joins AND terms with OR. OR AND
Karnaugh map /ˈkɑːnɔː mæp/	A **Karnaugh map** helps you simplify a logic expression.
Gray code /greɪ kəʊd/	In **Gray code**, only one bit changes at each step.
half adder /hɑːf ˈædə/	A **half adder** adds two bits.
carry /ˈkæri/	1 + 1 in binary gives 0 and a **carry** of 1. 1 + 1 0 1
full adder /fʊl ˈædə/	A **full adder** adds two bits and a carry.
flip-flop /flɪp flɒp/	A **flip-flop** stores one bit.

exercises.lol exercises.com.cn

Word	Example
bistable /baɪˈsteɪbl/	A flip-flop is **bistable**: it has two steady states.
toggle /ˈtɒgl/	The output will **toggle** from 0 to 1. 0 1
counters /ˈkaʊntəz/	Flip-flops can make **counters**.
SRAM /ˈesræm/	**SRAM** is fast and is used for cache.
clock /klɒk/	The **clock** sends a pulse at a steady rate.
SR flip-flop /ˌes ˈɑː flɪp flɒp/	An **SR flip-flop** has set and reset inputs.
JK flip-flop /ˌdʒeɪ ˈkeɪ flɪp flɒp/	A **JK flip-flop** can toggle its output.