OCR GCSE Computing – 2.1.2 (Hardware) – REVISION SHEET

Hardware

FETCH Instruction / Data

CPU
+ -
x ÷

Hardware

EXECUTE the INSTRUCTION

DECODE the INSTRUCTION

PERFORMANCE

Clock speed = time to perform 1 CYCLE = 1 Hz

CPU = Fast   Memory = Slow   ->   Bottleneck

Add faster memory – Increase Cost - > £££££££££££

Cache memory – Stores frequently used instructions – Much faster - > Reduces bottleneck

Cache memory = £££££££ so use small amount

1 Core = 1 Processor – Multiple cores = Multiple Processors so Multiple cycles

ROM	RAM
READ ONLY MEMORY	**RANDOM ACCESS MEMORY** **(Main memory)**
Start Up programme – BOOT PROGRAMME (BIOS)	Store programmes AND data that computer is working on
NON VOLATILE	VOLATILE
Not easily deleted / Changed	Can be changed More RAM = Faster processing
Size : 1 or 2 Mb	Size 4Gb upwards

BOOT
Performs basic checks
Finds operating system -> RAM
Hands over control -> Op System

Virtual Memory = Extension of RAM - > Computer runs out of RAM will stop

Swapping of programs from RAM to Virtual memory will slow computer

Cache Memory – Located on processor - > Buffer between processor (FAST FAST FAST) and Memory (Slow..)

Flash memory – Special type of RAM that is NON- VOLATILE (Does not need continual power supply). Cannot replace RAM as read/write is SLOW

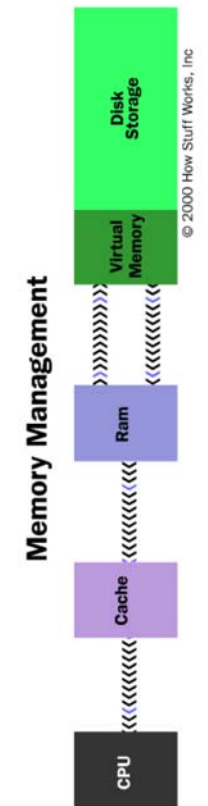Uses : Memory Cards / Smartphones / USB Sticks / Solid State Drives(SSD)

MEMORY TECHNOLOGY

STORAGE - > Portability

ACCESS - > Fast read/write times – Performance goes up

LESS POWER - > Battery life increases

LOWER COSTS

Memory Management

Disk Storage

Virtual Memory

Ram

Cache

CPU

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AND		OR		NOT	
INPUT	**OUTPUT**	**INPUT**	**OUTPUT**	**INPUT**	**OUTPUT**
0 0	0	0 0	0	0	1
0 1	0	0 1	1	1	0
1 0	0	1 0	1		
1 1	1	1 1	1		

Truth Table	Logic Diagram	Boolean Algebra
A B C Q 0 0 0 1 0 1 0 1 1 0 0 1 1 1 1 0		A AND B = C NOT(A AND B) = Q
A B C Q 0 0 1 0 0 1 0 0 1 0 1 1 1 1 0 0		NOT A = C (NOT A) AND B = Q

INPUT DEVICE	STORAGE DEVICE	OUTPUT DEVICE
Keyboard	Optical - CD / DVD	Monitor
Mouse	Magnetic	Speakers
Touch Screen	Hard Drive	Headphones
Barcode Scanner	Solid State	Printer
OMR (Lottery / Multiple choice)		
Joystick		
Microphone		
Sensors		
SELECT	**SELECT**	**SELECT**
Supermarket	CAPACITY	Supermarket
School	SPEED	School
House for disabled person	PORTABLE	House for disabled person
Patient Monitoring	DURABILITY	Patient Monitoring
	RELIABILITY	