مدونة المناهج السعودية

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الموقع التعليمي لجميع المراحل الدراسية

في المملكة العربية السعودية

Parts Of A Computer:

تعريفات هامه	
Computer science	is the systematic study of the structure and behavior of computational system. هو دارسه تركيب و سلوك النظام
Computer scientists	design and analyze algorithms to solve computationally intensive problems. تصميم و تحليل الخوارزميات لحل المشاكل المكثفه حسابيا الخوارزميه هى طرق متبعه لتسهيل حل المسائل
Computer scientists	**use** mathematics to find the solution to a problem. يستخدم الرياضيات فى الحل
algorithm is	a sequence of steps required to **implement** a solution using given resources. المصادر او المعطيات باستخدام لتنفيذ اللازمه الخطوات من سلسله
Computer Architecture for Computer Scientists	**The success depends on three things, developing the solution** **1-Theory** (i.e. Mathematics). الرياضيات اي نظريه 2- **Understanding the Tools** (i.e. Computers). **3- Mastering the implementation Techniques** (i.e. Programming)
Theory :	Theory of computation, algorithms and data structures. البيانات هياكل و خوارزميه و حساب نظريه
Tools :	Computer elements and architecture الادوات و هى محتويات الكمبيوتر و تكوينه.
Techniques	Programming methodology and languages منهجيه البرمجه و اللغات بطريقه سهله (لغه برمجه)
Processor	A computer is used for mathematical computations and calculations. الكمبيوتر يستخدمه ف المقارنات الرياضيه و العمليات الحسابيه يسمى المعالج • The primary component responsible for these computations
A processor has two main functions	1- Data Path 2- **Control unit**
1- **Data Path Has two function**	2- **Arithmetic and Logical Unit (ALU)** وحده الحساب و المنطق 3- **Register File**
1-Arithmetic and Logical Unit (ALU)	**Ability to perform diffent mathematical operation** **1-operations onnumbers(+ / *)2- Comparing number ><⇔=3-** **logical & - or**
2- **Register File**	**small memory component used to hold the data temporarily for the ALU** **ذاكره صغيره يوضع فيها البيانات مؤقتا لاستخدامها لل Alu**
2-Control unit	**Process receive program ins one by one**
Control unit	1- **Control Register:** The control registerspart of very small memory component **Which receives instructions AND keep track ins that need executed** هو ذاكره صغيره توصل لها الاوامر و تتبع الاوامر التى سوف تنفذ

	2- instruction decoder then 1- determines what the instruction means

32 bit **A processor whose registers have a size** The	**A processor whose registers have a size** of 32 bits is called a **32-bit processor architecture** معالج حجمه
64 bit **A processor whose registers have a size**	While a processor whose registers have a size of 64 bits is called a **64-bit processor architecture**
Some processors used for simple applications are still 8-bits or 16-	بعض انواع المعالجات تستخدم تطبيقات بسيطه تستخدم سجلات 8 او 16 بت
128-bit architectures processor	**128**يستخدم لاداء عالى المستوى
Instruction Set Architecture ISA	The complete list of instructions that a processor can understand and execute is called its instruction set or instruction set architecture (ISA). قايمه من الاوامر التى يفهمها المعالج وينفذها
1- Data Transfer Instructions انواع الاوامر	transfer of instructions frommemory to the processor registers & vise versa. • E.g.: MOV, LOAD اوامر نقل
2- Branch & Jump Instructions	responsible for breaking the sequential flow of instructions & jumping to instructions at various other locations. • E.g. JMP, JZ.قفز
3Arithmetic / Logic Instructions	one or more operands. • E.g.: ADD, SUB, XOR etc. حسابيه
RISC	is called a **Reduced** Instruction Set Computer (RISC).resulting in small-sized inexpensive processors --- basic
CISC	ISA that implement complex operations is called a **Complex Instruction Set Computer** CISC ISA results in higher performance but requires more expensive hardware
MEMORY	**Volatile Memory** متطايره **Non-VolatileMemory** غير متطايره
Non Volatile Memory	1-keeps its data evenwhen the power is turned off 2- access to such memory is slow 3- new data can be stored on it flash memory and sd card
Volatile memory	1-stores the data as long as power is available 2- the power is turned off,the memory losses whatever was stored 3- temporary memory it very fast fot read and write
(RAM) داكره وصول عشوائى	**Random Access Memory** intermediate results temporarily The processor gets all the instructions from RAM and stores all its data in It volatile • Diff type of DRAM IS has different READ and write speed • DDR/DDR2 /DDR3 /DDR4
BIOS دايمه غير متطايره بدونه لايعمل الجهاز	**Basic Input Output System (BIOS)** instructions. • **Read-only Memory (ROM)** is **permanent** memory. Booting up staring up program

Address Space:	How much memory can be connected to a processor depends on the bit-size of the processor.it know address space
Principle of locality	most program tend to reuse data and ins they have used recently هى اعاده استخدام البيانات التى تم استخدامها قريبا
There are two kind of locality	1- **Temporal locality** 2- **Spatial locality**
Temporal locality	pertains to recently accessed item are likely to be accessed in the near future الوصول الى المؤقت المتعلق بالعنصر التى تم الوصول له موخرا مع تغير الاسم
Spatial locality	:- pertain item that whose address are near one another and tend to be referenced closely together in time يتعلق بالعنصر الدى عنوانه يكون قريبا من الاخر و يميل الى الرجوع اليه فى وقت مناسب
Memory Hierarchy and Cache	1- **Any hardware that is physically placed closer to the processor is faster** اي اجزاء ماديه قريبه من المعالج تكون اغلى و اسرع 2- **More expensive than hardware which is placed farther away** 3- **based on memory of different sizes and speeds** هذا التسلسل الهرمى يعتمد على الذاكره بانواع و احجام مختلفه
Storage:	**It refers to a kind of non-volatile long term memory** **Which is not directly addressable by the processor but is accessed through an input/output device interface** هى ذاكره دائمه و تكون كبيره السعه و غير متصله بالمعالج
Cache	**is safe place for store thing it is first level of memory** مكان تخزين قريب من المعالج و هو فى المستوى الاول من التخزين **Cach is type of memory it pace so close to processor**
cache hit	**Processor finds request data item in cache it** **المعالج يجد مايطلبه من الذاكره القريبه**
cache miss	**Processor don't found request or data call** **المعالج لايجد البيانات هن**
Type of the storage	**1- Magnetic Hard disk Drives (HDD)** 1-Magnatic store2- Can read - write Can delete data -3 هى الاكثر استخداما من حيث السعر
	2- **Magnetic Tape:** **1-** Magnetic Tape has been used for data storage for a long time **2-**. It still used extensively for archival purposes. مازال يعمل على نظاق واسع لانجاز الاغراض - very dense storage capacity and has longer shelf life then hard disks. - يوفر سعه تخزين كثيفه و عمر افتراضي اطول
	كتر استخداما من حيث التقنيه .**Solid State Drive advantages** -3 **1-** 1- • They provide high data rates, fast access, have no moving parts **2-** provide longer life and higher reliability **3-** SSD is based on non-volatile flash memory**,**

Hard disk have two important parameter which determine access speed	**1- S**eek time 2- Rotational delay
Seek time :-	time take to position the head on specific track
Rotational delay	:-is the time required to move a requested sector under the head
Acess time	**When processor requests data requed wont time for acess**
BIT SIZE	**a processor determines the magnitude of integers that it can process.**

Address Bus	used to specify the address of device or memory location to communicate it
Data bus	:- used to transfer data between the address specified by address bus and processor Its called processor dus Front side Back side
Control bus	**:- used to control the timing , event and transaction such as read and write operation , enabling and disabling of component**
control bus	is a computer bus that is used by the CPU to communicate with devices that are contained within the computer بالاجهزه للاتصال المركزيه المعالجه وحده تستخدمه الذى الكمبيوتر ناقل هو التحكم ناقل الكمبيوتر داخل الموجوده
Computer Concepts	Artificial intelligence. ذكاء اصطنا ي ع • Software engineering. هندسه برمجيه • Programming. برمجه • Computer graphics
Clock speed	-: is the speed at which the data is passed from one component to another in a computer system. So a slower clock speed mean slower computer
	3- Clock speed become irrelevant when comparing two different architecture يصبح عديم الفائده اذا كان المعالج من انواع مختلفه
The bus speed	-: dictates the rate at which data can enter and leaves the processor chips
Ins per secand	**:- number of ins aprocessor can process in one second it important when comparing two processors and consider better metric of performance then clock speed** •
Benchmarks	**Stander method of measure processor performance is through standardized programs** **Diff processor are geared towords diff kind of application**
Most high performance base on cisc isa x86	It embedded computer such tv - microwaves automobile use red
Cache size	Has direct impact on the performance
call rotational delay	AVERAGE time necessary for correct sector of disk to arrive at read write head -
Address bus	Use specify address of device or memory location to commnicat with

1- Core I7 runing at 3 GHZ faster then core I7 run at 2.8 GHZ

2- Intel core i7 vs snapdragon the fastest Pentium 4 operater at 3.8

3- The fastest Celeron chip clock speed 2.8 ghz

4- Larger cache means system can hold more data very close the processor which increase probability of cach hit