



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Complete, fold and seal
(see note 2 below)

SURNAME: HUNT

FORENAME(S): JOEL
Nathanael

Examination Answer Books

12 Pages

Instructions to Candidates

- Please give the information requested in the boxes below.
- Enter your name in the space provided to the right, fold over and seal down (using the label provided) to hide your name.
- The answers must be legibly written. The Examiners can either ignore illegible script or have it typed and the expense of typing charged to the candidate.
- Write your answers in ink.
- Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
- No part of this book is to be torn out; it must be handed in complete.
- If more books than one are used, fasten them together using the tags available from the invigilator(s).
- Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.

1	Student Number	
2	Title of Examination Paper	Computer Architecture & network
3	Module Code	D4X00002
4	Date and Time of Examination	30/4/18
5	Examination Venue	Tychoch college main hall
6	Seat Number	2
7	Number of Answer Books handed in	1

List the numbers of the questions you have attempted	Office Use	
1	16	12
2	14	14
3	17	17
4	9	9
5	12	13
6		
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Office Use	68	68

(Gweler yr ochr arall am y fersiwn Cymraeg)

(See the other side for English version)

7	Nifer y Llyfrau Atebion a gyflwynwyd	
6	Rhif Sedd	
5	Lleoliad yr Arholiad	
4	Dyddiad ac Amser yr Arholiad	
3	Cod y Modwl	
2	Teitl y Papur Arholiad	
1	Rhif Myfyrwr	
	Rhestrwch rifau'r cwestiynau a ymgeisiwyd gennych At Dibenion y Swyddfa	
	Cyfanswm	

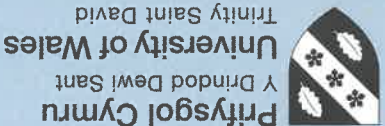
- Rhaid dychwelyd pob llyfr. Ni chaniateir mynd â llyfrau atebion, wedi eu defnyddio neu heb eu defnyddio, allan o'r lleoliad arholi o dan unrhyw amgylchiadau.
- Os defnyddir mwy nag un llyfr, rhwymwch hwy gyda'i gilydd gan ddefnyddio'r tagiau sydd ar gael oddi wrth y gwyllwr/gwyllwyr.
- Ni ddylid rhwgo unrhyw ran o'r llyfr hwn; rhaid ei gyflwyno yn gyfan.
- Dechreuwch bob ateb ar dudalen newydd. Gwnewch unrhyw fras nodiadau yn y llyfr atebion a thynnu llinell drwyddynt.
- Ysgrifennwch eich atebion mewn inc.
- Rhaid i'r atebion fod mewn llawysgriflen ddarlennadwy. Gall yr Arholwyr naill ai anwybyddu sgrïpt annarllennadwy, neu drefnu iddi gael ei theipio a chael yr ymgeisydd i dalu.
- Ysgrifennwch eich atebion mewn inc.

- Rhowch yr holl wybodaeth y gofynnir amdani yn y blychau isod.
- Rhowch eich enw yn y lle a ddarparwyd ar y dde, plygwch ef a'i sellio i lawr (gan ddefnyddio'r label a ddarparwyd) i guddio'ch enw.

Cyfarwyddiadau i Ymgeiswyr

12 Tudalen

Llyfr Atebion Arholiadau



Llenwch, plygwch a seliwch (gweler nodyn 2 isod)

CYFENW:

ENW(AU) CYNTAF:

(a)

RAID 0 - Striping Expands the disk space used over ~~multiple~~ multiple drives. This increases performance of HDD but has no fault tolerance because if 1 drive fails then all data is lost.

Raid 1 - Mirroring 1 drive copies total data of another drive. No performance increase but high ^{fault} tolerance because if one drive fails then there should be another one with the mirrored data. Expensive and only half storage is used.

Raid 0+1 is both mirrored and striping. Raid 5 - A minimum of 3 drives is required.

Very high fault tolerance as data can be retrieved if a drive fails. Also performance increase in a very expensive and usually recommended to larger businesses. It is a very effective way of protecting data.

If the company is considering only 4TB of External storage then it limits which Raid can be used. Raid 1 is the most recommended for smaller businesses as ~~it's able to~~ it's not the most expensive method and it has high fault tolerance. There is no performance increase in the HDD with Raid 1 however so the company would need to invest further down the line.

(b)

Disk Cleanup is a tool on the OS which is designed to search the HDD for temp files, deleted files, unused files, cached files and it removes these files to make room on the HDD. This improves performance and ~~storage~~ storage capacity. Fragmentation occurs when the OS is unable to store data continuously. This can cause the HDD to take longer to find certain files.

Performing Defragmentation Physically moves data back into the right place of the HDD. The HDD can fail if it has to work harder than normal to find data so Defragmentation not only speeds things up but it also protects the HDD. Disk check error carries out a status check of the HDD to identify possible errors. HDD Access time is effected if files are fragmented as it takes longer to find files. This can cause the HDD to fail as its ~~not~~ working harder to find data. Always ensure HDD is secured and stable within computer. As it has fast RPM speeds and is a moving part, it is susceptible to damage if moved around too much.

(a)

The first issue identified is that the OS is 32 bit. This only supports 4gb of Ram, hence why only 3.5gb is showing as usable. Upgrade to 64 bit to support more Ram. The 8gb of Ram is showing as installed which means the motherboard only supports up to 8gb of Ram. Upgrading the motherboard to one that supports up to 32gb of Ram is advised. Make sure ~~new~~ motherboard supports current type of Ram. It is highly recommended that a processor with more cores is used when video/image editing. A dual core CPU is going to be less effective than a quad core or octa cores, when it comes to multi-tasking and processing images. Ensure all drives and windows are up to date. The better the CPU the bigger the cache which is essential for effective processing and task management. The installation of a graphics card is also recommended. What type of Ram is installed DDR3 or DDR4? 4 is better but not always supported on motherboards. An interrupt is a signal sent from Hardware, Peripherals or Software to the CPU to perform a task or stop a task to start a new one. Interrupt - internal clock found in CPU. Restart Interrupt - If operator, Restarts Software or computer. Console command. Software update Program error Interrupt - If a Program crashes fails or encounters an error. Hardware Interrupt - If a piece of hardware fails or disconnects. For instance a Printer will Request data from CPU. Buffer will be filled with data from the CPU. Signal sent to fall and will send data to Printer allowing CPU to carry out other tasks. It will then send a signal asking for more data. When buffer is full signal will be sent to stop but if signal is

✓

✓

(B)

Arholwr yn unig

②

Within the process manager the user can end chosen processes if they crash. User can view current running processes to monitor performance.

Used for troubleshooting processes and programs that are running. Can prioritise processes. Extremely important for the day to day running of a computer.

If computer is running slow or at high temperature user can check which process is using the most processing power and end process. Can be used to end programs also. useful if program has crashed or encountered an error. Generally used to monitor performance.

(c)

③

1 - Address bus. Sends the address/destination of data. The width of this bus determines the size of memory installed.

2 - Control bus. Is bi directional as it sets and monitors signals

!!! - Data bus - Transfers data to the various elements of the system. Control bus is bi directional because it monitors and sets signals

Data bus send and receives signals and returns

USB can hold up to 127 devices. USB is Hot ~~swap~~ swappable. Universally supported by most devices. Host can send into hibernation. Backwards compatible. Can be extended expanded using a hub. Requires drives to connect to c/s. O/S usually installs this ^{once} after connected and should remember device after that.

~~USB is governed by a~~ USB has a maximum physical length of 5 meters for the cable. Anything beyond that would require a hub. Speed is limited thus far. Speed is determined via USB version for example USB 3. is 8x faster than USB 2.0. Speed is ~~limited~~ has a limit. Does not support Peer to peer. Peripherals are universally recognized and if not then the manufacturers drivers will allow computer to contact peripheral. Used for transferring data from device to computer or to charge a device. Usually reliable and quick for computer to recognise. Data transfer speeds have a limit

(b)

(c)

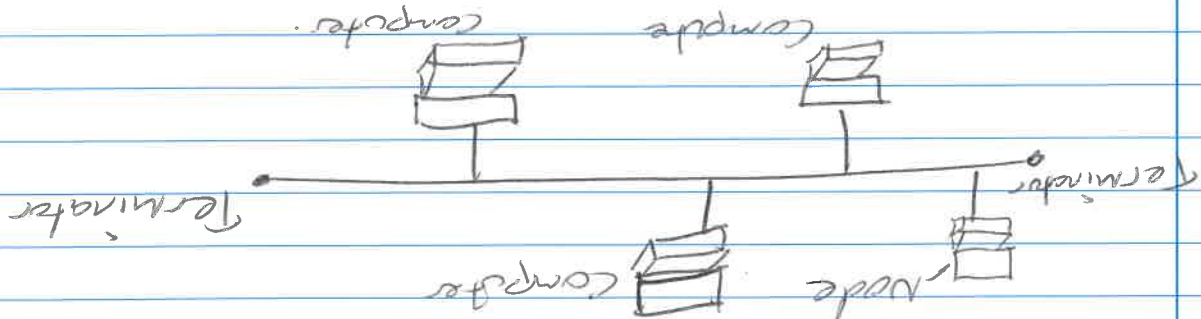
Rhif y Cwestiwn

(a) Easy sharing of files between users. Not expensive to set up so perfect for very small businesses. Ability to log on using individual usernames. Requires a trained individual to set up. Minimal equipment requirements compared to other options. No IP conflicts. Requires maintenance and requires more as the LAN expands. The storage of files has a high fault tolerance.

(b) !-FTP is file transfer protocol. Used for transferring data across a computer network.

!!- DNS is Domain Name Service. Holds Name Resolution on network to translate IP address !! TCP/IP - Peer to Peer connectivity is used when deciding if the how the data is formatted, ~~retrieval~~ and sent iv- ~~HTTPS~~ Secure Retrieval. iv- HTTPS Secure Communication over a computer network.

(a)



The bus topology is ideal for small businesses only requiring a few computers. It is ~~not~~ expensive to set up with the right knowledge. Easy to expand but it does have a limit. Maintenance costs rise over time and with expansion. Not very efficient at troubleshooting and narrowing down issues along the network. If the network fails at a point the whole network goes down. Less equipment is required to set up. Governed by physical wiring/cables the building itself.

Start	Source	Destination	Packet	Packet	Data	Checksum
	Address	Address	No.	type	Payload	

Mac address stores destination and identifies nodes in the network. Packet type is the type of data that is being transferred. The checksum is used for error checking the data. Usually performed upon ~~data~~ receiving source and destination details are created and labelled to correspond with the ~~data~~ packet. No so the data gets to the right destination. The packet type is determined and then the file is transferred. The checksum will then check for errors in file.

Rhif y Cwestiwn		Arholwr yn unig		Rhif y Cwestiwn		Arholwr yn unig	