
EXAM ANSWERS ATAR AIT MANAGING DATA UNIT 4

The backing up of data that has only changed since the last backup is called an incremental backup.

Which of the following is a record of who has accessed a computer system and what operations that person has performed over time?
audit trail

The contract that formally defines the services a service provider makes available to its customers is called a
service level agreement.

An international community that specifically works to develop web standards is called the world wide web consortium.

The process of identifying anomalies, patterns and correlations within large data sets to predict outcomes is referred to as data mining

Explain how using each of the following will ensure security when processing data.
digital signatures – mathematical technique which validates the authenticity of the message. Digital code (based on public key cryptography) attached to an electronic document to be transmitted by web to verify sender and contents. A validated signature allows a recipient to believe it was created by a known sender • digital certificates – electronic ‘passport’ which verifies sender from the web and allows receiver to encode a reply, provides a public key which proves ownership. Certificate contains serial number, name of certificate holder, expiration dates, copy of certificate holder’s public key and digital signature of certificate-issuing authority • encryption – the encoding of messages ensures that only authorised people can read the information, conversion of data to encrypt. The message to be sent via the web is encrypted by applying an encryption algorithm and an encryption key. The message is then decrypted by using the same method but in reverse. This increases the security of the message while in transit.

Describe two features specific to Web 3.0.

dynamic applications • computers interpret information • computers distribute useful information that is tailored • computers generate own raw data • semantic searches • search engines tailor searches to users • natural language searches • data mining

State three ways in which Web 3.0 has affected the use of web-enabled devices
enabled more efficient searching • contributed to improved marketing • contributed to improved web browsing • enabled predictive searches • enabled advertisers to better target profiles.

Describe in detail two benefits to a web-development company of using a Content Management System (CMS).

supports the creation and modification of digital content using a common user interface • facilitates central management • enables multiple users • facilitates a collaborative environment • facilitates ease of management.

Explain why the home owner should implement a Disaster Recovery Plan (DRP) for their home business.

to recover and protect IT infrastructure • to protect client data • to ensure business continuity
• to provide system redundancy.

You are aware that the DRP will require a data backup strategy. Identify three backup techniques that you will be suggesting the home owner implement and explain why each technique is appropriate.

full backup – is the starting point for all backups, stores all files and folders and if done frequently, results in faster and simpler restore operations. The most comprehensive, self-contained backup – best solution in data protection. • differential backup – contains all files that have changed since the last full backup. This backup shortens restore time compared to a full backup or incremental backup. • incremental backup – backs up all files modified since the last full, differential or incremental backup. Takes the least time to complete. • daily backup – copies all the files selected that have been modified on the day the daily backup is performed.

A differential backup technique captures only the changes made since the last backup

Describe three benefits to a company of outsourcing its production globally.

achieve lower operational and labour costs as third parties or external agencies' costs are cheaper • focus on core business processes while delegating mundane time-consuming processes to external agencies • tap into and leverage a global knowledge base, having access to world class capabilities

Identify two types of personal information and two types of sensitive information relating to the householders that could be stored in the smart home.

• location of the householders • demographic or biometric details of the householders • lifestyle patterns or occupancy details of the householders • data on matters of privacy of the householders.

Explain three different ways in which the householders could ensure the security of their personal and sensitive data in the smart home

encryption of data to protect data in transit • biometric access with key override to provide secure access and a fail-safe for power blackouts • installing antivirus software on computers to protect personal information • installing a firewall on computers to separate a secure area from a less secure area and control communications between the two

Describe two features that you could incorporate into your digital solution to facilitate user-generated content.

tweets – encourage conversation about the app, charging stations • blogs – ask for users to comment on their experiences • instagram – encourage customers to share images of stations, charging • forms – collects data from the user.

List three standards from the Web Design and Applications Standard of the World Wide Web Consortium (W3C).

HTML and CSS • graphics (images) • audio and video • accessibility • internationalisation • mobile web.

accept JavaScript, Web APIs; Privacy; and Math on the web

Explain how your digital solution will reflect each of these standards.

graphics – use of SVG which is supported by most browsers and PNG • accessibility – use of transcripts for Podcasts or audio files, Screen reader that reads aloud • internationalisation – use of language translators/options, unit conversions for examples, kilometres and miles • HTML and CSS – CSS to allow the presentation of the webpage/app design to be adaptable to different types of devices. HTML to code the structure of the website • graphics (images)– to ensure that the web pages and web applications optimise the presentation of information for different audiences with different needs and expectations.

You have developed the home page for the website and the landing page for the app and are now aware that the Australian Electric Vehicle Company requires the ongoing maintenance of both products. Describe three benefits of a service level agreement between the company and you, the developer.

ongoing maintenance – ensure data is updated and current • ongoing support – downtime, expected service levels • website is responsive – availability across multiple browsers, platforms • app is responsive – availability across multiple browsers, platforms • outlines the availability of service • clarifies the type of service.

To ensure the authenticity and reliability of an email message, a digital signature can be used. A user's digital signature consists of a personal mathematical key.

Describe how three types of biometric technology can be used to ensure security in processing data.

fingerprint authentication – to access a mobile device e.g. accessing a smartphone • voice recognition – to access a restricted room or to access a device e.g. engaging Siri or Cortana in a search • facial recognition – to access a restricted area e.g. entry to a research laboratory • eye/retina scan– to access a restricted area e.g. entry to a research laboratory

Describe the three online data storage methods listed below.

data warehouse – to store all of an organisation's data into a central repository so that data can be shared with different stakeholders for analysis and decisionmaking purposes • data mart – to look at specific data in order to meet the demands of a specific group of users within the organisation • data in the cloud – to allow users to use online storage solutions for their data for many benefits including disaster recovery, data backup and archiving.

Provide two reasons why an organisation would use data mining.

to identify interesting and useful patterns and relationships in large volumes of data • to identify and predict patterns based on trends and behaviour analysis • to identify relationships between price, product and customer demographics • to determine impacts on sales, customer satisfaction and profits.

Describe the three types of backup techniques listed below.

full – All data/files are copied from its original location to another location for use if needed. • differential – copies files that have changed since the last full backup occurred • daily – copies all selected files that have been modified the day the daily backup is performed. Every single file should have full recovery up to when the last daily backup was completed.

In the event of a full system restore, explain why a full backup is faster than an incremental backup.

a full backup consists of a complete copy of all data available on a single set of media, resulting in minimal time to fully restore data • incremental backups would be stored on multiple sets of media. It will take longer to locate and access all required files to complete a full restore.

Describe two techniques that can be used to ensure the validity of data entered by a user when completing an online form.

required fields – validation to ensure that the user provides all necessary details in the web form and it has to fail if one of the fields is not provided. Usually indicated with an asterisk • correct format – validation has to ensure that users provide information in the correct format. This applies to various cases such as email address, URL, dates, phone numbers and others. If information is not in the correct format, users should be informed and correct format should be suggested • confirmation fields – validation that lets the users confirm their input using additional confirmation fields. This way users can be certain that they provided correct information. A typical case when the confirmation field is used is for passwords, but it can be used in other cases like an email address.

Explain two ways in which a club might benefit by using Web 3.0 technology in conjunction with the data from the Viper pod.

enables more effective communication between players and management to assist in player fitness/health, participation in training and matches • improves awareness of player performance and the impact of any health/physical issues so that players bodies are not over-stretched • improves engagement with players to increase competitiveness and determine best playing position in matches.

Describe three ways in which a Premier League club could ensure that the data collected on their players is secure.

password – ensuring that only those with authenticated access will be able to view player data • firewall – restricting access to networked devices where player data is stored, reducing the possibility of hacking • anti-virus software – protecting player data from corruption/loss • encryption – protecting the transmission of player data if sharing player data online or via email.

Explain two concerns that a player might have if their club decided to store the data collected on them in the cloud.

security – possibility of hackers accessing player data; players would have a lack of control over their own data if outsourced to a third party online; where the server is located and the security/privacy laws of that country • confidentiality – some data may be personal or private and players would have no or limited control of their data and who can access it • level of accessibility – who can access, modify, save data files stored online; any downtime of the cloud storage.

Outline three reasons why one of the Premier League clubs might outsource the management of its player data. (3 marks) D

relieve pressure on storage capacity and ICT resources while reducing costs • enable quicker analysis of results when managed by data experts which will assist with decision-making • make reporting and metrics readily available for improved player and game-play strategies •

ensure access to most appropriate technology as clubs may not have the resources to store large volumes of data.

Explain how your homepage will comply with three standards from the Web Design and Applications Standard of the W3C.

HTML and CSS – HTML used to code the structure of the homepage; CSS to allow the presentation of the homepage; design should be adaptable to different types of devices • graphics – ensure that the homepage optimises images for different audiences with different needs and expectations; use of SVG and PNG which is supported by most browsers • audio and video – use W3C formats and audio and video codecs that enable authoring audio and video presentations using HTML, SVG, and SMIL • accessibility – create content that is accessible to people with disabilities such as use of transcripts for podcasts or audio files, screen reader that reads aloud • internationalisation – the design should work across cultures and languages by using language translators/options, unit conversions for distances/costs • mobile web – keeping the layout simple and fluid for different screen sizes and resolutions; allowing input from any form of input device; limiting use JavaScript due to less processing power and memory.

Describe two ways in which the government will benefit from having user-generated content feature/s on the homepage of the website.

enables feedback from users – users have a forum to express their thoughts and ask questions about the project allowing the government to respond to questions and make improvements to the project • increase user engagement – consumers are more likely to support government projects when there is a level of ownership and involvement • can build trust in the project – improves users' view of the government and belief in government policies and spending.

Explain three ways in which cloud technology can help ensure that patients have continuity of care and improved interactions with healthcare providers.

patients can see multiple doctors or other professionals who will all be able to see the same data, which can result in better health outcomes for the patients and continuity of care. The medical professionals will be able to collaborate • patients will easily be able to move doctors and the new doctor will be able to see a comprehensive medical history. Patients will not need to ask their current doctor for all their records • records can be lost if they are not carefully stored. Having the medical records in the cloud will mean they are protected from physical loss or damage • in an emergency, paramedics and medical professionals will be able to see health information to help them make informed decisions about patients.

Some patients have concerns about storing their medical information in the cloud. Referring to the article excerpt, explain why these concerns may be valid. (3 marks)

people may have concerns about the security of their medical information. With the data being hosted on the cloud, people may be concerned about hackers or other malicious people accessing or modifying their information • if the information is needed to make an important decision and the My Health Record system is unavailable, the medical professionals may not make the most informed choice.

Explain how a digital signature could be used to secure data in this system. (3 marks)

a digital signature could be used to ensure the data being uploaded to the My Health Record system is coming from a trusted source such as a medical practice, and that the data was not changed or modified during transmission • the digital signature can also prove who sent the

data should incorrect data be introduced to the system, allowing the cause of the error to be determined and making the responsible practice or professional accountable.

Describe four security methods, other than a digital signature, the My Health Record system could implement to secure the stored data.

password – ensuring that only those with authenticated access will be able to view patient’s medical data • firewall – restricting access to networked devices where medical data is stored, reducing the possibility of intrusion • anti-virus software – protecting the My Health Record system data from corruption/loss • encryption – protecting the transmission of medical data as it is being uploaded and downloaded from the system • biometrics – the use of human unique features, e.g. eyes, fingerprints, for authentication

Describe two benefits the Australian Government may have considered before outsourcing. outsourcing part of the development of the project could have been cheaper for the Australian Government than if they attempted to do the project themselves • it would allow the government to concentrate on their core focus rather than running the project • the third party may have better resources to develop the project in a shorter timeframe and/or to a better-quality final result. The Australian Government may not have the expertise available to complete the system to the standard required.

Describe three features that enable the inclusion of user-generated content in the website. Twitter feed – users can comment on their own experiences • blogs – ask for users to comment on their experiences • Instagram – encourage customers to share images • RSS feeds – users can comment on their eco-resort experiences • posting on review website, e.g. having the reviews embedded on the eco-resort webpage. Accept other rel

describe the concept of user-generated content (2 marks)

includes the ability to embed or display filtered content from any popular social media service, e.g. Facebook, Twitter, Instagram, TripAdvisor • includes Web 2.0 features that allow Ceerenity’s guests to comment on the website • guests can interact with the feature

describe two advantages of user-generated content

allows for current up-to-date content to maintain interest in Ceerenity’s website and repeat visits • allows for engagement with guests • allows promotion of Ceerenity across the host social media platforms.

describe two disadvantages of user-generated content. (4 marks)

Ceerenity could lose control of the message and brand being promoted • the possibility for bullying or bad behaviour in comments or posts, affecting guests • inappropriate images could be uploaded by guests • extra maintenance time required by site owner to check information uploaded.

Describe a way that Web 3.0 interconnectivity can be used to improve experiences for consumers.

consumers with smart watches could be recording their heart rate during exercise; based on results consumers can modify exercises to improve their heart rate over time and track results; improves experience for the consumer as they have access to live data of fitness levels. • search engines can tailor searches for the consumer resulting in fast result response times to search queries; improves experience for the consumer by reducing frustration and providing information quickly and efficiently

State the purpose of the world wide web consortium (W3C).

W3C was established to help in the development of web design standards to make web design accessible and inclusive for all users regardless of abilities.

The W3C has produced a set of standards. Describe two ways in which a designer could develop a web page for an international audience.

adjust the reading gravity of the webpage to fit reading styles of other cultures • have a currency converter for different currencies • reduce the use of idioms and cultural slang in the text for ease of understanding/reading for all users • check that symbols and graphics used are not culturally specific or have different associated meanings to avoid misunderstanding • formatting of names is in line with cultural rules so that users are not offended • the use of appropriate images and graphics with an understanding of religious and cultural sensibilities.

Define data mining

The process of analysing large sets of data to find patterns, trends or new information that can be beneficial to businesses.

Explain how a business could use data mining.

Stock – Data mining allows a business to examine sales patterns and trends to determine what is currently in store and what needs to be reordered. This helps business efficiency so that stocks are not over/under supplied and costs are kept under control. Customers can be assured that stock is available when required. • Customer habits – Data mining allows a business to determine time periods when consumers are more likely to spend – such as late night or weekend. This helps the business organise for stock availability and staffing to cope with numbers of customers. Customers benefit from stores having adequate supplies and staff to process transactions. • Advertising/marketing – Data mining allows a business to develop target audience profiles so that they can cater their advertising and marketing to specific consumer groups. This helps the business to increase market base and profits. Customers may purchase additional/new items or offer loyalty to the business.

Describe three reasons why Plumbers Galore should consider using a content management system (CMS) for its business website.

CMS do not require Plumbers Galore office staff to have specific technical skills or coding expertise, which means Plumbers Galore can save money on training staff. • staff at Plumbers Galore can easily make changes to their mobile and web platforms minimising time taken to keep these up to date • little downtime is required to make changes which means Plumbers Galore website and business can resume normal business practices • a CMS will allow Plumbers Galore web content to be updated, modified and or edited by their administrative staff, rather than then having to outsource this task to an external vendor, which will save them money. • Plumbers Galore will retain control of their website content, which reduces the risk of sensitive or personal data being lost • Plumbers Galore and can easily make design changes to their web content, in order to make their website more dynamic, and interactive, as well as run promotions and sales. Accept other relevant answer

Outline two ways in which you could include user-generated content in your website.

Comments – allowing users to post comments onto the website to allow collaboration and the sharing of ideas/experiences • Reviews – users could rate the regeneration activities • Image sharing – users could share photographs of the regeneration activities and progress.

