THE INSTITUTE OF CHARTERED ACCOUNTANTS OF SRI LANKA

SUGGESTED SOLUTIONS

07204 – Information Management

Certificate in Accounting and Business II Examination
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THE INSTITUTE OF CHARTERED ACCOUNTANTS OF SRI LANKA

Answer No. 01

(a) SWOT analysis identifying the strengths, weaknesses, opportunities and threats faced by the blood bank:

Strengths

- There are thousands of people who are blood donors registered with the blood bank
- There are thousands of patients needing blood from the blood bank
- There are trained staff for the collection of blood
- Facilities available in the blood bank

Weaknesses

- Records of donors and patients are maintained in manual files
- Traditional computerised databases are being used
- Donors are scattered all over the island and difficult to track
- It is very difficult to match a needy patient with a donor as the database system has limited facilities
- There is a shortage of uncommon blood groups

Opportunities

- There are a lot more potential donors willing to donate blood regularly
- Blood donation campaigns are organised by various parties
- Donors can register in a system to be regular blood donors at blood donation campaigns
- High priority donors have to be available on call from various parts of the country
- The management of the blood bank is hoping to implement a web based system to create awareness for most people to donate blood
- To send SMS alerts to donate blood to urgent critical patients in relevant areas
- Social media such as Facebook and LinkedIn can be used to create awareness to attract more people to join
- Other hospitals in the districts also sometimes depend on the blood bank to provide them with the services needed
- An accurate monitoring mechanism needs to be established
- Link up with blood storage units of other peripheral hospitals

Threats

- There is a threat of people with diseases donating blood
- Breach of confidentially of records

(b) Advantages of Joint Application Development (JAD) technique:

- Allows key users to participate effectively

- When properly used, JAD can result in a more accurate statement of system requirements, a better understanding of common goals, and a stronger commitment to the success of the new system

- When users participate in the systems development process, they are more likely to feel a sense of ownership in the results and support the new system

Disadvantages of Joint Application Development (JAD) technique:

- More expensive and can be cumbersome if the group is too large relative to the size of the project

- Requires significant planning and scheduling effort

- Requires trained and experienced personnel for facilitation and recording

(c) Advantages of using a web based system to monitor blood donations and inventories:

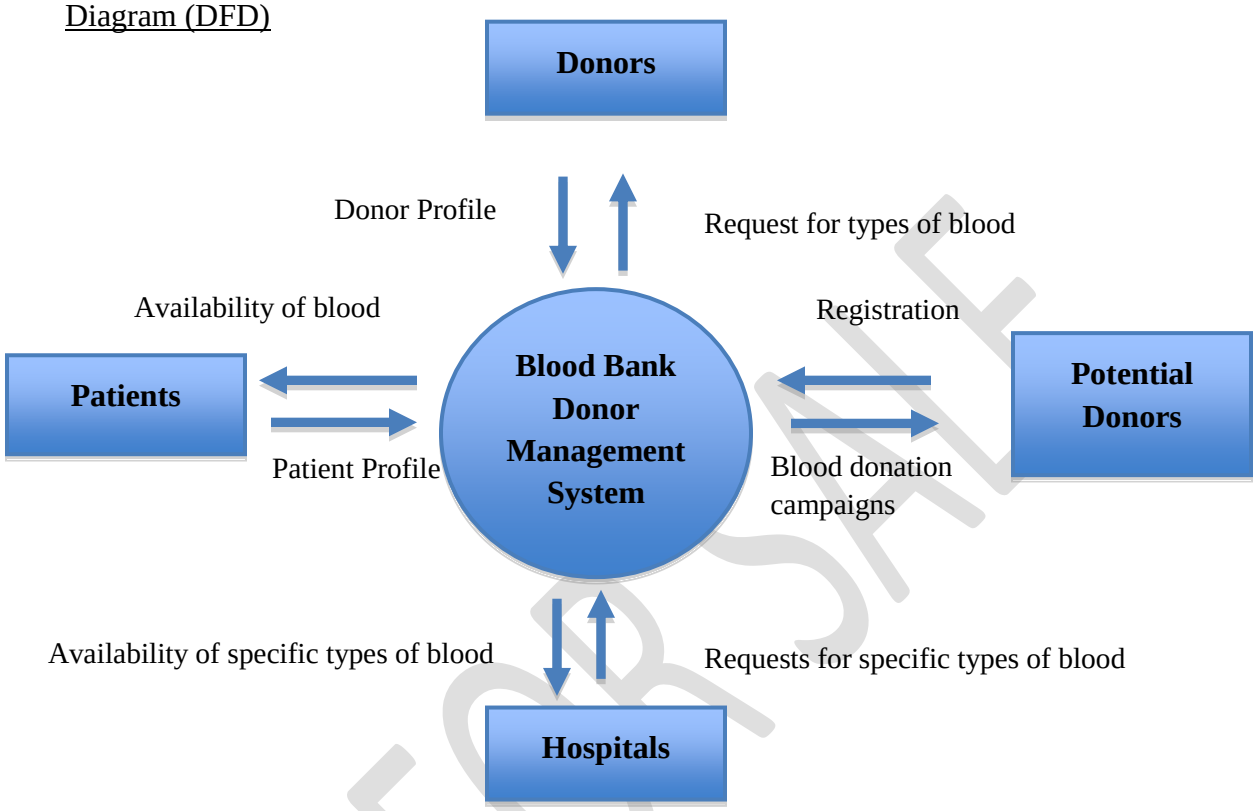
- Create awareness about donating blood and how it saves lives
- Monitor activities of all donors
- Availability of donors on request
- Monitor requests coming from patients
- Faster online registration / reduction in paper work
- Collaborations with peripheral hospitals
- Availability of stock can be monitored and measures can be taken to collect more blood

Disadvantages of using a web based system to monitor blood donations and inventories:

- Undue exposure of patients to the system
- Security breaches

Answer No. 02

(a) Illustration of the proposed blood donating system using a context level Data Flow Diagram (DFD)



(b) (i) Parallel Conversion: Both the old and the new system are operated until the project development team and end user managements agree to switch completely over to the new system.

(ii) Phased Conversion: Only parts of a new application or a few departments, offices at a time are converted.

(iii) Pilot Conversion: Where one department serves as a test site.

(iv) Plunge/Direct Cutover: Use the system immediately, and totally abandon the old system.

(c) **Software controls**

Monitor the use of system software and prevent unauthorized access of software programs, system software, and computer programs. System software is an important control area because it performs the overall control functions for programs that directly process data and data files.

Hardware controls
Ensure that computer hardware is physically secured and check for equipment malfunction. Computer equipment should be specially protected against fires, and extremes of temperature and humidity. Organizations that are dependent on their computers also must make provisions for backup or continued operation to maintain constant service.

Computer operations controls
Oversee the work of the computer department to ensure that programmed procedures are consistently carried out and correctly applied to the storage and processing of data. They include; controls over the setup of computer processing jobs, computer operations and backup and recovery procedures for processing that ends abnormally.

Data security controls
Ensure that valuable business data files on either disk or tape are not subject to unauthorized access, change, or destruction while they are in use or in storage.

Implementation controls
Audit the systems development process at various points to ensure that the process is properly controlled and managed. The systems development audit looks for; the presence of formal reviews by users and management at various stages of development, the level of user involvement at each stage of implementation, and the use of a formal cost-benefit methodology in establishing system feasibility. The audit should look for the use of controls and quality assurance techniques for program development, conversion, and testing and for complete and thorough system, user, and operations documentation.

Administrative controls
Formalize standards, rules, procedures, and control disciplines to ensure that the organization's general and application controls are properly executed and enforced.

Answer No. 03

(a) Computer Networks are two or more computers inter-connected using communication media consisting of relevant hardware and software, together with other peripheral equipment like printers, scanners etc. attached.

There are three bases that can be used to categorize computer networks:

a. Architecture or topology
b. Geographical area (Scope)
c. Users

(b) (i) Network Interface Cards (NIC) – this is the card that physically makes the connection between the computer and the network cable in a LAN. They provide a dedicated, full-time connection to a network.

(ii) Routers – wired or Wi-fi

(iii) Switches

(iv) Modems – convert digital computer signals into a form that allows them to travel over phone lines as analogue signals

(c) (i) Mobility – With a laptop, computer or mobile device, access can be available throughout a school, at a mall, in an airplane etc. More and more businesses are also offering free Wi-Fi access.

(ii) Fast setup – If the computer has a wireless adapter, locating a wireless network can be as simple as clicking "Connect to network"; in some cases you will connect automatically to a network within range.

(iii) Lower cost – Setting up a wireless network can be much more cost effective than buying and installing cables.

(iv) Expandability- Adding new computers to a wireless network is as easy as turning the computer on as long as the maximum number of devices is not exceeded.

(d) (i) Firewalls

A firewall acts like a gatekeeper that examines each user's credentials before access is granted to a network. The firewall identifies names, Internet Protocol (IP) address, applications, and other characteristics of incoming traffic. It checks this information against the access rules that have been programmed into the system by the network administrator. The firewall prevents unauthorized communication into and out of the network, allowing the organization to enforce a security policy on traffic flowing between its network and other unthrusted networks, including the Internet.

(ii) Intrusion detection system

Commercial security vendors now provide intrusion detection tools and services to protect against suspicious network traffic and attempts to access files and databases. Intrusion detection systems feature full-time monitoring tools placed at the most vulnerable places.

The system generates an alarm if it finds a suspicious or anomalous event. Scanning software looks for patterns indicative of known methods of computer attacks (such as bad passwords), checks to see if important files have been removed or modified and sends warnings of vandalism or system administration errors. Monitoring software examines events as they are happen to discover security attacks in progress. This intrusion tool can also be customized to shut down a particular part of the network if it receives unauthorized traffic.

(iii) Antivirus software

Defensive technology plans for both individuals and businesses must include antivirus protection for every computer. Antivirus software is designed to check computer systems for the presence of computer viruses. Often, the software can eliminate the virus from the infected area. However, most antivirus software is effective only against viruses already known when the software was written. To remain effective, the antivirus software must be continually updated.

Answer No. 04

(i) Source Program - The original program written by a programmer using a specific programming language. A source program cannot be executed by a computer directly. It should be first translated in to machine code, using a language translator, in order to be executed by a computer.

(ii) Compiler – the software that is capable of converting a source program into machine language. The high level version (in say COBOL) is given to the compiler as input, and the compiler converts it to the equivalent machine language.

(iii) Object program - compiler converted machine language version (of the source program) which is ready to be loaded to a computer for execution. The object program carries all information about data stacks, resource-device allocation, which are necessary at the run time.

(b) (i) Features - whether the accouting package has the necessary features that matches your needs

(ii) Fit – whether it is compatible with other IT products, hardware and software which you already have

(iii) Agree with the IT strategy – whether it support your IT strategy

(iv) Future – whether the package is in line with future trends of the company and IT expectations

(v) Vendor support – whether you will continue to get customer support from the vendor

(vi) Flexibility - whether the package is flexible enough to do any changes necessary to match the changes needed by the company

(vii) Budget – whether the software in line with your budget

(viii) Return policy – whether the package purchased can be returned/exchanged if you are not satisfied with it, and if trial versions available

(ix) Training - whether the company will get the training facility for its employees
(x) Documentations- whether the package is supported with a set of manuals, licences etc .

Answer No. 05

(a) The categories of e-commerce which you could introduce to your company are: business-to-business (B2B), business-to-consumer (B2C) and business-to-government (B2G).Within these categories, the following types of e-commerce can be introduced:

i. Electronic markets
ii. Hosting a web service – information
iii. Web advertising
iv. Web invoicing – delivery
v. eBusiness
vi. Electronic payment methods
e.g. credit cards, digital cash, debit cards
vii. eProcurement, eTendering
viii. eRecruitment
ix. eAttendence and leave control

(b) (i) Higher IT knowledge of competing companies
(ii) Transactions with bogus/stolen credit/debit cards
(iii) Losses due to delays in updating the websites
(iv) Losses due to incorrect information provided in the websites
(v) Losses due to wrong deliveries
(vi) Breakdown in the Information System, IT System.
(vii) Sabotage, malicious attacks

(c) (i) Frequently update the IT knowledge within the company
(i) Duplicate/backup internet services through a few internet service providers
(ii) Employ a webmaster for all activities related to the website
(iii) Frequently update information on stolen credit debit cards within the company
(iv) Check deliveries atleast at three points before dispatch
(v) Promptly communicate with e-commerce customers if in doubt of their orders etc.
(vi) Maintain high security in relation to employees dealing with/using the information system

Answer No. 06

(a) Cloud computing has three distinct characteristics that differentiates it from traditional hosting like websites on the Internet:

(i) It is sold on demand - typically by unit of time (minute, hour etc.)

(ii) It is elastic – user clients can have as much or as less of the service as they want at any given time

(iii) The service is fully managed by the service provider – the consumer/client needs nothing but basic equipment at his place (such as a computer and Internet access)

(b) (i) Significant innovations in virtualization

(ii) Notable development in the areas of distributed computing

(iii) Availability of scalable access to computing resources/IT services

(iv) Improved access to stabilized high speed Internet and availability of Internet anywhere.

(v) A weaker economy and /or cost-cutting trend among clients/users for equipping the hardware and software needed to build up information systems.

(c) Private Clouds

A private cloud is a proprietary network or a data centre that supplies hosted services exclusive to a limited group of users/clients. Usually these users/clients have a common connection e.g. employees of a particular group of company, bank, society or government.

Public Clouds

A public cloud is a network owned by someone (company or government) which sells services to anyone on the Internet. Some service providers could use public cloud resources to create their private clouds which are called 'virtual private clouds'.

(d) ***"One cloud does not fit all"***

In the past, most organizations rushed to adopt cloud computing services without assessing its implication on the company size, nature of business etc. At present, clouds can give a variety of services for targeted clientals at a reasonable cost. In the event that all services are to be provided by one cloud, the cloud has to be a large service platform providing a wide selection. Therefore, interest should be given to options available with ensured security of data moving in and out, and the selections should be made by the clental as and when necessary.

Answer No. 07

(a) Advantages

(i) High data entering speed
(ii) Low error rate
(iii) Sometimes they can operate without user/human intervention
(iv) Input data types are of a wide spectrum – not limited

Disadvantages

(i) Equipment and implementation cost is comparatively high
(ii) User requires training before using the device
(iii) Proper maintenance/cleaning is frequently necessary
(iv) Frequent calibration may be necessary

Common for all automated data capturing devices.

(b) (i) Digital cameras - use a light sensitive silicon chip to capture photographic images in digital form. The bits of digital information can then be copied in to a computer hard disk for storing, editing and printing purposes

(ii) Sensors - are input devices that collect specific types of data directly from the environment and transmit to a computer. Sensors can be hidden from most naked eyes and can be used to detect many dimensions and physical elements such as speed, movement, weight, pressure, temperature, humidity, wind current, fog, gas, smoke, light, shapes, images, vibrations etc .

(iii) RFID - is the use of an object (tag) applied or incorporated into a product, animal or person for the purpose of identification and tracking using radio waves. Some tags can be read from several meters away and beyond the line of sight of the reader. There are two main components of a tag. One is an integrated circuit for storing and processing information, modulating and demodulating a radio-frequency signal and other specialized functions. The second is an antenna for receiving and transmitting signals.

Answer No. 08

(a) (i) Hardware

Set of devices which support the major functions of an Information System such as; collecting data, entering data into systems, processing data, producing outputs, disseminating information and storing data .

(ii) Software

Set of programs that enable the hardware to process data, provide life and make them function. It includes the operating system, system software, application software. Application software are those prepared to deal with varying needs of the computer users.

(iii) Database

Database is a group of related files. Data is typically organized in a database for the smooth operation of an Information System. There can be flat databases or relational databases. In a flat database, the data is in a repetitive manner. In a relational database, data is arranged in a relational manner avoiding duplicates.

(iv) Telecommunication Network

A network is a collection of computers and devices interconnected by communication channels or lines, that facilitate communication and allow sharing of resources and information among interconnected devices in the Information System.

(v) Procedures

Procedures are a set of instructions, indicating how to combine the above components in order to process information and generate the desired output.

(vi) People

People in a system can be categorized into two groups; individuals who work with the system (e.g. data entry operators, systems analysts) and individuals who use the system (customers, managers of an organization).

(b) Managers need variety of information for their decision making. Senior managers require more detailed information to plan business. Middle managers usually need more detailed information to help them monitor and control business activities. Employees at the operational level need information to help them carry out their duties. The information required by these different levels of management varies as they (the managers) are involved in different types of decision making .

Information required by these different levels can be categorized as; Operational information, Tactical Information, and Strategic Information.

Operational Information.

Operational level information is information that is required for the day to day transactions in the organization. This information is useful again and again at the operational level to solve structured problems. These structured problems can be solved using predefined procedures. The effect of the structured problems are short term and the effect of the decision is narrow. Structured problems are identified as programmable questions. Most of the information is easy to understand and very simple.

Tactical Information

Tactical information is consumed by the middle level managers to solve the tactical problems. Middle level managers solve semi-structured problems (semi-structured means a combination of the features of structured and unstructured problems). The effects of the tactical decisions are middle level.

Strategic Information

Strategic information is used to solve strategic problems. Strategic problems are unstructured problems that cannot be solved using predefined procedures. Launching a new product, changing prices etc. are some examples. The effect of strategic decisions are long term and they also affect the entire organization.

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