

25. (a) (i) Grandfather, Father, son backup allows for different levels of backup. In the event of system failure or errors, three generations of backup, all ~~of~~ taken at different intervals are available for recovery, allowing better ~~and~~ recovery of the system.

(ii) These non-computer are essential as backup procedures for transaction processing systems. If a system fails for an extended period of time (power failure), transactions must be able to be continued to continue to provide services. These procedures must be tested periodically to ensure that the non-computer system can function properly and also to ensure non-computer transactions can be added to an existing system.

(i) The establishment of an online transaction system could reduce the problems. Data could be collected for each order ~~could~~ ^{by} ~~be obtained in~~ a web form. The data entered in each box becomes data in a database which can be used to process orders, produce ~~an~~ order lists, bills, etc. Confirmation of a successful transaction is sent to a user's email or instantly. Also use of a membership could be used to allow ease of billing.

(ii) Changing nature of the Country

Bakers company would be the main issue. The effect of establishing a completely online business, to the store would have to be considered. Also job security & arise with this. Will the online store result in job loss in the bakery and what IT jobs are created?

Data integrity will be important.

Data validation at the time of entry will need to be implemented to insure that the correct orders are sent to the correct places, etc.

Security may need to be implemented especially with the use of credit cards.

Data encryption, passwords and firewalls may need to be implemented to prevent unauthorised access to sensitive information.

(c) Data Accuracy or integrity is a big issue with the proposed system. Data validation will need to be implemented to ensure that ~~the~~ correct data is collected. This could include a number of measures taken on the bank website including range checks (data is in the right form), list checks (data compared to accepted data), check digits could be added to account numbers and type checks (correct data type). All these measures insure that the ~~most~~ ~~so~~ highest degree of ~~data~~ accurate data is transmitted between banks.

Security measures will have to be taken to ensure that personal information is neither stolen or ~~is~~ edited. Passwords will have to be allocated to each user. Data encryption ~~will~~ (probably asymmetric) will have to be used to insure data is not intercepted between banks. Firewalls placed

(c) cont.

at every bank will ~~ensure~~ ^{increase protection} ~~intrude~~ against unauthorised access to bank systems.

Data integrity for all transaction processing systems involves the ACID test which ensures data integrity.

Atomicity - each step in the transaction is completed successfully.

Consistency - occurs when the system goes from one valid state to another

Isolation - each transaction is concurrent and processed individually.

Durability - successful transactions are stored as permanent records.

The implementation of the ACID test to the proposed system will ensure data integrity.