Chapter 7:

Why is data verified ?
To ensure that the data entered has been copied correctly.

Verification vs proof reading :
Proof reading is checking the content of data for errors.
Verification is the visual comparison of data entered with a data source

Double entry :
Entering data twice and the computer compares the two sets of data , whether by comparing them after the data has been entered or during data entry.

Validation : Making sure data satisfies certain criteria when input into the computer.

Validation	Verification
range check length check type check character check format check presence check check digits	double entry (data entry) screen/visual check (data entry) parity check (data transmission) checksum (data transmission)

methods of researching the current system:
interviewing
Questionnaires can be given to users/employees
Checking documents from the current system
Observation of staff/users

Form Features :
Appropriate font styles to help the user to read the form by a clearer font
Appropriate/larger font sizes to help the user read the form
Appropriate spacing between fields to help with the readability of the form
Larger character spacing of individual fields to help fill the form in
More use of white space to help readability
Larger dropdown menus/radio buttons to give options to enter
Larger forward/backward/submit buttons to help navigate
Darker writing on a light background/lighter writing on a dark background

Name three methods of implementation.

Direct changeover
Parallel implementation
Phased implementation

Pilot implementation

Types of Data

Normal data:
Data that is within the range/boundaries/Acceptable data
Examples: between R$2 and R$10

Abnormal data:
Data outside the range/boundaries/unacceptable data/invalid data
Values less than R$2 or larger than R$10 or text.

Extreme data:
Data on the boundaries of acceptable data
Examples R$2, R$4, R$10

Live data :

Data that has been used in an existing system
Data where the results are known

Describe two drawbacks of using interviews.

The interviewee may be uneasy with the questioning…
….as it is not anonymous
Time consuming to interview all the users…
…the interviewers are carried out one at a time
Both the interviewee and the interviewer have to be free at the same time…
…which can cause time problems
May be a language problem…
…this increases the time explaining all sections
May give an answer they think the interviewer is trying to elicit…
…the interviewer could be biased/leading questions
Disillusioned workers may give an answer that jeopardises the project…
…they could give a biased view/too vocal
They cannot give the answer they want…
…as the interview is not anonymous/due to peer pressure
Costly to the employers…
…time for the worker being off job

The health authority is considering whether to implement the system using Pilot Running or Direct Changeover. Give advantages and disadvantages :

Advantages
Direct changeover the benefits are seen immediately
There is less cost to the Health Authority with direct changeover as only one system is in operation
Takes minimal time to changeover using direct changeover therefore the bookings are not disrupted
With pilot it is a safer method as it is trialled in one department/centre/branch
Only one department/centre/branch affected if system fails
If pilot is used it gives staff time to train with new system
Fewer errors as it is fully tested

Max **five** from:
Disadvantages
Training using direct changeover could be difficult as users cannot be trained on the new system
Training with pilot changeover could take place gradually/in direct changeover everyone has to be trained at the same time
With pilot there would be two systems in operation therefore there could be confusion
No backup of the system using direct changeover
For the department/centre/branch using the pilot there is no backup

1 mark is available for the choice of method and a reason:
Pilot Changeover as there is less disruption to the system if it does wrong.
or
Direct changeover this is a cheaper method/immediate results

The health authority has implemented the system and it is now in full use. Evaluation now needs to take place.

For each of the following, identify **two** questions that could be asked in order to evaluate the new system.

Efficiency
Does it operate quicker than the previous system?
Does it operate by reducing staff time in making bookings? // Does it reduce the time to make a booking?
Does it operate by reducing staff costs? // is it more cost effective than the old system?

Max **two** from:
Ease of use
Are all the users able to use the system and make bookings easily/effectively?
Are all the users able to change and cancel bookings easily/effectively?
Can all staff understand how to use the system with minimal training?

Max **two** from:

Explain why testing is important.

To prove the system works as designed
So that the system can be implemented correctly/modify the system if errors
show up
Trapping all errors
Meets the user's expectations/requirements

Discussion during analysis :

The programmer will not be familiar with the workings of the theatre/to
understand the requirements of the system
The solution may be easy for the programmer to use but not the users/make
it user friendly
The theatre manager is paying the programmer
The theatre manager may want enhancements that the programmer has not
thought of
The progress of the solution needs to be checked with the theatre manager
…in case the he/she changes his mind
The budget needs to be discussed (as it may involve purchasing new
hardware/software)
The timescale needs to be discussed

Explain what other testing should have been carried out before the system was implemented.

The whole system should have been tested
The operator should have checked the meter reading against the previous
one
The bill should have been checked before it was sent
Linkages between modules should have been tested

Explain why the management would choose direct changeover rather than parallel running.

Less expensive as the old system is removed before new one starts with parallel there are two systems
There is only one set of workers but with parallel there are two sets and therefore more expensive
Benefits are immediate but the parallel old system is phased out when new system is working
Don't need to maintain integrity of duplicate set of data, parallel running has two sets of data.

Parallel running...
...has a backup of the data

Pilot running...
...only affects one branch if system goes wrong/other branches can learn from the branch's mistakes

Phased implementation...
...if system fails still have most of old system to fall back on
...staff can be trained gradually

Explain why technical documentation is needed.

Designed to help programmers/systems analysts ·

Any **one** from:
...to improve a system
...to maintain a system
...to upgrade a system

Explain why user documentation is needed

To help the user understand how the new system works
To help the user to learn how to use the new system
Technical documentation may be too complex for the user to understand
To help the user deal with problems

Normal data is data that is within the range/right data type.

Abnormal data is data that is outside the range/wrong type.

Extreme data is data that is on the edge of acceptability.

Parallel running

Any **one** from:

If the new system fails then the old system is still running.
There is always a backup of the whole system.

Direct Changeover

Any **one** from:

Saves on the costs as less personnel
Saves the time of implementing the new system
Advantages are immediate

Phased Implementation

Any **one** from:

If the new system fails then most of the old system still in place.
Possible to see if part of the new system works before proceeding

Describe two evaluation strategies.
Compare the final solution with the user requirements
Identify any limitations of the new system
Identify any further improvements to the new system
Analyse feedback from users of the new system
Compare test results from the new system with the old system

Explain why proofreading is not necessarily verification.
Proofreading often involves reading through the document without referring to the original source document.
This is to check for errors in the typing/spelling/grammar.
Verification involves reading through the document but referring to the original source document.
Verification can involve one person reading the document and a second one re-reading the document.
Proofreading does not involve two people keying in the same data for the computer to compare the versions. [2

He designed a length check for the Barcode field. However, when he entered the code 5012472141308 by mistake, the system still accepted it. Describe the check he could have used to prevent this error.

Use a check digit
Single digit calculated from other digits appended to these,
Computer carries out fresh calculation on digits and compares answer with original check digit.

Direct changeover
New system replaces existing system immediately/overnight
A small organisation which can afford to lose data/where system needs to be up and running very quickly/where the new system has been thoroughly tested

Parallel running
New system runs alongside/together with existing system
An organisation with large amounts of data which would take too long to re-enter / cannot afford to lose data/where time taken/cost to implement is not an issue/where the new system needs to be thoroughly tested

Phased implementation
New system is implemented part by part
An organisation where there are clearly defined separate processes/where the new system needs to be thoroughly tested

Pilot running
(Whole) system is implemented in one branch/one office (at a time)
An organisation where there are several branches all doing the same work)/where the new system needs to be thoroughly tested

direct changeover – new system replaces existing system immediately/overnight
parallel running – new system runs alongside/together with existing system
phased implementation – new system is implemented part by part
pilot running – system is implemented in one branch/one office (at a time)

After the current system has been researched, the new system will be designed. This means that the file structure will be designed. Identify three items of a flat file structure which will form part of this activity.

Data type for each field
Appropriate field names
Validation rules
Field lengths
Field descriptions

Interview
Can change questions in light of previous answers/interviewer can detect body language

Questionnaire
Quicker to get every worker's response/easier to collate responses

Examining documents
Can see exact details of inputs and outputs

The new system will be designed after the current system is analysed. Identify three items which will be part of the design.

Design of data capture forms
Design of screen layouts
Design of report layouts
Design of screen displays
Design of validation routines
Design of data/file structures
Choice of hardware
Choice of software

Once the system is implemented, the systems analyst will provide documentation for the new system. Explain why two types of documentation are needed.

User documentation needs to be provided
This will help people use various features of the new system/so users will know/learn how to use the system/learn how to deal with errors
Features such as how to save/print/enter data/troubleshooting/FAQs, etc. need to be provided
Technical documentation needs to be provided
This will help a programmer or systems analyst to upgrade the system
This will help a programmer or systems analyst to modify the system
Will contain technical elements such as program listing/flowcharts/lists of variables, etc. **[5]**

One of the stages in systems analysis and design is called development and testing. Describe the different testing strategies that can be used on a new system.

Testing modules with abnormal data
Testing modules with data that is outside the range
Testing modules with data that is of the wrong type/format/length
Testing modules with normal data
Testing modules with data that is within the range
Testing modules with data that is of the correct type/format/length
Testing modules with extreme data
Testing modules with data that is at the boundaries/ends of the range
After testing each module thoroughly…
…testing the whole system
Description of user testing
Testing with live data

Interview

Advantage
The user is more open and honest with the answers
Questions can be added to/extended
Questions can be modified
Can see body language/facial expressions

Disadvantage
Time consuming to complete <u>all</u> the interviews
Expensive due to analyst's time
Not anonymous
Can give answers that they think the interviewer wants
May not be available at the time the analyst is available

Questionnaire

Advantage
Faster to complete all questionnaires
Cheaper to produce questionnaires than pay/employ an interviewer
Individuals can remain anonymous therefore they are more truthful.
More people can answer the questionnaire than can be interviewed.
They can fill it in in their own time.

Disadvantage
Tend not to be popular with users
Too inflexible cannot ask follow up questions
Users tend to exaggerate their responses as they are anonymous.
As it's anonymous people may not take it seriously.
Cannot expand on their answers/limited in their responses

Examining documents of the existing system

Advantage
Information can be obtained which is not possible using other methods.
Can see the scale of the problem easily

Disadvantage
Time consuming to go through the documents
Expensive method as the analyst will have to spend time going through documents.

Observation

Advantage
Reliable data
Better overall view of the whole system/all the inputs and outputs of the system
Inexpensive method as the analyst is only watching the workers.

Disadvantage
Hawthorne effect (describe)