VCE Information Technology Units 3 & 4

Test Your Knowledge

Chapter 5

Decisions made in organisations

1. What is a strategic plan?

A strategic plan is a process for identifying long term goals within an organisation. The strategic plan could range from 2 yeas to 25 years depending on the goals of the company.

2. What are the advantages of a strategic plan?

Advantages of a strategic plan are many;

- Looks beyond day to day tasks to what is going to happen in the future.
- Forces an organisation to establish goals and objectives to meet long term goals.
- It is generally well thought out plan with clearly defined costs.

3. What is the difference between a mission statement and organisational goals?

A **mission statement** is generally one or two sentences that encompass the objectives of the organisation. It is the basis for establishing a set of **organisational goals** that will help accomplish the aims or mission of the organisation.

4. How do objectives enable goals to be met?

Objectives are small achievable tasks undertaken to accomplish a big or larger task. This process is similar to breaking down a project into smaller achievable tasks with deadlines.

5. Provide an example of how an inefficient procedure can prove to be an information problem.

Inefficient procedure; a process that might take more money and time than it should. Therefore, using resources that the company may be able to use elsewhere. Take a look around your school. Are there any inefficient procedures that you can use as an example?

6. Explain, with the help of examples, why information must be reliable, timely, consistent and relevant to be useful to an organisation or individual.

Use an example to emphasise the following:

- People often make important decisions using information that comes from an information system, do you have an example of a bad decision that was made as a result of **unreliable** information?
- Have you ever received a piece of information too late (timely)?
- If information is not consistent, what mistakes are likely to be made when interpreting that information?
- Have you ever received an email or notice that is irrelevant to you? How might this impact on an organisation if this happens all the time?

Spreadsheets

1. What is a 'killer application'?

A killer application is a software application that encourages widespread use if a new piece of hardware and software. Can you think of any programs or web sites that have encouraged the use of new technology? iTunes? Myspace?

2. List three of the functions that a spreadsheet can perform.

Any three functions, but the students should understand the following:

- Calculate data (basic mathematical and logical functions)
- Graph a series of data using a range of graph types including pie and bar charts.
- Using lookup statements to extract data needed for a calculation in another worksheet.
- Using statistical functions to create meaningful information from data input into a spreadsheet.

3. Why are format and conventions important when producing a spreadsheet?

Formats and conventions allow the information produced to be presented in such a way that it is meaningful, relevant and informative. Including things such as headers, footers and headings add meaning to the information being presented. Numerical data should be formatted according to defined accounting or financial conventions using dollar signs and borders where appropriate. A financial statement that does not adhere to set formats and conventions may be hard to understand. Using a set of standard formats and conventions assures that the information we produce is clear and concise.

4. Why is it important to use validation in a spreadsheet?

If the data you type into a spreadsheet is full of errors then the information that you produce from that spreadsheet will be full of errors (Garbage In, Garbage Out). Designing a spreadsheet solution should take into account the possibility for human error when information is input into it, and should use functions of the software package to limit or control input error.

5. What types of errors would range checking, existence checking and data type checking pick up?

Range checking

- Check to make sure that a number or data is within a particular range. For example: Year Level of a student in a secondary college should be between 7 and 12 (unless they have a Year 13).

Existence Checking

- Check to ensure that a code or reference number exists. For example: If the spreadsheet references a list of 'codes' for a hardware store, it might limit the input of a code into the spreadsheet to what is only contained on that list.

Data Type Checking

- Check to make sure that the data type is of the correct type. For example: If a number typed in has to be a whole number or integer, a data type check would check to ensure there were no decimals in the number typed in.

6. Why would it be important to 'protect' formula areas of a spreadsheet?

You do not want the end user **accidentally** deleting or changing formulas that are included in the spreadsheet to process data that the end user types in.

7. What methods does a spreadsheet have build in to alert users of data corruption?

Data corruption is when unintended changes occur to original data after it has been typed into the system. There are a number of features that you can build into a spreadsheet.

- Data validation checks
- IF statement to give a visual check that data is validated
- Having a sheet in the spreadsheet that is input data only will ensure that original data is kept away from charts, reports and calculations.

Only typing in original data that is properly validated will ensure that the output produced comes from the same source, therefore eliminating the potential for data corruption.

8. How might the 'natural' alignment of numbers and characters in a spreadsheet serve as a validation technique?

Look at the following product codes; 10001, 1OOO1. One product code has zeros in it, the other has the letter 'O'. If the end user accidentally types in letters rather than numbers then the natural alignment feature of most spreadsheet applications will align the data to the right hand side of the cell rather than the left hand side of the cell. Therefore, highlighting to the user that is typing in the data, that there is something incorrect.

9. Explain the difference between validation and testing.

Validation is when we check **input data** to ensure that is of the correct type, range and existence.
Testing is when we check to ensure that formulas, functions and features of the spreadsheet does what is intended. However, some of these functions' may be validation functions that we build into the spreadsheet.

10. List some of the common mistakes made that can be picked up through testing.

- Incorrect data. For example: Codes that might be typed in wrong. An existence check can be used to pick this up.
- Unrealistic numbers. For example: 200 hours worked in one week. A range check can be used to identify this error.

11. When we test for functionality, what area of the spreadsheet are we testing?

To make sure that the function of the spreadsheet works correctly. Such as formulas that might calculate a total, a chart that is dynamically linked back to original data, a pivot table that is used to summarise data.

12. List three areas that can be tested for presentation.

- Author of the spreadsheet is clearly identified (footer).
- Date on which the page is printed is clearly identified (footer).
- Organization that owns the data/information is clearly identified (heading).
- Data is vertically or horizontally aligned properly on the page.
- Gridlines are showing if necessary.
- That all information is contained on the one page and not unnecessarily spread out over 2 or 3 pages.
- That there is an acceptable amount of whitespace located around the data being displayed.
- Balance in terms of text and graphics. Graphics should compliment the information being displayed and not overpower it.

- Is the text easy to read and of an acceptable size? Formal reports should not have 16pt font, rather 10 or 12pt font.
- Consistent colours are used for information presentation.
- Background colours should look good in colour or black/white printouts.

13. What is the difference between usability testing and accessibility testing?

Usability testing is when you test your spreadsheet to see how easy it is to use.

- Are instructions clear?
- Do you have to scroll down the page to find information?
- Is any 'help' advice easy to see?
- Is it easy to get back to the index or introduction page/sheet?
- Can the user accidentally delete formula's or change validation rules without a password?
- Are input cells easily defined?

Accessibility testing tests to see if the spreadsheet solution is easily accessible by the user.

- Does the solution open up at the correct page?
- Are font sizes easy to read?
- Is there limited use of red or green colouring or glaring background colours?

Problem-solving methodology

1. List the seven steps in the recommended procedure for solving problems.

Analyse, design, develop, test, document, implement and evaluate.

2. Why does testing come before evaluation?

Testing normally occurs during and at the end of the development process. Evaluation happens after the solution has been rolled out and the end users have been using the solution for a while. In most cases, evaluation happens between one and three months after implementation, depending on the nature of the solution.

3. Why is it best to rephrase a problem as a question?

Rephrasing a problem as a question allows a problem to be expressed as who, what, when, were and why. By reducing a problem to a question it is easier to establish the individual causes and therefore create a solution that solves the problem.

4. A take-away food store needs to decide whether it can afford to reduce the price of pizzas to remain competitive.

a. **What type of information would you ask for in order to start designing a solution?**

- How much it costs to make a pizza?
- How much money does the organisation make when they sell a pizza (profit)?
- How many pizza's are sold each night (frequency)?
- What overheads exist in the organisation to run the pizza shop?

b. Once a preferred solution for the take-away store has been established, a proposal is made to seek the approval of management for the solution to be designed and developed. What information should be provided in the submission?

- What the solution will do?
- How much will it cost to create the solution?
- When will the solution be ready for roll out?
- When will it be evaluated?

5. Describe in detail the steps performed in the design stage.

This question is a Chapter 1 revision question:

- Identifying the data required.
- Choosing an appropriate software solution
- Macro design (flowcharts, IPO Charts)
- Choosing layout designs
- Choosing test data
- Choosing conventions and applying formats
- Preliminary project management plan

6. When designing a spreadsheet, why would we use a layout diagram?

To show where data is typed in, where formula's are located and where layout features like headings, borders, graphics and shading are included.

7. What is the purpose in using a structure chart when creating a large spreadsheet?

Often when designing a large spreadsheet we use multiple sheets to organise our input data and information for the end user. A structure chart can show us how the various sheets in the spreadsheet relate to each other.

8. Describe in detail when the following design tools are used and for what purpose:

a. **Layout diagram**

To show what the spreadsheet layout will look like and were the end user will input data and where formulas are located.

b. Structure chart

How each sheet in the spreadsheet relates to each other and the purpose of each sheet.

c. Flow chart

To graphically represent in a logical order, the steps required to create a solution or a procedure to use the solution.

d. Formula list

Shows a detailed list of the formulas used to achieve each bit of output identified in the IPO chart. Formulas are written in plain English with lots of explanation.

9. Give an example of a problem that you might have solved in the last day or two. What steps did you go through to solve the problem?

Student should clearly identify problem and write down clear steps. An extension to this exercise might be to express the steps in the form of a flowchart.

10. What are the three broad categories that information problems fall under?

1. Problems arising from inefficient procedures
2. Problems arising from information produced that has errors or does not meet user needs.
3. Problems arising from dependence on old technology.