

(ai) A structured problem or situation is one that have a definite answer which can be reached using an algorithm. The answer will be obtained by following a strict sequence and the result is guaranteed. An example of a structured problem or situation is calculating the total of pay. This can be done by following/calculating a formula, resulting in an ~~an~~ answer with a certainty factor of 1.

(ii) Certainty factor shows the extent to which a result is true. A certainty factor of 1 suggests that the result is certain (equivalent to 100% sure) and 0 means that it is not true at all. This may be used when determining a species of an animal ~~number~~. For example,

IF the animal has fur ~~and~~ AND has 4 legs,
THEN the animal is a dog.

This statement may have a certainty factor of 0.2, where ~~20%~~ is ~~sugg is most likely~~ suggesting



that this statement is only 20% true, making the animal most likely (because <50%) to not be a dog.

(b) (i)

	A	B	C	D	E	F	G
1	MONTH COST OF CALLS						
2	Time of calls in seconds:		MONTH :	January			
3							
4	Toady's phone		Monopoly Mobile		Shakey Service		
5	Rate/sec	0.01	Rate/sec	0.0075	Rate/sec	0.005	
6	Free calls	0		10		15	
7	Monthly fee	0		14.5		28.5	
8							
9	Actual call cost	= B2 * B5		= B2 * D5		= B2 * F5	
10	Monthly charge	B7 + B11		D7 + D11		F7 + F11	
11	Monthly Actual call costs	= IF (B9 > B6 + B9 - B6), B9		= IF (D9 > D6 + D9 - D6), D9		= IF (F9 > F6 + F9 - F6), F9	
12							
13	monthly charge	= B7 + B 11		= D7 + D 11		= F7 + F 11	
14							
15							

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(ii) Graphs would be able to assist Gertrude by comparing her monthly calls ~~and~~ and comparing the costs of each company. By using a bar graph, Gertrude can compare the monthly charge of all 3 companies and can easily make the decision ^{of one that} ~~that~~ charges less. She may also use a line graph which can represent the increases ~~or~~ decreases in calls revealing the trends. She has made a pie graph would also ~~be~~ be an appropriate way as it is easy to read + therefore Gertrude is able to observe the costs associated with the companies.

Gertrude can also use the graphs to not only compare the costs of the 3 companies, but also the different \$ amounts of ~~times~~ ~~durin~~ call times during different months. This can be done by importing information from other spreadsheets and creating a line graph to view the trends, or a ~~bar~~ ^{bar} graph to view which month she ~~spent~~ ^{called} the most. ~~calls~~.

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c. This situation likens it to using an expert system. This means that the data is organised as fact, rules and certainty factors. ^{known as the knowledge base} when all the necessary data is collected such as university location, ^{degree} course, UAI required in need to be coded as facts and rules by a knowledge engineer/ls i.e Kim and Hendra. Usually the facts and rules are coded as if, then statements. ~~unlike~~ Such as

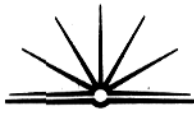
IF UAI > 95 THEN LAW

IF LAW ~~AND~~ = COMMERCIAT THEN solution = COM/LAW

By organising the facts and rules in this way if done well it will include all possible variations and the subsequent solution i.e what degree to study. It is necessary that the facts and rules are relevant to ensure outputted results are as relevant as possible. This could be aided through using a decision tree or table.

Analysing: As an expert system is the preferable option, the inference engine is used to analyse user input and fire questions to obtain a suitable solution. The inference engine uses the knowledge base of facts and rules, related to degree, UAI, interests to ask appropriate questions, such as what is your expected UAI. To find an appropriate solution the inference engine discards solutions which are irrelevant according to input. i.e. ~~if a user enters~~ if the inference engine asks what are your interests? and the user enters sciences, an ARTS degree will be discarded. Analysing is the process to use data to produce information.

Fuzzy logic and certainty factors can be used. Some solutions may be irrelevant.



Processing: To process user input a fast processor (CPU) is needed to produce answers or find the next question in an appropriate time period. The database of facts is also part of processing as it stores the fired question and user answers.