

### Question 23

a) The BNF technique does not incorporate symbols for repetition, so recursion has to be used instead which is less efficient & quite confusing. For example, integer must be included in its own definition, this is recursion, so an integer can be allowed to be made up of more than one digit.

If EBNF had been used repetition symbols ( $\{ \}$ ) would make the syntax much easier to understand.

ii)  ~~$\langle \text{hexadecimal} \rangle = \langle \text{letter} \rangle | \langle \text{digit} \rangle$~~

$\langle \text{hexadecimal} \rangle = \langle \text{letter} \rangle | \langle \text{digit} \rangle | \langle \text{letter} \rangle \langle \text{hexadecimal} \rangle | \langle \text{digit} \rangle \langle \text{hexadecimal} \rangle$

$\langle \text{letter} \rangle = A | B | C | D | E | F$

$\langle \text{digit} \rangle = 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9$

b) Emerging Network communications technology could have both positive & negative effects on the usage of this system. New & more sophisticated hardware may allow the sit medical practices to transfer data of ~~the~~ medical knowledge <sup>and technologies</sup> to other practices quickly which would benefit doctors. Patients may be able to visit any practice and their details could be retrieved by new high speed communications links such as cable or even satellite technology. All practices could manipulate a common ~~server~~ database which would contain all data in a secure site away from premises in case of ~~fire~~ fire (etc) at the medical centre.

However, the networking of this system could make it more susceptible to virus infections, also patients



data could be retrieved and hence privacy of personal details abused.

The extra networking technology could also put extra strain on the system's ~~resources~~ resources to slow down response times ~~and~~ frustrating the users.

However, new network technology and adequate hardware & software configuration will ensure the system runs efficiently.

The networking ~~and~~ technology will ~~be~~ overall benefit the users of the system.

C1) The analyst could interview receptionists to determine their computer skills and any requests they have for manual processing procedures. ~~Receptionists~~

The analyst could interview doctors to determine their level of IT knowledge and the processes they wish the system to perform.

~~The~~ Patients could be surveyed about problems they perceive with the current system and any reservations they may have with the new system.

ii) The end-user approach would not be suitable for the construction of this system because the sophistication of the software and network technology required would exceed the level of expertise of the doctors. The doctors would not have the time or skills to develop a solution on their own. The system would need to be very reliable and efficient, as it is going to contain patients' personal details and medical history. If a patient arrives, the doctor will rely on the system to quickly display the patient's medical history. For this reason, a RAPID application development approach would probably

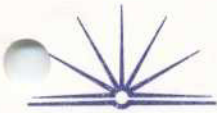


not be suitable because ~~the~~ solutions created with this approach tend to be less efficient & reliable. However, it must be acknowledged that this is due to a shortened development time, which could be an ~~factor~~ important factor because the system will need to be running in 3 months time.

The prototyping approach could be used in this scenario to gauge ~~the~~ receptionists views on manual processing ~~of~~ screens to doctor's opinions of the interface displaying patient records, etc. Because the ~~the~~ people using this system have basic IT knowledge, ~~the~~ prototyping would be beneficial because the interface ~~of~~ ~~the~~ ~~from~~ ~~point~~ of view would be crucial to how

users react to the new system. Prototyping would also allow for additional requirements to be discovered ~~later~~ into the design process & incorporated into the system. For example, vaccination reminders, the structured approach would create a reliable and efficient solution which is important in this scenario. However, this approach involves long development time and may not be suitable for the three month deadline.

Since all of the approaches discussed both have benefits & drawbacks in reference to this proposed system, a combination of approaches may be suitable such as the structured approach but with the re-use of already ~~test~~ built & tested modules, a characteristic



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