Q 22

a) i. Outsourcing involves ~~an~~ an entity (usually a company) hiring software engineers outside of their own company to come and create ~~their~~ software for them. ~~The~~ The company who requires work done contacts the software company they are going to outsource, and ~~together~~ together they sign a contract indicating what is to be done, by when and how much. etc.

ii. Outsourcing is cheaper for the company because they don't need to hire full time software developers inside their own company. When the software for the bank's network is done, the ~~so~~ software developes who have been outsourced ~~simpler~~ simply leave and ~~or~~ no longer interact or work for the bank. That said, the developers ~~be~~ are never 'employed' by the bank, they are employed by the outsourced company. ~~The~~ The implications of outsourcing are quite severe in the software industry.

Because their are no ~~&~~ positions to fill in large corporations, highly skilled developers are often left without a job. When companies such as this bank need work done, they simply call ~~the~~ ~~the~~ the external company - they don't hire their own. If a developer manages to get a job within one of these external companies, who other companies outsource, then it is simple for them to get projects. seeing as ~~as~~ many corporations outsource. ~~Apart from the lack of jobs, and it~~ In the end, however it is money that prevails, and because these companies such as the bank don't need to continue paying the developers once the work is done - outsourcing is widely used.

iii. The ~~the~~ systems analyst must ensure that the needs of the new internal network are known precisely. To do this, time must be spent watching the users using the existing system to determine what tasks are done and at what times.

Surveys, interviews and questionaires should also be given to the users to ensure their perspective is taken into account in the development process. Input must also be taken into account from the bank managers - who understand the needs and objectives of the new system. Continual interaction between these three groups is vital for the new internal system to be reliable.

b) i. An open circle with an arrow represents data that is being passed along through the modules. In this example, the Customer Number symbol represents the number of the customer being passed from the "Accept card details" module, to the main module "Autoteller Management System."

A closed circle with an arrow represents a flag. For example Validated indactes whether or not the password has been validated or not. In this example, the "Validate Password" module validates (or invalidates) the password, and

sends this boolean value, the flag, back up to the main module, which can then pass it on to calling modules.

ii. — Next book. Sorry.

iii.

```
BEGIN AcceptAndValidatePassword (StoredPassword, Validated)
Tries = 0
Password = ""
WHILE Tries < 3
    [illegible]
    Set password to User Input
    IF password = StoredPassword THEN
        Validated = TRUE
    ELSE
        Tries = Tries + 1
        Password = ""
    ENDIF
ENDWHILE
IF Validated = FALSE
    PRINT "You have exceeded the limits of entering a wrong password. Sorry"
ENDIF
END
```

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Q 22.

b) ii. The program does not shut down. There is no line to indicate whether the system has been turned off. "System_on = TRUE" is not complimented with "System_on = FALSE". This would result in the system ~~being~~ ~~turned~~ left on continuously. To modify this, code would need to be written to constantly check whether or not the system had been turned off.

b) ii. The & code on line 4 would cause a problem. ~~#~~ → System_on = TRUE has been used in the initialisation, however "Switched_on" has been used in the main loop. To rectify this, line 4 needs to be changed to:
4 "WHILE System_on"
This would allow the program to function correctly.