Sample Exam 2, 2016: Solutions and Teacher Notes

SECTION A – Multiple choice questions

Question 1
Answer: C

Objectives always have measurables associated with them..

Question 2
Answer: D

Question 3
Answer: C

A functional requirement is one that the solution can do.

Question 4
Answer: D

Question 5
Answer: A

Question 6
Answer: C

Question 7
Answer: D

This question is aimed at the difference between methods and events. Events are (generally) triggered when objects are interacted with, though events can also be triggered by other objects or the object itself. A method is contained within the definition of the object and can be used to change its function or appearance.

Question 8
Answer: C

Question 9
Answer: C

A and B require some decision to have been made on the direction / purpose of the App. D is not a valid choice either as it is researching the ideas of others rather than coming up with one of your own.

Question 10
Answer: D

Question 11
Answer: D

Question 12
Answer: A

It is important to remember that when answering a multiple choice question, your task is to select the most correct answer. While 'A' may not describe the exact function of a firewall, the other choices are either incorrect or not a good.

Question 13
Answer: C

Question 14
Answer: A

Question 15
Answer: B

Syntax errors are most commonly misspellings or commands with the incorrect parameters or formatting. The thing that sets syntax errors apart from other types of error, is that syntax errors render a software solution unable to run. The syntax errors must be fixed first.

Question 16
Answer: D

Question 17
Answer: B

Emily's company employed the person who wrote the code and has ownership of it. Therefore, Emily's company would be legally liable.

Question 18
Answer: D

Question 19
Answer: C

Question 20
Answer: A

SECTION B – Short-answer questions

Question 1

Answer: A mission statement is a statement about the goals of the organisation and why it exists.

Remember that a mission statement is often very broad and while it is important, it does not go into specific detail about objectives.

Question 2

a. An IP (Internet Protocol) address is a unique identifier for a node in a network.

b. A static IP address is one that stays the same no matter if the device is shut down and started up on a different day. Other IP addresses on the network are normally assigned on a first come, first served basis.

c. If two devices on a network have the same IP address, a packet intended for that IP address will have trouble finding the correct destination.

Question 3

An attribute listing is a brainstorming technique in which group members list as many different attributes related to aspects of the problem as they can.

The main purpose of creating an attribute listing is its use as a brainstorming technique.

Question 4

a. Internal documentation relates to comments (documentation) placed within the code to make it easier for programmers to understand and modify the code at a later date.
b. Not having any internal documentation makes modifying the code later on difficult – especially if it is being done by someone other than the person that wrote the code.
c. Martin: documenting each line of code will be very time consuming. It will, however, mean that the code is very easy to understand at a later date.
Julee: documenting each event procedure with a few lines will be much more practical and less time consuming. However, there will be event procedures that are long and complex and if Julee limits her comments to just a few lines, this may not be enough to fully explain the function of the code.

When a question uses the stem 'discuss', this means that you need to discuss the pros and cons of two alternatives. This is also reflected in the marks for the question which are set at 4 – meaning that the examiners will be expecting you to make 4 points.

Question 5

a. For the condition to be met, the user must have entered 'Rebecca', 'Tony' or 'Thien'
b. The user is not told what they need to enter and what the program is doing.

Question 6

a. Milestones may not be met.
b. If the project is not running exactly to time, it may mean that resources that are booked for key parts of the implementation will not be available (given that they will be required later or earlier).
c. Parts of the implementation may begin (at their allotted time) without the pre-requisite tasks they need to be completed having been finished. This may lead to confusion and wasted time.

Question 7
Full backup: backup all of the data every time.
Differential backup: only record the changes to the data compared to the last full backup.
Incremental backup: only records the changes since the last incremental backup.

SECTION C – Case Study

Question 1

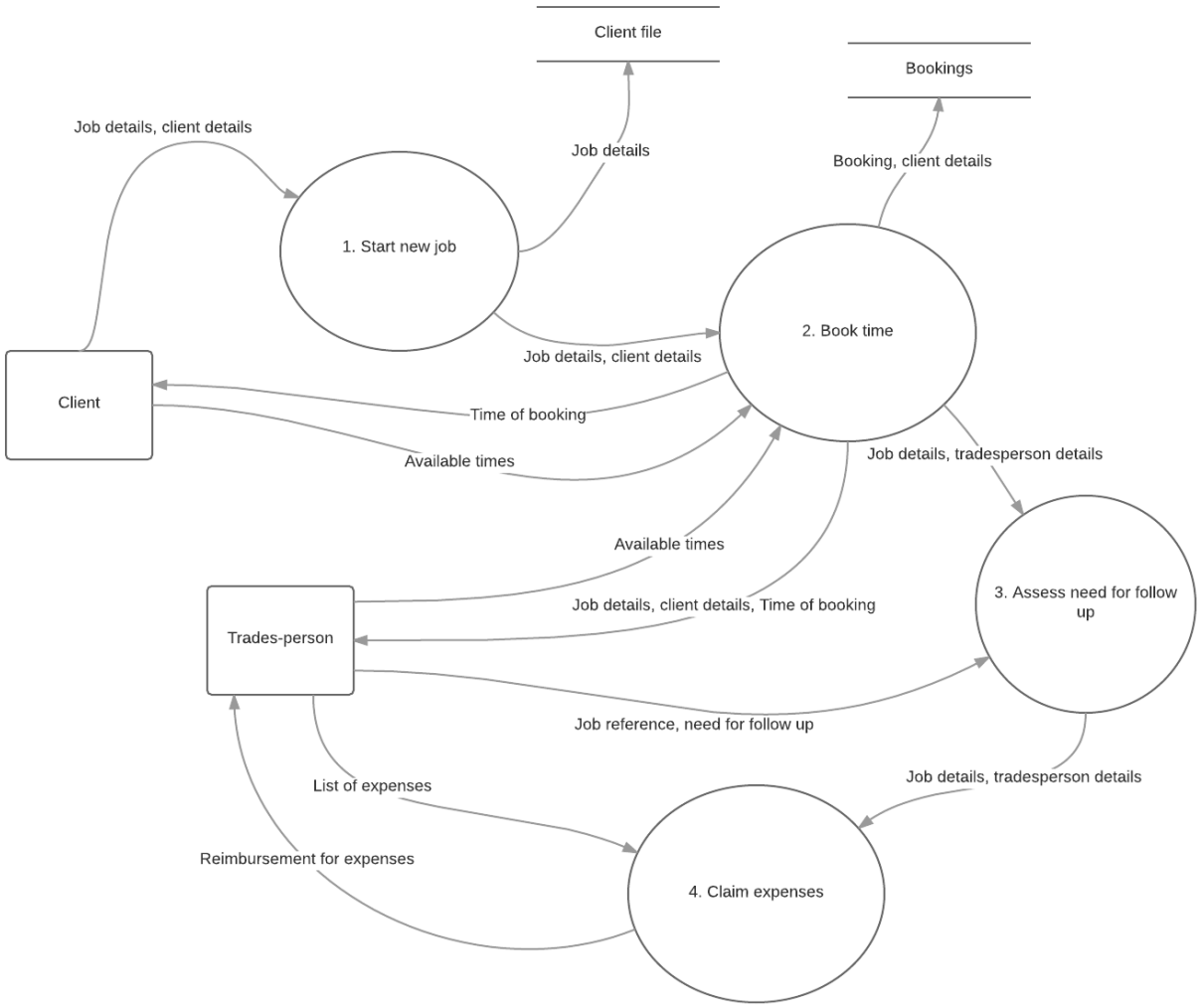
Goal 1: Record the jobs that clients register with *WeCare*.
Goal 2: Keep track of the progress of jobs.

Other goals could be equally valid involving communicating with trades-people or maintaining the register of clients.

Question 2
Aspect 1: Language in the questionnaire is not appropriate for the audience (*WeCare*'s primary demographic is aged pensioners and unemployed people with low levels of literacy and numeracy).
Aspect 2: There has not been enough space left for the responses.

Additional things that could be mentioned. The inclusion of an address field may mean that people don't want to fill out the survey as they can be identified. They also may not want to provide that personal information (though WeCare will have it in their system anyway). People could submit multiple forms to try and win the prize and there would be no way to tell (they could just say that their friends were at the same address).

Question 3



Question 4

The biggest constraint on the solution is cost (economic). That is because *WeCare* is a not for profit company that does not have a lot of financial capital available for this project.

Question 5

Concern 1: Text is too difficult to read (too small for a mobile device).

Correction 1: Place this text into a 'tool tip' or into another page or section that the person can access if they need help.

Concern 2: It is unclear what format the address needs to be in (the box is also very small)

Correction 2: Divide this box up into boxes for street number, street, suburb and make them large enough to accept input.

Concern 3: The submit button is very small and potentially hard to find (and press).

Correction 3: Make this button larger and clearer – or have it appear in the middle of the screen once the other boxes have been filled out.

Question 6

a. The 'LocateClient' function finds the ID for the client based on their name and street.

b. This condition exits the subroutine if the client does not have an ID. This is done as the client has not registered – and this process would need to be done first.

c. JobID: Integer
JobClient: Integer *(also a 1D array – though the question is not asking this)*
PriorityFlag: Boolean

d. They will be able to be reference via the JobClient(JobID) variable

e. The algorithm checks for each of these conditions, but resets the 'PriorityFlag' variable inbetween each one. These lines should be removed (except for the first one).

Question 7

WeCare are getting a good deal from Nancy in some respects. She is allowing them to use it indefinitely and at no cost. She will also be taking on the support for the software solution, so this is something that *WeCare* will not need to worry about. This could be tricky, however, if Nancy is out of town (she works for a multi-national company) or if her circumstances change. It could mean that changes take a long time to happen. Any bugs or problems with the product (and slow response from Nancy) will reflect poorly on *WeCare* as well.

Again, as with questions that begin with discuss, you need to explore the pros and cons of the alternatives. In this case, 4 marks for the question means that you need to provide 4 points.

Question 8

Timely: The App could make use of the date/time features of the device so that jobs are logged at that time as opposed to asking the user to enter a date and time (which could introduce errors).
Accurate: The App could make use of location services so that the person could opt to use this feature instead of typing in their address.
Authentic: To prevent anyone logging a job using the name of someone that they know has registered, perhaps users should be given their own PIN as a means of authentication.

There are other potential answers – as long as the answer is in line with the text book definition of these terms, then it could be a valid answer.

Question 9

a. Privacy legislation.

b. Clients need to be asked whether they will allow their data to be shared with the GoodWill Army and what it will be used for. If they say no, then a record of this must be kept and the data cannot be shared.

Question 10

Question 1: How does the App transmit data back to the *WeCare* offices (is it encrypted)?
Question 2: Does the *WeCare* network have a firewall and adequate security measures in place?
Question 3: Are there logs kept at *WeCare* to keep track of who is using the system and when?
WeCare does have a number of employees, some of which are volunteers that have a high turnover.

Question 11

a. Full backup.

b. Only the new jobs would be backed up.

c. 'Jobs' database: <TradespersonID>
'Client' database: <CurrentJobID>
'Trades-people' database: <CurrentJobID>

Question 12

Aspect 1: Does the App meet the requirements of the initial brief?
Aspect 2: How will the success of the App be measured?
Aspect 3: Was the App completed in the allotted time (and in budget – which may not be relevant in this case).

Question 13

a 1 – Data could have been lost or corrupted
2 – Data that has been collected manually while the App has been out of operation, could be incomplete or different in format to the data that the App collects.
3 – The confidence of users in the App could have been shaken. They may not want to use the App again.

b Prior to the release of the App, conduct testing of the App with a small pilot group consisting of (known – willing) clients and reliable trades-people. Try to vary the conditions under which the App is used – such as the time of day, the type of job being submitted and the type of data that it is collecting. Construct a detailed trace table and use this to test out all the features of the App.

Question 14

This is a breach of Nancy's copyright. Nancy is the author and owner of the App and she must give permission for any modification to it. She is not an employee of *WeCare* and *WeCare* have not paid her for the App. In addition, Nancy had WeCare sign an MOU that stated her conditions for allowing them to make use of the App.

Question 15

Group 1: Trades-people
Feedback: How easy is it to get the details of the job and then to provide feedback on the progress of the job.
Group 2: Clients
Feedback: How easy is it for them to log a job via the App (as opposed to calling *WeCare* direct as they used to do).

It is especially important with questions like this (but indeed all questions in Section C), to relate them back to the case study. This means citing specific aspects within the case study relevant to each group rather than just being general and saying something like "to see if it works well".