

**SAMPLE ASSESSMENT MATERIAL**

**Level 3 Cambridge Technical in IT**

**05838/ 05839/ 05840/ 05841/ 05842/ 05877**

**Unit 2 Global information**

**Date – Wednesday 16 May 2018 – Afternoon**

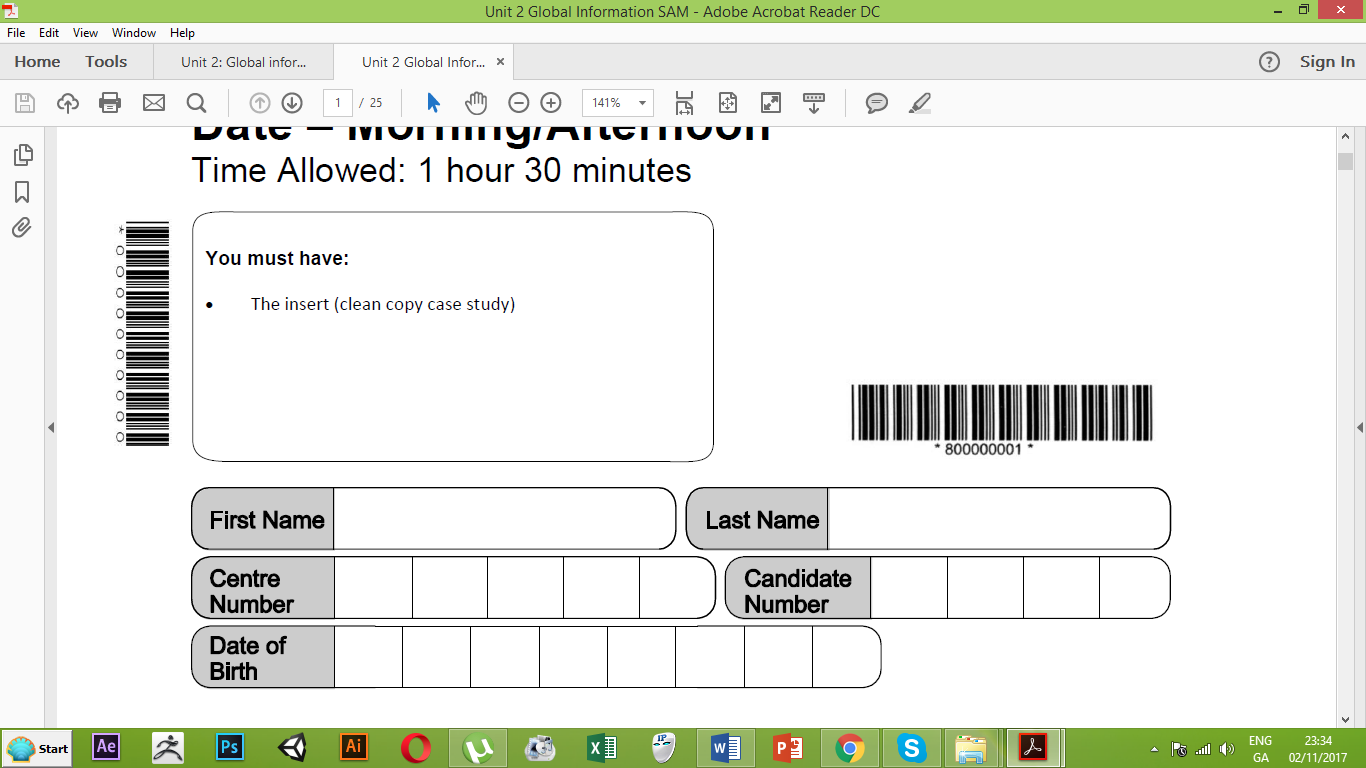
Time Allowed: 1 hour 30 minutes

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You must have:

The insert (clean copy case study)

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**INSTRUCTIONS**

* Use black ink.
* Complete the boxes above with your name, centre number and candidate number.
* Answer **all** the questions.
* Write your answer to each question in the space provided.
* Do **not** write in the bar codes.

**INFORMATION**

* You should make yourself familiar with the pre-release material before you take the examination.
* You must not take notes into the examination.
* A clean copy of this pre-release material will be given to you with the question paper.
* You must not take this copy of the pre-release material into the examination.
* This document consists of 4 pages. Any blank pages are indicated.

**Organisational Profile**

**Introduction**

Progress LakeSailing is a sailing Club based on the shores of Lake Windermere in The Lake District. The Club runs an annual regatta where competitors compete for trophies. The regatta attracts competitors from all over the North of England. Permission has to be granted by The Lake

District National Park (LDNP) for the regatta to take place each year as LDNP controls what happens on and around the lake.

There are many different classes in the regatta, each with different rules and regulations. A maximum number of competitors can enter each class.

The Club is able to arrange berths for the boats and, if needed, accommodation for the competitors. There are a limited number of available berths on Lake Windermere, some of which have length restrictions. Some berths are positioned in very shallow water.

Progress LakeSailing can also hire boats to competitors. Boats can be hired to competitors if:

* they are unable to transport their own boat;
* they do not own a boat of their own.

There are, however, a limited number of boats to hire in each class.

**Regatta Administration**

The regatta is advertised in specialist sailing magazines and also on the Club’s website. Entry forms are available to download from the website. The completed entry forms can be returned to the Club by email or post. No entries are accepted by phone.

As each entry is received by the Club, it is dated. Entry forms which are received by email are printed and then dated. On the day after the closing date for entries, the entry forms are sorted into classes and then put into date order, starting with the earliest date.

Those competitors whose entry has been successful, based on maximum numbers in each class, are informed and asked to confirm their entry. Any entrants who have been unsuccessful are informed and put on a waiting list.

Once entries have been confirmed then hire boats and berths are allocated.

**Entry and Regatta Records**

The regatta has a maximum of 300 competitors with some competitors competing in more than one class.

The competitor entries are initially kept on paper which can cause errors as updates may not be recorded. As each competitor confirms their entry the data is input into a single table database which has no security. This is then used to print out details of the competitors in each class.

The entry database records data on:

• competitor details such as competition number, name and contact details;

• details of boats including length and name;

• berth locations, length and water depth;

• class(es) entered.

These details are then manually input into a spreadsheet which is used during the regatta.

During the regatta, the timing office is located in a hut on the shores of Lake Windermere by the finish line. A laptop is used to access and use the spreadsheet. As each competitor finishes the race their time is recorded on the spreadsheet. When the class has been completed the results are then uploaded to Progress LakeSailing’s website along with a photograph of the winning crew and boat.

The timing office uses a dongle provided by a phone company to access the internet.

Neither the entry database nor the regatta results spreadsheet are backed up. After each regatta, the database and spreadsheet are deleted with no copies held.

To prepare for the examination, you should research the following themes:

• How different types of information storage media and information styles could be used by Progress LakeSailing, including the advantages and disadvantages of each type.

• The logical and physical security methods which could be introduced and used by Progress LakeSailing.

• Differing types of internet connections which could be used by Progress LakeSailing during the regatta and how these could be affected by the location of the regatta.

• Legal requirements, including Green IT, and how Progress LakeSailing can comply with these.

1. The regatta is advertised in specialist sailing magazines and also on the Club’s website.  
   **(a)** Explain **one** reason why advertising online and **one** reason why offline advertising is   
   more effective for this kind of Company.

Offline: People are more likely to spend time reading an offline magazine, it is physical and therefore more presentable, clearer information and people can return to it more easily. Also physical so it feels more worthy.

Online: Larger potential customer base, more convenient, easier to update, easier to search through and find information relevant. **[2]**

**(b)** To advertise in the specialist Boat magazine, the file sent needs to be in a PDF file format. What are the benefits and issues with converting a file from Doc file format to PDF.

Files in PDF are more compatible with devices and other operating systems, they are locked down to prevent editing, they are smaller as the images are compressed when the file is saved, it is a single file (unlike a webpage). Issues include file size when emailing, cannot be edited (easily), reduction in the quality of images. **[2]**

**(c)** Entry forms are available to download from the website. These will have a range of Validation areas to restrict the information input. Describe, in context, **two** forms of validation these forms could use relating to the classes and competitor numbers entered.

**Classes**: Time restrictions on the field using a validation rule, a restriction on the number input using an integer or a between validation rule. Possibly an input mask to restrict the numbers that are allowed to be input, or restricted to a letter and number to endure correctness. Drop down menus could be used to select classes and a pop up calendar to select dates.

**Competitor Numbers**: Restriction on higher and lower limit using a validation rule, restriction on the field to allow only numerical input (not letter) Referential check to stop an existing key field user number form being re-entered. **[4]**

**(d)** The completed entry forms can be returned to the Club by email or post. Email versions will be digital based, describe the process of converting a paper based system form into the Regatta Administration database accurately.

First the paper based page arrives and is manually input by the secretary or administrator to the system. A form would be used with restrictions to reduce poor information. Each field would be manually input using drop down boxes, tick boxes or input boxes, information would be checked when each field is selected tor validity, the finished form would be submitted and the paper based document would be filed away, (students could also state an OCR or an OMR scanner could be used and visually verified). **[4]**

**(e)** Phone entries are not permitted. In this context, give two reasons why these are more unreliable than digital versions.

1: Information given could be misinterpreted, misheard, leading to over bookings or underpayments. The telephone staff or the customer may have language barriers.  
2: Payments given over the phone would need to be verified by the user leading to possible corruption, theft of or mistakes. (Counter-arguments stating why digital systems are better would also work, such as reliable, speed, onscreen confirmation) **[2]**

**(f)** Entry forms are printed and stored by date. They are then sorted into classes in date order, starting with the earliest date. This still allows for duplicate entries. Describe in context two verification methods the company could use to reduce duplication.

1: Visual verification, the user could check each form for duplication against the other forms before sorting them into classes to make sure there are no duplicates.  
2: Setting each user with a unique user ID so when the data is entered, it is checked against current entries on the system, alerting the user of duplicate entries. (this is very similar to one of the previous questions as I wanted to rephrase it for after sorting. This will only occur once in some form). **[4]**

**(g)** Why is storing the records in date order more reliable than storing the records in Name order?

There could be similar names, same names, or names that may be processed with different spellings, with or without the title or with additional middle names, or input with errors whereas dates are unique and can be limited using validation methods sucha s a pop out calendar. **[2]**

**(h)** Those competitors whose entry has been successful, based on maximum numbers in each class, are informed and asked to confirm their entry. A confirmation report is sent to each successful entrant. Describe with a benefit, three confirmation communication methods that the Regatta Administration could use in this context.

1: Forms could be emailed to the user with a verification response to each email to confirm places.

2: Online linked verification method through a social media link to a website where the user could open the link and confirm the details.  
3: Text message confirmation where the user receives a message and confirms the details by replying to the message. (Any other method could be argued from phone call to written message as long as it is in context to this scenario). **[3]**

**(i)** Confidentiality is one of the principles of information security. Identify two other principles of information security.

1. Integrity – The information gathered needs to be complete and valid for the purposes gathered as well as secure and in moral and ethical line with the needs of the customer.  
2. Availability – The information needs to be stored in a place where it can be made most use of, a single location so the information is up to date and valid. **[2]**

**(j)** It has been suggested that this entire system is transferred across to a whole online booking system with a visual GUI of Book allocation, confirmation system and payment system. Describe in terms of the Green IT initiative, two advantages and two disadvantages to the company of updating their processes.

**Advantages:**1: Less use of paper resources (something the students will need to answer as stated in the brief, greenIT is possibly a bigger question than this). Digital use uses less materials, less need for printing, less waste by products.  
2. Seen by the customers as more up to date and relevant, reduces mistakes, become more digitally available on portable devices and less reliant on printing hardware. (Also time consumption can be used, distance or storage needs) **Disadvantages:**1: Overuse of technology, becomes technologically dependent for customers who may not be up to date or as technically capable as others (therefore bias)   
2. Involved training, more need to stay up to date, overusing IT, electricity, cabling, hardware, becoming less friendly and more remote, social costs of less contact. (Any argument would do as ling as it is linked to environmentally or social issues).  **[4]**

**(k)** When the Regatta information is complete and the event closed, the information will be stored and anonymised. How would the company do this and why. What is the difference between the following classification types:

Partially Anonymised:  
This involves the removal of information that could lead to an individual being identified, either on the basis of the removed information or this combined with other information held by the company. Progress LakeSailing could do this by removing names, specific details or identifiers from the data.  
Non Sensitive:  
This refers to information that is already a matter of public record or knowledge, customers would be able to access it but all sensitive information within would be removed such as medical or personal details to reduce down the invalid use of the information. Progress LakeSailing could do this by removing any sensitive information from the data gathered.  
Completely Anonymised:

Information is fully anonymised if there are at least 3-5 individuals to whom the information could refer. For example, if your data relates to an individual of a specific gender and ethnicity living at a certain postcode you can increase the number of people to whom it could refer by only using the first 3 digits of the postcode. Progress LakeSailing could batch the categories so the number of people within each criteria is enlarged and therefor distinct from an individual. **[6]**

(Answers must be given in reference to the company)

**2**  **(a)** The database for storing Entry and Regatta Records will have 4 tables, Competitor, Allocation Details, Berth Locations and Classes. Describe with example, two Data Fields and their Data Types which would likely be used within these tables.

Competitors:

Name, stored as Text, Date of application, stored as Date.  
Details:

Details of the medical or dietary needs, stored as Notes and number of competitors stored as integer.  
Classes:

Category of class stored as a list from a menu (text), categories, stored as short text.

Berth Locations:

Accommodation details, stored as Short text and Number of Berts sored as Boolean or Tick list. **[8]**

**(b)** Demonstrate in a Data Flow Diagram, the Input, Processes and Outputs of providing the required Regatta booking Information.  **[6]**

1 - Customer fills in the booking form

Customer information is verified on screen against stored data

**3 - Verification**

Information is added to the data store

**2 - Database**

If information is rejected, customer is informed

**5 - Rejection**

Confirmed information is added to store

**4 - Confirmation**

Information is printed out on the day of the Regatta for use.

**7 - Printing**

Conformed information is stored for later retrieval

**6 - Stored**

**(c)** Explain one feature that could affect the flow of information in the data flow diagram above.

If the communication with the customer in between submitting the information and confirming the information is broken, then the customer may believe that their information has been accepted and continue on with the booking without knowing. (any other interruption from loss of data to poorly processed data could be used as long as the input, process or output is mentioned). **[2]**

**(d)** Because some competitors will be competing in more than one class, the database tables will need to have a one to many relationship with enforced data integrity. What does this mean?

The tables will be linked by a primary key to a secondary key (1) with referential integrity turned on so that if one record is removed from table, then it will cascade through the other tables and remove that data too (1) (The question should be treated as two separate ones, defining referential integrity and defining relationships) **[2]**

**(e)** The competitor entries are initially kept on paper which can cause errors as updates may not be recorded. This information is then input into a flat file table. Describe the variance in the Standard of Information gathering with the following data characteristics in this context:

Validity. Mistakes in input or writing may make the information on the flat file invalid, wrong, causing the wrong results or scoring.  
Time Frame. The information may be out of date making the information invalid, for example the winners of a round may not be input in time to be entered for the next race.

Cost effective.

For the information to work well, it should not be replicated, causing dual entry and a waste of time and effort. Duplication of data or late entries can also cause the data to be less cost effective.

Relevance. If the information that is being entered for each race is not necessary, this will make the information less cost effective, irrelevant and time consuming. Information such as captains may not be relevant if the team name is used as well causing a replication of unnecessary data. (1 mark for explaining the term, 1 mark for linking it to the scenario) **[8]**

**(f)** These details are then manually input into a spreadsheet which is used during the regatta and updated during the regatta on a laptop at the finishing line. The suggestion that using RFID enabled tracking devices on the boats linked to the database would be more effective. In terms of data validity, data transmission and data security, Discuss.

Validity: The RFID tracking could be placed on each boat so that the finish line information would be more accurate. The device would signal when it passes the finishing point automatically on the database and that information updated on the system so that the next round data would be accurate and instant.  
Transmission: RFID data is transmitted instantly over a short distance to an RFID reader at the finish and start lines. This transmission will be secure and up to date, difficult to hack or corrupt and accurate due to the instantaneous transmission to the control device and linked to the database.  
Security: RFID data is very secure, the data is linked to the device using a tracked signal and will update the information live to reduce the risks to the tracked races and boats. The data is then securely transmitted to the computer and should be secure at that point. **[6]**

**(g)** Under the current finishing line data gathering system, explain **two** possible effects on Progress LakeSailing if it were to corrupt or abuse the event information.

The reputation of the company would be jeopardised as the event places a lot of trust in data accuracy and a lot of time and effort to maintain customer loyalty and trust.

Stolen data could be used for nefarious purposes such as names and addresses of customers linked to credit payments, this would force the company to spend more money on data security and customer data protection. (1 point for the problem, one point for the impact, two points at least should be made) **[4]**

**(h)** As each competitor finishes the race their time is recorded and the results are then uploaded to Progress LakeSailing’s website along with a photograph of the winning crew and boat. How does the data and image confidentiality of this information need to be considered in terms of legality?

Images used on the website should have the express permission of the contestants to protect their privacy. Data on the website about customers, the regatta or times etc. is considered confidential or private and under the Data protection Act, this data needs to be anonymised or secured. Photographs need to be decent, with permission, and need to be kept only for as long as necessary. Copyright issues may also have to be taken into consideration in order to stop the images used being used by other companies for marketing. **[2]**

**(i)** The images and data are uploaded via cloud storage using a login name and password. Why is this data transfer method beneficial to Progress LakeSailing?

Security – Cloud storage is more difficult to hack or corrupt.

Ease of use – uploading to the cloud can be considered easy to do, instant and live.

Accessible – it is easier to access this information as it is shared and live, as soon as it is uploaded, multiple people will have access to it for different uses. (any other reason such as convenience, cost, reducing risk of loss etc. will do as long as it is scenario based.) **[2]**

1. **(a)** As each competitor finishes the race their time is recorded and the results are then uploaded to Progress LakeSailing’s website along with a photograph of the winning crew and boat. How does the data and image confidentiality of this information need to be considered in terms of legality?

Copyright needs to be considered as the data may belong to LakeSailing but the image rights will need to be agreed. Confidentiality needs to be considered as the image of the winners etc. may not be shared without permission of the winners, an agreement on the image store and use needs to be arranged under the Data Protection and an agreement on privacy and use needs to be negotiated. (Very similar to the last question but there are 2 scenarios where copyright and image use are being mentioned so I made 2 questions on it.) **[2]**

**(b)** The laptop is used in a hut at the finishing line, describe two physical security measures that could be implemented to protect the laptop from theft?

1: Biometric security (finger printing login.)

2. Security cable lock (A chain lock to hold the laptop to a secure object like a radiator). (Any other physical measure such as door locks, barred windows, tamper alarms etc. can be argued). **[2]**

**(c)** Describe two logical protection measures that could be put in place to secure the results information?

1: File could be password protected to restrict access from other users.

2. File could have read rights but not write or delete rights. (can also include storage in a secure area, backups or encryption) **[2]**

**(d)** The timing office uses a dongle provided by a phone company to access the internet. This dongle is 4g enabled. Describe the security stages and processes of accessing the internet using this device.

Dongle is inserted and hardware found with the appropriate drive (1). Internet icon is activated through the icons toolbar (2). Login name and password on the device is input by the user with a confirmation of successful input given (3). Internet browser is opened and used through the device connection. (4) **[3]**

**(e)** Describe including features two types of internet connections which could be used by Progress LakeSailing during the regatta and how these could be affected by the location of the regatta.

1: 3g (or 4g as stated above) these, could link phones or tablets to the internet so information could be uploaded through cloud or sent vie messages or email. Location could be an issue of the connection is in a black spot where no signal is getting through.  
2: Wi-Fi, this could connect devices from phones or laptops to the internet through a Wi-Fi router that will be connected to the internet through a cable from the router. Users access this through the use of the Wi-Fi key. Issues can happen if the user is out of Wi-Fi signal range causing the internet or uploading to be interrupted. (1 point for the device description, 1 for the potential connection issues) **[4]**

**(f)** Neither the entry database nor the regatta results spreadsheet are backed up. Why would the company use this policy?

In order to avoid data protection issues, issues with storage, the need to spend money securing or protecting customer information or having to deal with legal issues over the data, the company may have decided not to keep a store beyond the regatta of the customer’s data. **[2]**

**(g)** Analyse the ethical implications that need to be considered when dealing with information/data within Progress LakeSailing system (inputs/outputs)

The information stored on the customers during the regatta is private and may lead to issues with confidentiality and data protection. Stolen data could lead to theft, or could be manipulated for nefarious purposes. When inputting information into the system the user needs to be sure that the data is secure, correct and not abused, not shared or given away, not manipulated or adapted, not excessive and remains at all times confidential and is always in line with the data protection act stipulations.

Ethically and morally the information is private and should be treated as such, should not be discussed or shared or used outside the need for which it was gathered. (this is a vague question so the student need to keep referring to privacy, confidentiality and decency) **[4]**

**(h)** After each regatta, the database and spreadsheet are deleted with no copies held. This therefor does not allow the company to analyse or review the processes and results. Discuss the advantages and disadvantages of this decision.

Advantages – no need for additional security, no worries about data breaches, sticking with the Data Protection Rules, less storage space, no need to protections on the data.

Disadvantages – no analysing of data, no records to share, no ability to share good practice, no ability to use data to improve the system for next year. (this is another vague question but is mentioned in the given scenario for a reasons so there will be some question as to this decision). **[2]**

**Marks out of 96: \_\_\_\_\_\_\_\_\_**

**Grade: \_\_\_\_\_\_\_\_\_**

**Grade Boundaries based on June 2017:   
Pass - >34 Merit - >52 Distinction – >72 (If out of 80 then D60 M44 P29 U0)**