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| **logobw**  CANDIDATE NAME  CT GROUP | VICTORIA JUNIOR COLLEGE  JC 2 TIMED PRACTICE  Higher 2  **………………………………………………….…………………….………..**  **……………………………..** | | |
| **COMPUTING** | | **9569/01** | |
| **Paper 1**  Additional Materials: ets.txt data file  Electronic version of Carpets.txt data file | | | **8 March 2023**  **1 hour** |
| **READ THESE INSTRUCTIONS FIRST**  An answer booklet will be provided with this question paper. You should follow the instructions on the front cover of the answer booklet. If you need additional answer paper, ask the invigilator for a continuation booklet.  Answer **all** questions. Approved calculators are allowed.  The number of marks is given in brackets [ ] at the end of each question or part question. The total number of marks for this paper is 30.     |  |  | | --- | --- | | **For Examiner’s Use** | | | **Total** | **/ 30** | | | | |

1. The ASCII standard defines how numbers are used to represent common characters that can be typed using a keyboard, such as upper-case and lower-case letters.

Besides ASCII, Unicode is another method of encoding characters.

Describe **one** difference between ASCII and Unicode. [1]

1. Telemedicine or telehealth can improve access to care for patients, especially with an ageing population and increasing incidence of diseases in Singapore. In telemedicine, doctors may be able to interact with other healthcare professionals, providers, caregivers and patients virtually using Information Communication Technologies (ICT).

Through such a system, the above users can interact with one another in the following areas:

* Telesupport such as scheduling appointments and collaboration
* Teleconsultation such as assessing, managing and monitoring patients

Explain **two** benefits of a web-based solution over native application in this situation. [2]

1. The following is a design blueprint of the Layers module in a software.

Graphical user interface

Description automatically generated

In the Layers module, users can move layers around using the cursor. They can visually see the layer being represented as physically dragged within the module. The cursor also changes from an open hand into a gripped hand when the user drags a layer around.

Describe **two** usability principles that are applied in designing the above dragging of layers. [2]

1. Read the following problem scenario, then answer the following questions:

A travel booking website offers accommodation services to customers. A customer usually makes a booking a few months before the start of the rental period. The customer pays a deposit at the time of the booking and the balance (the remaining money owed) a month before the start of the rental.

At the time of a booking, the company records the following data:

* customer name and address, if the customer has not made a booking before.
* customer reference code
* booking date
* rental start date
* rental completion date
* accommodation type
* deposit taken

Accommodation types are coded as follows:

* H1 for hotel room
* A1 for one-bedroom apartment
* A2 for two-bedroom apartment
* A3 for three-bedroom apartment

Each accommodation type has its own daily rental features such as its daily rental rate, add-ons such as extra beds. Each accommodation has a unique number. Each customer may make more than one booking.

The company wants to model this application using a relational database.

* 1. A database needs several tables to store the data for this application.
     1. Draw the Entity-Relationship (E-R) diagram to show the tables in third normal form (3NF) and the relationships between them. [7]
     2. A table description can be expressed as:

TableName (Attribute1, Attribute2, Attribute 3,...)

The primary key is indicated by underlining one or more attributes. Foreign keys are indicated by using a dashed underline.

Using the information given, write table descriptions for the tables you identified in part **(a)(i)**. [7]

* 1. The company wishes to expand its services globally, offering various types of accommodation services such as hotels, apartments, and villas. The database will be expanded to include a wider range of information about each accommodation, such as its location, availability, and amenities. Furthermore, the company is looking to handle a large volume of data and support high scalability.

State **two** reasons why the company may wish to deploy a NoSQL DBMS. [2]

1. The travel booking company collects personal data such as customer names and addresses. State and describe **two** data protection obligations that the company needs to comply with under the Personal Data Protection Act. [4]
2. An educational institution wants to ensure that its data is protected and preserved for the long-term using data backup and archive. Explain the main difference between data backup and archive. Provide an example of how each could be used in the context of the institution's operations. [3]
3. The Infocomm Media Development Authority (IMDA) and Singapore Computer Society (SCS) have jointly developed a Code of Conduct for Computing Professionals in Singapore. The code outlines the expected standards of behaviour and professional ethics for individuals working in the computing industry in Singapore.

Your system solutions company is approached by a school to develop facial recognition software to monitor the attendance of students, which would require collecting biometric data from the students without their explicit consent.

Provide **two** examples to explain how you will uphold the Code of Conduct for Computing Professionals in this scenario. [2]

**End of Paper**