

Sample 2

Option A (Databases)

Online Booking System

A recreation centre is going to set up an online booking system. The centre offers three types of membership: VIP, Gold and Ordinary. Members can book three venues located in Wan Chai, Shatin and Mongkok online. The online registration and booking order forms are illustrated below.

Registration Form	
Membership number:	00001234
Name:	<input type="text" value="So Siu Man"/>
HKID number:	<input type="text" value="A123456(7)"/>
Type of membership:	<input checked="" type="radio"/> VIP <input type="radio"/> Gold <input type="radio"/> Ordinary
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

Booking Order Form			
Booking number:	12041901	Venue:	<input type="text" value="Wan Chai"/> ▼
Membership number:	<input type="text" value="00001234"/>		
Date:	<input type="text" value="2015-04-19"/>		
Session:	<input type="text" value="1430-1600"/>		
<input type="button" value="OK"/> <input type="button" value="Cancel"/>			

Task 1 (Design & Implementation)

Create a prototype of the DBMS of the online booking system for the recreation centre, focusing on the online booking process. The prototype should include

- the data dictionary of the database tables involved
- an ER diagram and the corresponding database schema
- three SQL commands to manage the booking for daily operations

You may consider some of the following key factors when designing the prototype:

- three levels of data abstraction, namely conceptual level, physical level and view level
- relational database design
- data redundancy
- data integrity
- SQL implementation
- user-friendliness

Create a presentation and/or documents to briefly describe the components involved in designing the prototype.

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Task 2 (Testing & Evaluation)

Referring to the prototype of the DBMS (*Alternative: According to the prototype of a DBMS stipulated by your teacher*), complete the following tasks.

Conduct a test of the prototype. Collect and record the feedback and results of the test.

- Either (i) make one major change in the database design and illustrate the corresponding improvement,
or (ii) describe how the scope of the prototype could be extended.

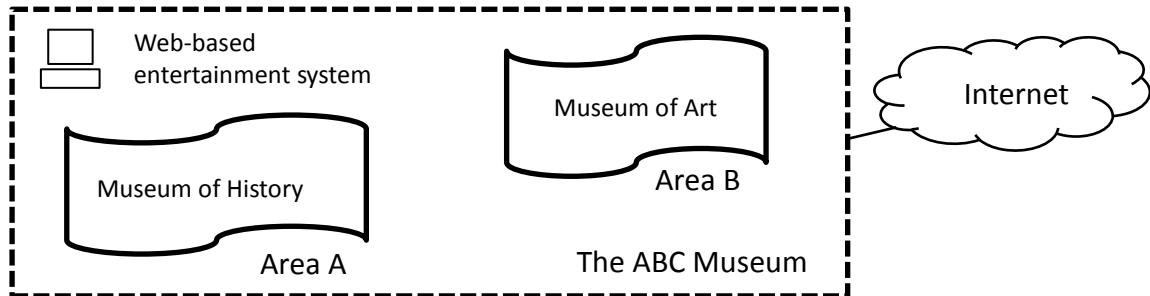
Create a presentation and/or documents to illustrate the database schema. You may consider some of the following items:

- pros and cons of the DBMS design
- concept of relational database
- database security
- data privacy issues
- data validation and verification
- impact of database development on society

Option B (Data Communications and Networking)

Network Services in Museum

The ABC Museum consists of two areas, namely the Museum of History and the Museum of Art. Thousands of visitors visit the two areas every day. The museum is going to set up a network and provide a web-based entertainment system and wireless Internet connections for visitors via their mobile devices. Staff at the museum will use desktop computers to connect to the network for work. The IT staff can manage the web-based entertainment system outside the museum via the Internet.



Task 1 (Design & Implementation)

Create a prototype of the network design for the museum, focusing on the overview of the network service. The prototype should include

- network connecting devices
- the access control and data security
- the use of simple network monitoring software
- the application of advanced network skills

You may consider some of the following key factors when designing the prototype:

- types of network connection
- network infrastructure design
- IP address management
- access control and data security
- cost of network setup
- other special network requirements

Create a presentation and/or documents to briefly describe the components involved in designing the prototype.

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Task 2 (Testing & Evaluation)

Referring to the prototype of the network design (*Alternative: According to the prototype of a network design stipulated by your teacher*), complete the following tasks.

Conduct a test of the prototype. Collect and record the feedback and results of the test.

- Either (i) make one major change in the network infrastructure design and illustrate the corresponding improvement,
or (ii) describe how the scope of the prototype could be extended.

Create a presentation and/or documents to illustrate the network infrastructure. You may consider some of the following items:

- pros and cons of the network design
- resources and steps involved in the network setup
- network management and monitoring
- simple fault diagnostic flow charts
- system test plan
- system acceptance checklists

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Option C (Multimedia Production and Web Site Development)

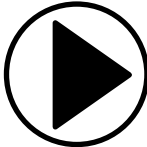
Online Ticketing System

ABC cinema wants to set up a web site for selling tickets over the Internet. The following screen layout has been designed for customers to reserve movie tickets. Customers click numbered boxes to select seats and then click the 'confirm' button to proceed with the reservation.

ABC Cinema

Banner Area

D	12	11	10	9	8	7	6	5	4	3	D	2	1
C	12	11	10	9	8	7	6	5	4	3	C	2	1
B	12	11	10	9	8	7	6	5	4	3	B	2	1
A	12	11	10	9	8	7	6	5	4	3	A	2	1

Movie Trailer

Confirm**Clear**

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Task 1 (Design & Implementation)

Create a prototype of the online ticketing system with one or more web pages, focusing on the input of ticket selection. The prototype should include

- an extract of a video
- background music
- a tweening animation

You may consider some of the following key factors when designing the prototype:

- web site structure
- audience awareness and friendliness
- sitemap
- the use of multimedia elements
- hardware, platform, language and colour compatibility
- web accessibility

Create a presentation and/or documents to briefly describe the components involved in designing the prototype.

Task 2 (Testing & Evaluation)

Referring to the prototype of the web site (*Alternative: According to the prototype of a web site stipulated by your teacher*), complete the following tasks.

Conduct a test of the prototype. Collect and record the feedback and results of the test.

- Either (i) make one major change in the web page design and illustrate the corresponding improvement,
or (ii) describe how the scope of the prototype could be extended.

Create a presentation and/or documents to illustrate the web site. You may consider some of the following items:

- pros and cons of the web site design
- how the editing of the multimedia elements compromises the environmental factors of the web site
- how the prototype addresses the key factors of a good web site
- how the evaluation helps to improve the web site

Option D (Software Development)

Seating Plan

ABC school is going to organise a dinner for alumni to celebrate its 50th Anniversary. The school will develop a program for the dinner registration and generating a seating plan. During the data collection stage, the personal information of the participants will be input into the program, as shown in the following example:

- name of participant
- year of graduation
- sex
- age
- employment
- number of seats required

Task 1 (Design & Implementation)

At the end of the registration period, the program should generate a seating plan for the dinner and store it in a text file. You should clearly define the seat allocation rules and other system parameters such as table size. Some possible seat allocation rules are as follows:

- grouping family members together
- balancing male and female participants
- grouping participants of similar age
- grouping participants of similar employment

The program should follow at least **two** seat allocation rules at the same time when generating a seating plan. You should note that there may not be a perfect seating plan that follows all the stated rules. An approximate seating arrangement is acceptable. You may consider some of the following key factors when designing the program:

- data structure
- variable declaration and initialization
- data collection, input and validation
- data processing
- program output
- interface of the program
- modularity
- reusability

Write the program for ABC school and create a presentation and/or documents to briefly describe the components involved in designing the program.

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Task 2 (Testing & Evaluation)

Referring to the program (*Alternative: According to a program stipulated by your teacher*), complete the following tasks.

Conduct a test of the program. Collect and record the feedback and results of the test.

- Either (i) make one major change in the program and illustrate the corresponding improvement,
or (ii) describe how the scope of the program could be extended.

Create a presentation and/or documents to illustrate the development of the program. You may consider some of the following items:

- pros and cons of the program design
- test cases
- unit test
- system test
- user acceptance test
- algorithms optimization