

Hong Kong Examinations and Assessment Authority
Hong Kong Advanced Level Examination 2010
Computer Studies Paper 3
Project Assignment

Candidates should complete **one** of the following project assignments.

Title 1: Sports Day System

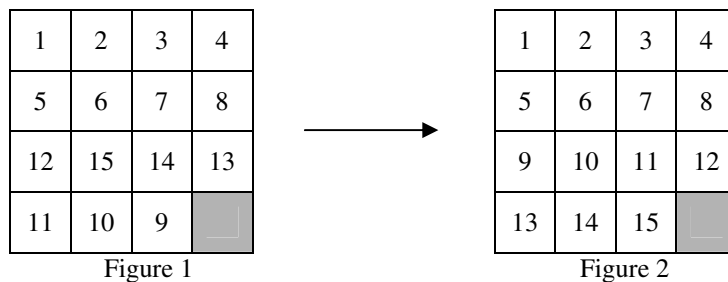
There are a number of tasks to be performed before and during the sports day of a secondary school, as shown below:

- Students are categorized into different grades according to their ages.
- Students enroll in at most three events.
- All participants are allocated to different heats of the events with eight participants per heat in maximum. For example, if there are 50 participants in Boys Grade C 100M run, they will be allocated to seven heats.
- Results of each event are reported based on the rank order of the results.
- Special merits, such as individual champion and house champion, are computed based on the overall results.

Candidates are required to design and implement a Sports Day System by

- designing a database schema
- designing algorithms for event allocation and participant allocation to minimize possible time clashes
- reporting the results of events and merits
- writing a program to implement the algorithms

Title 2: A Mini-Puzzle Game



Candidates are required to write a classic mini-puzzle game program.

- The dimensions of the game board are $n \times n$, where n is an integer.
- There are $(n \times n - 1)$ tiles in the game board which are labelled with numbers from 1 to $(n \times n - 1)$, and one cell is vacant. Figure 1 and Figure 2 show an example for $n = 4$.
- The player can move one tile at a time. For example in Figure 1, the shaded cell is vacant and the player can either move '13' downward or move '9' rightward.
- The player should continue to move one tile at a time until the numbers are in order (i.e. the configuration in Figure 2 is reached).
- The program should be able to
 - generate a random starting configuration using the dimensions chosen by a player;
 - allow the player to input his/her preferred move;
 - offer hints at the player's request;
 - update and display the game board after each move; and
 - determine when the game is over.

END OF PAPER