Hong Kong Diploma of Secondary Education Examination

School Based Assessment

Information and Communication Technology

Option D: Software Development

Topic: Puzzle & mini games

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Class: 6B

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**Chapter 1 : Introduction**

**1.1: Background**

Nowadays, in this technologically-driven world, children are exposed to various kinds of entertainment such as video games and movies online. However, as the Internet is a free place where anyone can share anything, including some content deemed immoral or obscene by the general public, such as violent games and pornographic films, these children are in need of some games healthier to their minds.

In line with the worldwide trend of protecting children’s use of computers, such as the $170M fine over children’s privacy for YouTube by the U.S. Federal Trade Commission, I have developed a program that provides safer entertainment for children by providing them fun-to-play puzzle games.

**1.2: Aim**

To provide 3 different fun-to-play games that can automatically save progress, in order to train children’s logical and critical thinking alongside providing entertainment so that children can be willing to continue playing. The key aim is being fun to play, which is most suitable for children.

**1.3: Target Users**

This solution is aimed at lonely and bored people who wish for exciting games with moderate difficulty. Being easy to open and operate, this solution will be a good choice for them.

Children are another target. Being in need of exciting games that are non-violent, this can provide relief from homework and tests for them.

**Chapter 2 : Design and Implementation**

**2.1: The User Interface**

This program runs on the Command Line Interface (CLI) instead of the Graphical User Interface (GUI), as it uses less system resources, as the program is text-based and does not require complex graphical processing, and is more cross-platform, as all computer operating systems have one. By detecting key presses instead of commands for user input and providing clear instructions on screen, the disadvantage of CLI where the user has to remember commands to input can be avoided. Moreover, using CLI, the overall aesthetics can be made more consistent as all text use the same font and the players can feel the beauty of consistency. The player will be more engaged in playing these games, thus increasing emotional responses and increasing the effectiveness of such system.

**2.2: Modularization**

In this program, there are 5 “rooms” where the controlled character can move through; of which 3 are games to play. Each room is a module where the player can navigate through different situations and obstacles, which increase the excitement and fun of the games. When the player successfully completes a room, the progress is automatically saved so that the player does not have to go through past progress again.

**2.3: Diagrams**

The following outline the design of the system, shown based on the functions and objectives stated in Chapter 1.

The following will be shown:

1. The Level 0 data flow of the system

2. The Level 1 data flow of the system

3. The Level 2 data flow of the system

4. The Structure Chart of the system

5. The System Flowchart of whole system

6. The System Flowchart of 3 Games

**2.4: The Level 0 data flow of the system**

The system consists of the puzzle game program and the player.

Player

Game input

Game state

Puzzle Game Program

Save user information

Loaded user information

D1 User information

**2.5: The Level 1 data flow of the system**

2.0

Registration Process

7.0

Winning Screen Process

6.0

Connect Four Process

5.0

Code Crack Process

4.0

Number Guess Process

3.0

Title Screen Process

1.0

Login Process

D1 User information

ID & Password

Player

ID & Password Login information Registration Confirmation

Player

User IDs

New registration account

New progress

Avatar  
control

Player

Avatar control

Avatar Game and number input  
movement state

Player

Game  
 state