

DFD specification Document

Become Pac-Man

version: 1

Group F8

1155127434 HO Chun Lung Terrance

Department of Philosophy, The Chinese University of Hong Kong

1155143519 WOO Pok

Department of Physics, The Chinese University of Hong Kong

1155157839 NG Yu Chun Thomas

Department of Computer Science and Engineering, The Chinese University of Hong Kong

1155157719 LEUNG Kit Lun Jay

Department of Computer Science and Engineering, The Chinese University of Hong Kong

1155143569 MOK Owen

Department of Mathematics, The Chinese University of Hong Kong

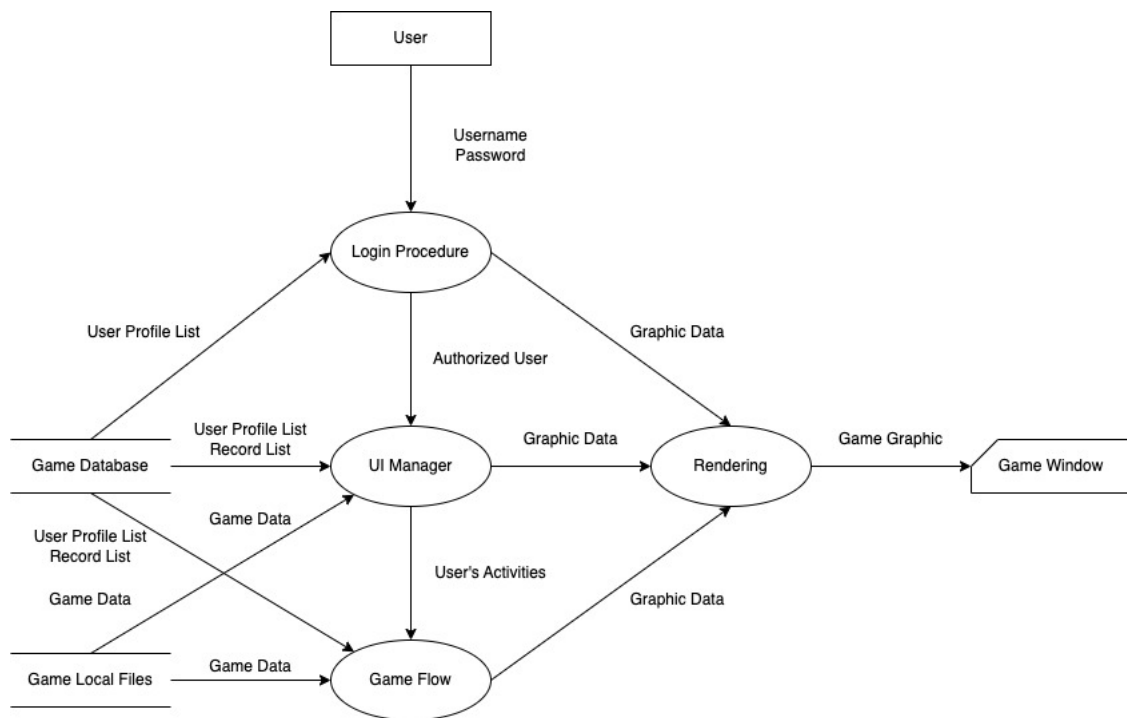
February 24, 2023

Contents

1	High-Level Context Diagram	3
2	Feature Diagrams	4
2.1	Game Rendering	4
2.1.1	Description	4
2.1.2	DFD	4
2.2	Game Flow	4
2.2.1	Description	4
2.2.2	DFD	5
2.3	Player Control	6
2.3.1	Description	6
2.3.2	DFD	6
2.4	Enemy AI	7
2.4.1	Description	7

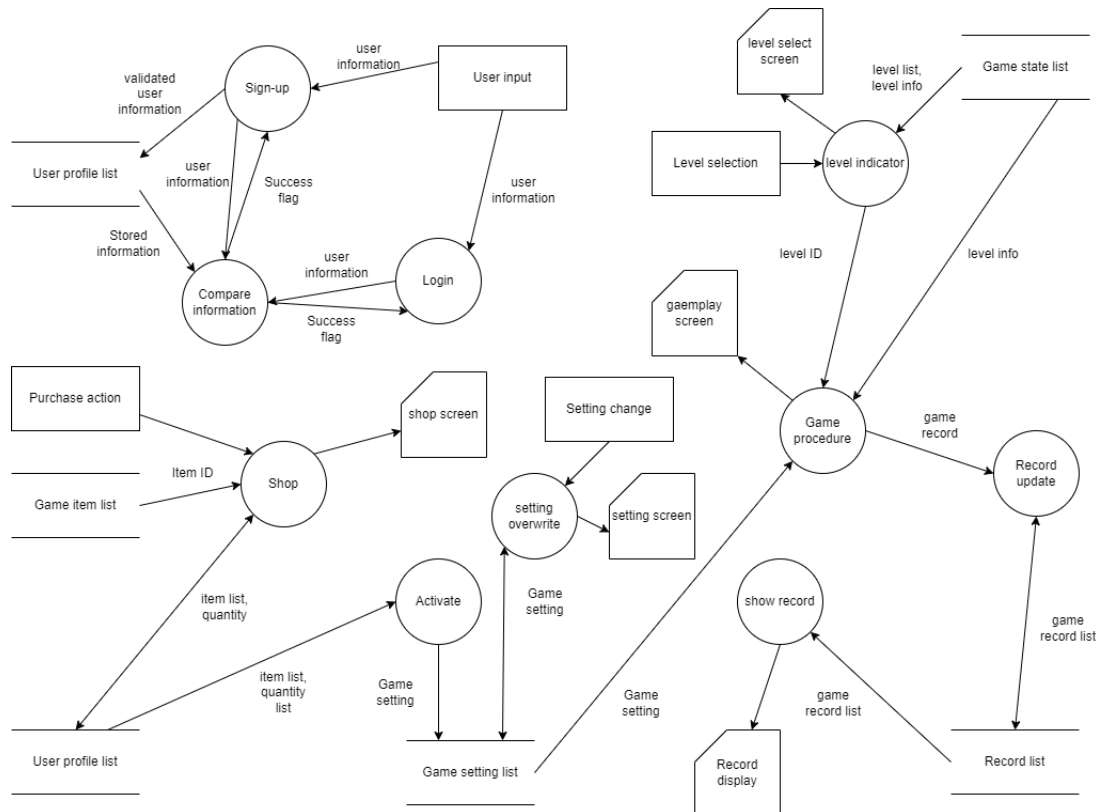
2.4.2	DFD	7
2.5	Game UI	7
2.5.1	Description	7
2.5.2	DFD	8

1 High-Level Context Diagram



profile list. Then, the activate function will be called to get the updated item list from user profile list, manipulate the data into specific game setting, and put them into game setting list. When setting change is performing, the setting overwrite function will be called and game setting will be retrieved from game setting list. The game settings will be send to setting screen, and once game setting changes are completed, the updated game setting will be stored into game setting list. During level selection, the level indicator function will be called, then level list and level information will be retrieved from game state list. The data will be sent to level select screen for displaying, and once level selection is completed, selected level ID will be sent to game procedure. The game procedure will retrieve level information according to the recieved level ID, with game setting stored in game setting list, to perform the game, sending gameplay information to the gameplay screen. After the game procedure, game record will be generated and be sent to the record update function immediately, called right after the game ends. The record update function will simultaneously retrieve game record list from record list to update the list of game record. It will then store the updated record to record list. Once the show record function is called, the stored game record list will be retrieved from record list, and be sent to record display.

2.2.2 DFD

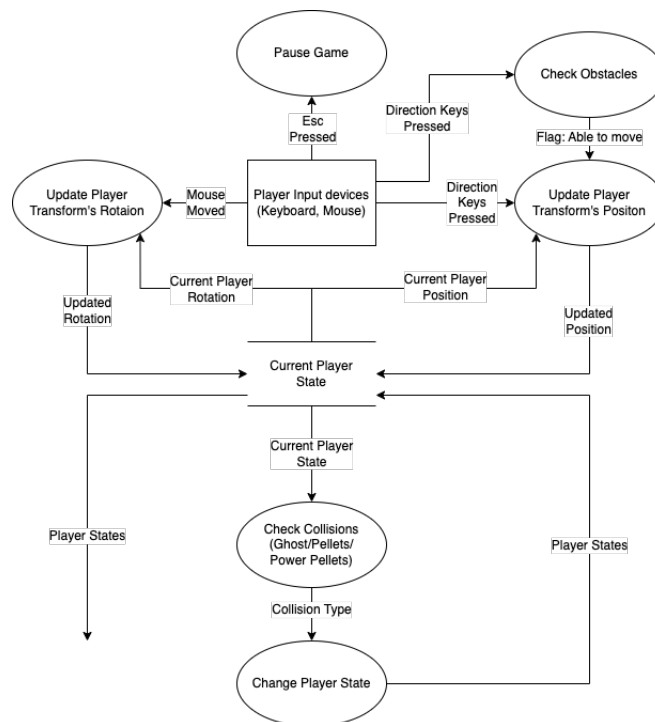


2.3 Player Control

2.3.1 Description

For the data flow of the player control, the game will receive signals from the user's input device and perform different actions. For example, the user can move Pacman and change its vision using a keyboard and mouse, also one can pause the game by pressing the "Esc" key. On moving, the game checks for any collisions to update the player's state, such as collisions with ghosts will decrease lives, collisions with power pellets will enter the powered state, and collisions with walls refuse the player to move along the direction. The player state (transform, "isPowered", remaining pellets, etc.) will be saved and output to the engine.

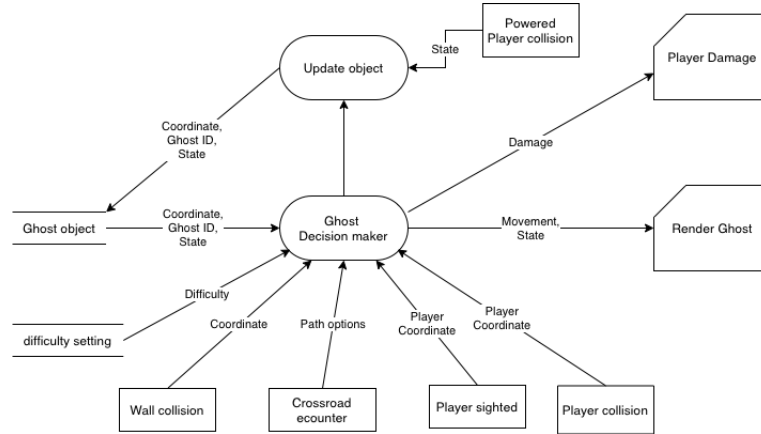
2.3.2 DFD



2.4 Enemy AI

2.4.1 Description

2.4.2 DFD



2.5 Game UI

2.5.1 Description

UI Rendering: The UI Manager handles input and output of the UI. For example, during game, a 'game end' event can be invoked when a player choose to quit the game after pausing or a ghost killed the pacman. For the first case, a button UI element calls UI Manager to end a game; for the second case, an other system calls UI Manager. After that, the UI Manager will choose to show and render the UI panel by calling the SwitchPanel() function. UI panel list stores a list of displyable panels where a panel contains a list of UI elements. The panel list may contain panels such as title main screen panel, shop panel and game pause panel. A UI panel may contains elements such as button, text and slider.

Title Screen UI: As mentoned before, UI Manager handles input and rendering of UI. The UI Manager may call different functions according to the inputs. Change game setting function change the player game setting data such as music volume and graphic setting. It will update the Game Setting List which stores all player setting on the database. Our Pacman has a shop system where player can buy skin or other game items. The game item list stores all game item while user profile list stores all user profile. A user profile contains the player's owned game items and score. A record list stores all players highest score. the world record will be displayed on the title screen for players to compare. Everytime when the game is started, it will fetch the player game setting and the player profile for the game rendering.

In-game UI: During game, a game event, such as game pause and game end, can be called by different systems, like UI Manager and Player Controller. For instance, a game end event can be invoked by the UI Manager when a player clicked the end button in pause panel or by the Player Controller when a player health is below 0. UI Manager handles all the game

events in game and react according to it. When game is running normally, there are also data needed to be rendered, such as player health and scores. Those data will be fetched from Game State and Player State and keep updating. If a player would like to change setting in game after pausing, the new game setting data will be passed to the change game setting function and it would update the Game Setting List Database. When the game resumes, it will first update the game setting and then continue the game.

2.5.2 DFD

