

**DigIt**  
**HKU Game Design Document**  
**Version 1.2, 28-6-2006**

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**1. Game Contents**

*a. Game Explanation*

i. Single Player

DigIt is a single player game played on a single mobile phone. It is a simple, easy to learn never ending game in which you can gain skill to raise your high score every time you play.

ii. Gameplay

In DigIt you need to press the right number button at the right time to score points. A number is displayed in the middle of the screen and a small ball moves around the screen. As soon as the ball is inside a special area, the player needs to hit the required button to get points and display a new number for a new round.

iii. Goal

By pressing the right buttons you can score points and gain levels. In higher levels the difficulty will increase. You can stop the ball inside three areas, the middle one gives you the most points. These points are added to your total score, but also to you level meter. In higher levels, scoring points will add more to you total score. The goal is to get the highest score without dropping in level.

#### *b. Game Structure & Flow*

##### *i. Starting Conditions*

The player has a level meter that shows what his progress is in the current level. In a new level, this meter starts with 5 points and the meter is full when the player scores 30 points in a level. In the beginning, only the numbers 1, 2 and 3 are used and the ball moves at a manageable speed.

##### *ii. Pressing Numbers*

The player has to press a specific number button at the right time. At first, the amount of different numbers used is low, but this will increase with levels. The player has to press the right number when the ball is inside the specified area. If successful, a new number will be shown. The number sequence is totally random and the player doesn't get the same number more than once in a row. Later in the game, numbers will be replaced by the letters of that same button. The buttons to press are still the same, the player only needs to look at letters instead of numbers.

##### *iii. Scoring Points*

There are two areas in which the player can score points. The exact middle of that area will give the player more points than on both sides of the middle. These points have an effect on the level meter, which is used to upgrade the user to a new level when playing well, and add to the total score when multiplied with the current level.

##### *iv. Levels & Variations*

Levels vary in difficulty. The higher the level the player gets to, the more difficult it will be to stay in the game, but the more points a player earns by playing well. The level difficulty can be changed by increasing or decreasing multiple variables in the game.

## **2. Playing**

### *a. Rotation*

#### *i. Speed*

The speed of the ball following the circular line greatly determines the difficulty of the game. This speed has to be manageable in the beginning, but not as slow that it becomes boring.

#### *ii. Cycles*

A cycle is one full rotation of the ball along the circular line. Cycles have to be watched to be able to limit the time a player has to press the right button. The player has to press the right button within a cycle to prevent losing level meter points each consecutive cycle.

#### *iii. Direction*

To increase the variation between numbers and levels, the ball can travel in two directions along the circular line. This direction can change every time the player manages to press the correct button at the right time.

#### *b. Points*

##### i. Goal Points

The goals are the three different areas in which the player can stop the ball to score points. The goal points are the same for the two areas on the sides, but the middle area will give a higher score.

- Exact center: 2 points
- Side areas: 1 point

##### ii. Level Point Meter

The level meter indicates the progress of the player in the specific level. The goal points mentioned above are directly added to the level meter. This means that a center hit will increase the level meter with two points and a side area with one point. The meter can also drop by bad play from the player in two ways.

- No right input in cycle: The player has one full cycle to enter the right number. If no correct input has been registered within the cycle, the player loses one block from the level point meter.
- Input at the wrong time: The player presses a button, not necessarily the right one, at the wrong time. To prevent the player from hitting the button over and over again, the player loses one block from the level point meter when the input is at the wrong time.

##### iii. Error Indicator

The error indicator is there to determine a maximum amount of errors in the game. This indicator drops one number when the level point meter also drops, based on the rules mentioned above. The error indicator also grows with five when the player reaches a higher level. The indicator is added for two reasons.

- To prevent abuse of the system when the player is trying to stay in one level with a manageable difficulty to score as much points as possible. If there is no limit other than the empty level meter, the player can keep scoring points between filling and emptying the level meter.
- To motivate the player to get to a higher level as quickly as possible. To be able to afford more errors on the higher levels and stay there longer to score more points, a higher error indicator is always better. The player needs to save up possible errors in the lower levels to score more points in higher levels.

##### iv. Session Score

The goal points and level meter together determine the total score. Other factors also increase the amount of points added to the total score each time. Indicated below is the exact scoring calculation system.

- The first variable necessary is the goal point earned by the player, depending on which area the player stopped the ball in. This value is either 1 or 2.

- The second variable is the current level the player is in. This level can only increase and doesn't have a real limit. This limit is only determined by the expertise of the player
- The third variable is the combo counter. This variable indicates how many times in a row a player has stopped the ball in the center area. This value is reset after a player misses the middle area.
- The addition to the current score is calculated using the following formula: Addition = Goal points \* Current level \* Combo counter.

c. Levels

i. Gaining Levels

A player gains a level by filling up the level meter completely. This is done by scoring points, 1 or 2 goal points will be added to the level meter depending on the area stopped in. If a player only needs one more point to gain a level and scores 2 points, this extra point is added to the next level meter. The level meter always starts with five points in the beginning of a level to avoid losing right away and five allowed errors are added to the error indicator.

ii. Losing Levels

The player is unable to drop in levels. When he loses a level, he loses the game. The player starts each level with at least five points and the goal is to survive the current level and get to the next one. There are two ways to lose a level and with that also the game.

- The player is unable to keep up with the difficulty of the level and his level meter will eventually be empty. The player will lose one block of his level meter when he is unable to press the right button within a cycle. This will happen more often as the difficulty increases. When the level meter is empty, the player loses the game.
- The player is unable to keep up with the difficulty of the level and his error indicator will eventually drop to zero. The player will lose one point on his error indicator when he also loses a block on the level meter. This will happen more often as the difficulty increases. When the error indicator is zero, the player loses the game.

iii. Difficulty Variations

The game will rise in difficulty every level. There are three factors that determine the difficulty of each level and these factors differ from level to level.

- Speed of the ball.
- Amount of possible numbers/letters.
- Change in direction of the ball.

Level #	Rotation Speed (Degrees)	Numbers Available	Direction Change Probability (Chance 1 in # - 1)
1	5-7	123	19
2	6-8	123	18
3	7-9	1234	17
4	8-10	1234	16
5	9-11	12345	15
6	10-12	12345	14
7	11-13	123456	13

8	12-14	123456	12
9	13-15	1234567	11
10	14-16	1234567	10
11	15-17	12345678	9
12	16-18	12345678	8
13	17-19	123456789	7
14	18-19,9	123456789	6
15	12-13	1ABC3456789	15
16	13-14	1ABC3456789	14
17	13-14	1ABCDEF456789	13
18	14-15	1ABCDEF456789	12
19	14-15	1ABCDEFGHI56789	11
20	15-16	1ABCDEFGHI56789	10
21	15-16	1ABCDEFGHIJKL6789	9
22	16-17	1ABCDEFGHIJKL6789	8
23	16-17	1ABCDEFGHIJKLMNO789	7
24	17-18	1ABCDEFGHIJKLMNO789	6
25	17-18	1ABCDEFGHIJKLMNOPQRS89	5
26	18-19	1ABCDEFGHIJKLMNOPQRS89	4
27	18-19	1ABCDEFGHIJKLMNOPQRSTU9	3
28	19-19,9	1ABCDEFGHIJKLMNOPQRSTU9	2
29	19-19,9	1ABCDEFGHIJKLMNOPQRSTUVWXYZ	1

### 3. Controls & Interface

#### a. Button Configuration

##### i. Playing Buttons

The game is played using all the numeric buttons on the phone. It is part of the gameplay to find and use the right button at the right time. One button is reserved to pause the game at any point.

- 1-9: Possible buttons to press for input.
- 0: Pause the game.

##### ii. Menu Buttons

In the menus other buttons are used to determine what to do. The player can not move around a selection and confirm that selection. Instead, each menu has a few options with a number assigned to it so that the player can press that button to select that option immediately. Which buttons those are depends on the menu.

#### b. Start Menu

The start menu consists of the following elements.

- Game logo: An image of the game's name.
- Extra button information: Button indication of how the player can pause the game and turn the sound on and off.
- Copyright notice: Remark about the year and the developer.
- Buttons
  - Play (1): Start the game right away.
  - Help (2): Read a short tutorial on how to play.

#### c. Main Screen

The main screen consists of the following elements.

- Ball loop
  - Small rotating ball: The ball that needs to be stopped inside the correct area to score points.
  - Circular area: The ball rotates along the outline of this circle.
  - Hit area (center): Stopping the ball inside this area will earn the player two base points.
  - Hit area (sides): Stopping the ball inside this area will earn the player one base point.
  - Button indicator: A number showing which button needs to be pressed.
  - Level indicator: A number showing which level the player is currently in.
- Score section
  - Level meter: The meter indicating the player's progress in the specified level, including a bar showing the level minimum.
  - Error indicator: A number showing how many errors the player is allowed to make before losing the game.
  - Total score: The actual score the player is generating by multiplying his goal points with the level and his amount of combos.

#### *d. Additional Screens*

##### *i. Help Screen 1*

The first help screen consists of the following elements.

- Header: A title bar telling the player this is a help screen.
- Text: The first part of the explanation on how to play the game.
- Buttons
  - Play (1): Skip the rest of the explanation and start playing the game.
  - Next (2): Go to the next section of the explanation on how to play the game.

##### *ii. Help Screen 2*

The second help screen consists of the following elements.

- Header: A title bar telling the player this is a help screen.
- Text: The second part of the explanation on how to play the game.
- Buttons
  - Play (1): Skip the rest of the explanation and start playing the game.
  - Back (2): Go to the main menu screen.

##### *iii. Pause Screen*

The pause screen consists of the following elements.

- Header: A title bar telling the player this is an information screen.
- Text: A notice that the game is paused.
- Buttons
  - Play (0): Continue the game from the point where you paused.
  - Quit (1): Return to the main menu and stop the current game.

##### *iv. Game Over Screen*

The game over screen consists of the following elements.

- Header: A title bar telling the player this is an information screen.
- Text: A notice that the game has ended.
- Information
  - Level reached: The number of the level the player was able to reach.
  - Highest combo: The highest consecutive center hits during the entire game.
  - Total score: The final score the player was able to build up during the entire game.
- Buttons
  - Retry (1): Immediately restart the game again.
  - Quit (2): Return to the main intro menu.