The KBlackBox Handbook

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Contents

Abstract

This documentation describes the game of KBlackBox version 21.04

Chapter 1

Introduction

GAMETYPE:
Puzzle, Board

NUMBER OF POSSIBLE PLAYERS:
One

KBlackBox is a nice logical game, inspired by the Emacs blackbox game. A major part of this help file is based on the original Emacs help.

KBlackBox is a game of hide and seek played on a grid of boxes. The computer has hidden several balls within this box. By shooting beams into the box and observing where they emerge it is possible to deduce the positions of the hidden balls.

The fewer beams you use and the quicker you are to find the balls, the better (the lower) your score.

Chapter 2

How to Play

OBJECTIVE:
Use laser beams to deduce the placement of the balls inside the black box.

Use lasers and place balls and markers on the game board to deduce the position of the hidden balls inside the black box.

The game starts as soon as you use the first laser. Before that, the time is not running and no point will be count for the score.

The cursor can be moved around the box with the standard cursor movement keys or the mouse. Switching of lasers or marking of black boxes is done with the left mouse button, or by pressing the **Return** or **Enter** key.

You can also drag and drop the balls and the markers with the mouse.

You can mark the fields where you think a ball cannot be, too. Just press the right mouse button. It often helps you to find an area where a ball could possibly be. To clear any marks, press the same key or mouse button again.

When you think the configuration of balls you have placed is correct, press the **Done!** button. You will be informed whether you are correct or not, and be given your score.

If you placed any balls incorrectly, the right solution will be displayed.

The score increases with the time (1 point per second) and with the use of lasers: 3 points if the laser beam hits a ball or exits at the entry point and 9 points if it exists at another entry point. If you make a mistake, the score is set at the end of the game to 999, which is the maximum score.

Chapter 3

Game Rules, Strategies and Tips

3.1 Game Rules

You have to find balls hidden in the black box. Your means are limited - you can just fire lasers which are around the box. There are three possible outcomes for each beam you send into the box:

Detour

> The beam is deflected and emerges somewhere other than where you sent it in. On the playfield, detours are denoted by matching pairs of numbers - one where the beam went in, and the other where it came out.

Reflection

> The beam is reflected and emerges in the same place it was sent in. On the playfield, reflections are denoted by a special sign.
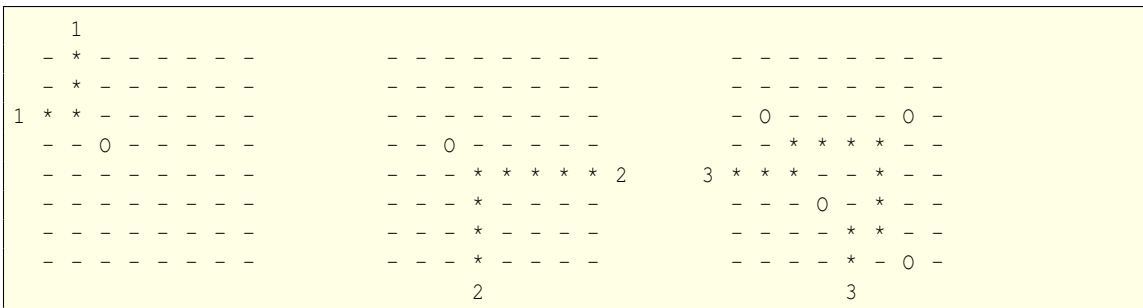
Hit

> The beam strikes a ball and is absorbed. It does not emerge from the box. On the playfield, hits are denoted by a special sign.

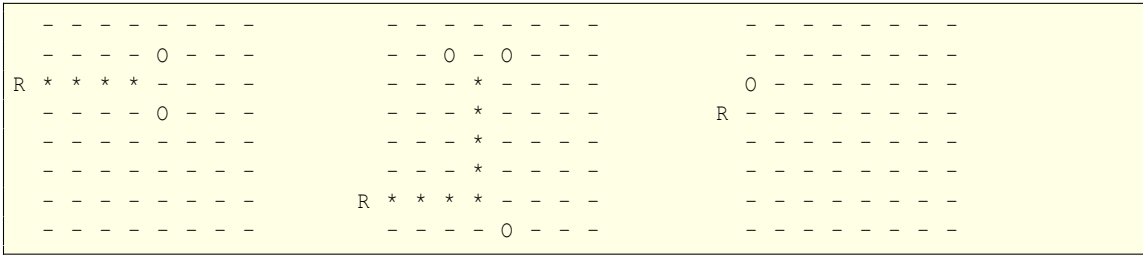The rules for how balls deflect beams are simple and are best shown by example.

As a beam approaches a ball it is deflected ninety degrees. Beams can be deflected multiple times. In the diagrams below, the dashes represent empty box locations and the letter **O** represents a ball. The entrance and exit points of each beam are marked with numbers as described under Detour above. Note that the entrance and exit points are always interchangeable. * denotes the path taken by the beam.

Note carefully the relative positions of the ball and the ninety degree deflection it causes.

```
    1
  - * - - - - - -         - - - - - - - -         - - - - - - - -
  - * - - - - - -         - - - - - - - -         - - - - - - - -
1 * * - - - - - -         - - - - - - - -         - O - - - - O -
  - - O - - - - -         - - O - - - - -         - - * * * * - -
  - - - - - - - -         - - - * * * * * 2     3 * * * - - * - -
  - - - - - - - -         - - - * - - - -         - - - O - * - -
  - - - - - - - -         - - - * - - - -         - - - - * * - -
  - - - - - - - -         - - - * - - - -         - - - - * - O -
                              2                           3
```

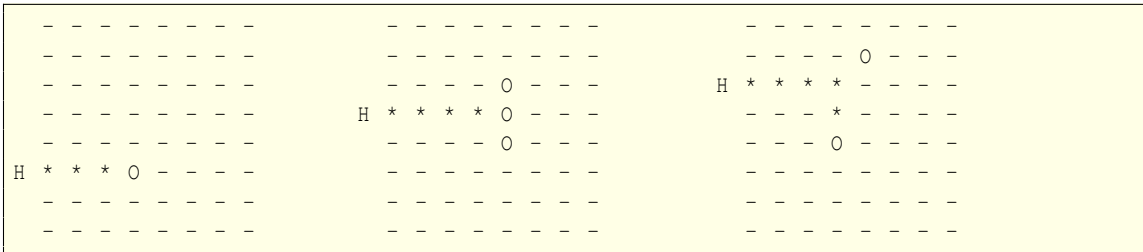As mentioned above, a reflection occurs when a beam emerges from the same point it was sent in. This can happen in several ways:

```
 _ _ _ _ _ _ _ _          _ _ _ _ _ _ _ _          _ _ _ _ _ _ _ _
 _ _ _ _ O _ _ _          _ _ O _ O _ _ _          _ _ _ _ _ _ _ _
R * * * * _ _ _ _          _ _ _ * _ _ _ _          O _ _ _ _ _ _ _
 _ _ _ _ O _ _ _          _ _ _ * _ _ _ _         R _ _ _ _ _ _ _ _
 _ _ _ _ _ _ _ _          _ _ _ * _ _ _ _          _ _ _ _ _ _ _ _
 _ _ _ _ _ _ _ _          _ _ _ * _ _ _ _          _ _ _ _ _ _ _ _
 _ _ _ _ _ _ _ _         R * * * * _ _ _ _          _ _ _ _ _ _ _ _
 _ _ _ _ _ _ _ _          _ _ _ _ O _ _ _          _ _ _ _ _ _ _ _
```

In the first example, the beam is deflected downwards by the upper ball, then left by the lower ball, and finally retraces its path to its point of origin. The second example is similar. The third example is a bit anomalous but can be rationalized by realizing the beam never gets a chance to get into the box. Alternatively, the beam can be thought of as being deflected downwards and immediately emerging from the box.

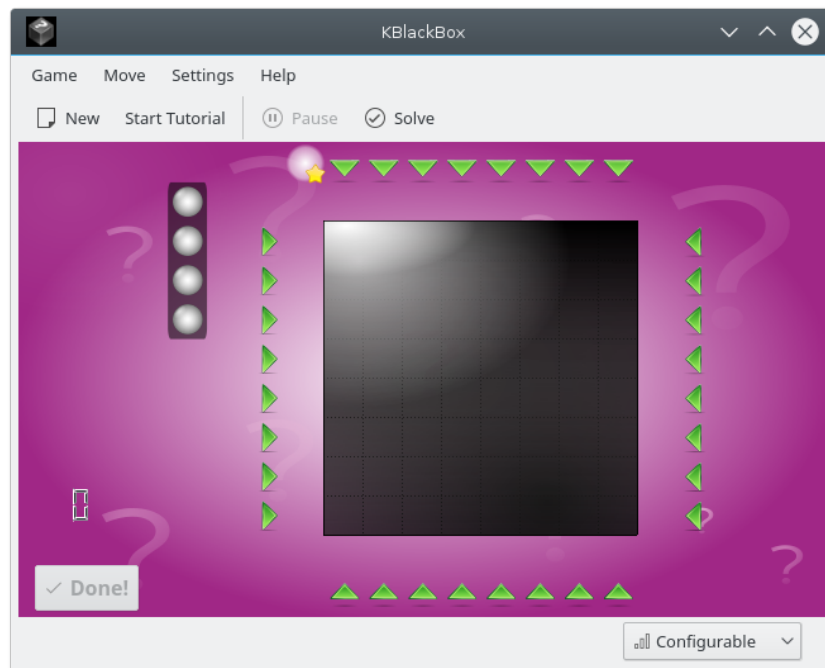A hit occurs when a beam runs straight into a ball:

```
 _ _ _ _ _ _ _ _          _ _ _ _ _ _ _ _          _ _ _ _ _ _ _ _
 _ _ _ _ _ _ _ _          _ _ _ _ _ _ _ _          _ _ _ _ O _ _ _
 _ _ _ _ _ _ _ _          _ _ _ _ O _ _ _         H * * * * _ _ _ _
 _ _ _ _ _ _ _ _         H * * * * O _ _ _          _ _ _ * _ _ _ _
 _ _ _ _ _ _ _ _          _ _ _ _ O _ _ _          _ _ _ O _ _ _ _
H * * * O _ _ _ _          _ _ _ _ _ _ _ _          _ _ _ _ _ _ _ _
 _ _ _ _ _ _ _ _          _ _ _ _ _ _ _ _          _ _ _ _ _ _ _ _
 _ _ _ _ _ _ _ _          _ _ _ _ _ _ _ _          _ _ _ _ _ _ _ _
```

Be sure to compare the second example of a hit with the first example of a reflection.

Chapter 4

Interface Overview

4.1   Game Board Description

The following types of field are found on the game board:

The big black box in the middle

Here you must mark the positions you think a ball is in.

Lasers around the box

The lasers are shooting beams of light when switched on. Then, they disappear and are replaced by an information about the interactions of the laser beam with the balls in the black box.

Balls

'There must be one there!' you think. These mark where you suspect a ball is placed in the black box.

At the end of the game, the right and wrong positions of the balls are also marked with 'balls'.

Markers for "free position"

You can use them to mark some positions where you are sure there is no ball.

4.2 Menu Items

Game → New (Ctrl+N)

Starts a new game (and abandons the current, if any.)

Game → Pause (P)

Pause or continue the current game.

Note that the interaction results are hidden in a paused game.

Game → Show High Scores (Ctrl+H)

Show the high score tables.

Game → Start Tutorial

Start the tutorial of the game. This is a user friendly way to learn the game rules.

Game → New Sandbox Game

In this mode, the solution is displayed at the start of the game. This is useful to understand the game principles.

Game → Quit (Ctrl+Q)

This closes the window and quits KBlackBox.

Move → Solve

Use it to give up a game. It shows you the solution: the right positions of the balls.

Move → Done!

When you placed all the balls, choose **Done!** to terminate the current game, to compute the final score and to display the real positions of the balls.

Settings → Difficulty

Select the game difficulty. Harder games have more balls and bigger black box than easier games. You can also play with a custom difficulty level that you can set up in the setting dialog of KBlackBox.

> NOTE
> Games with 4 balls or less can always be solved with certainty! That is not the case for games with 5 balls or more.

Additionally KBlackBox has the common KDE **Settings** and **Help** menu items, for more information read the sections about the Settings Menu and Help Menu of the KDE Fundamentals.

Chapter 5

Frequently asked questions

1. *Can I use the keyboard to play this game?*

   Yes. You can use the directional keys to control the cursor, **Enter** to place and remove balls, and **Space** to place 'empty' marks.

2. *I have to quit the game now, but I am not finished yet. Can I save my progress?*

   KBlackBox has no save feature at the moment.

Chapter 6

Credits and License

KBlackBox

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