

Diamond Circle

Implement the game "DiamondCircle". The game takes place on a matrix with minimum dimensions of 7x7 and maximum dimensions of 10x10. The game can be played by a maximum of 4 players and a minimum of 2. The dimensions of the matrix and the number of players are determined before starting the application. User input validation is required.

Each player has a name (which must be unique) and four figures of the same color. Each figure is characterized by its color and way of movement. There are three types of figures: regular, floating, and super-fast. Each figure can be red, green, blue, or yellow. The regular and floating figures move the specified number of fields, while the super-fast figure moves twice the specified number of fields. Regular and super-fast figures can fall into a hole, while the floating figure remains hovering above the hole. At the beginning of the game, each player is given four randomly chosen figures of the same color.

In addition to the figures that players use, there is also a "ghost" figure - it starts moving when the first player moves and moves along the path "in the background", placing bonus fields - diamonds, on the path. It places a random number of diamonds ranging from 2 to the size of the matrix on random positions. Placing takes place every 5 seconds and lasts until the end of the game. When the figure encounters a diamond, it "picks it up" and in the continuation of the game, during movement, the number of fields it passes is increased by the number of diamonds it has collected.

Figures move along the path shown in the image below. The matrix has minimum dimensions of 7x7.

In the case of the matrix shown, the 4th position is taken as the starting position. The order of the players is determined randomly and the players take turns to make a move. A move is defined as moving a figure from one position to another by a certain number of fields. When moving, take care that if the field to be moved to is already occupied, the figure is placed on the next available field. Moving from one field to another should take one second. The way of movement is determined based on a randomly selected card from a deck of 52 cards. There are regular cards and special cards. The regular card consists of an image and the number of fields the figure passes. The special card only has an image on it. When a special card is drawn, holes are created at n places on the path. The holes are black. After drawing, the card is returned to the deck. Drawing means drawing the card on the GUI. If a figure is on a hole, and it is not a floating figure, it falls. When a figure falls, if the player has other figures, they start again from the beginning. The game ends when all the players run out of figures - i.e., each player's figure has reached the end (field 25 in the example) or all figures have fallen. Information about the fields passed and the time of movement is stored for each figure. When displaying a figure on a field, it is necessary that the color and type of the figure are visible in a certain way. The game can be stopped and restarted. The game is played automatically. At the end of the game, the results are saved in text files named IGRA_current_time.txt.

