# tetris-pygame Release 0.0.1

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**CHAPTER** 

**ONE** 

# **TETRIS PACKAGE**

# 1.1 Subpackages

# 1.1.1 tetris.db package

```
Subpackages
```

tetris.db.models package

**Submodules** 

tetris.db.models.get base dir module

tetris.db.models.user module

```
class tetris.db.models.user.User(*args, **kwargs)

Bases: Model

Model for user table

DoesNotExist

alias of UserDoesNotExist

games_played = <IntegerField: User.games_played>

highest_score = <IntegerField: User.highest_score>

id = <AutoField: User.id>

lvl = <IntegerField: User.lvl>

username = <CharField: User.username>

tetris.db.models.user.on_save_handler(model_class, instance, created) → None Increments games_played field on save

tetris.db.models.user.user_exists(username) → bool

Checks if a user exists in the database
```

#### **Module contents**

tetris.db.scripts package

#### **Submodules**

tetris.db.scripts.get base dir module

#### tetris.db.scripts.migration module

```
tetris.db.scripts.migration.create_db() \rightarrow None Migrates the database tetris.db.scripts.migration.reset_db() \rightarrow None Resets the database
```

#### **Module contents**

#### **Submodules**

tetris.db.settings module

#### **Module contents**

## 1.1.2 tetris.tests package

#### **Submodules**

#### tetris.tests.test game module

```
class tetris.tests.test_game.TestGame(methodName='runTest')
```

Bases: TestCase

A test case class for testing the Game class.

```
0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0,
0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0,
0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], ['I', 'I', 'I', 'I',
'I', 'I', 'I', 'I', 'I', 'I'], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0,
0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0,
0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0]]
CHECK_TETROMINO_GRID = [[0, 0, 0, 0, 0, 0, 0, 0, 0], ['I', 'I', 'I', 'I', 'I',
'I', 'I', 'I', 'I', 'I'], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0,
0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0,
0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0],
0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0,
0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0,
0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0,
0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0]]
CLEAR_GRID = [[0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0,
0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0,
0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0,
0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0,
0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0,
0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0,
0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0],
0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0]]
CLEAR_NEXT_TETROMINO_GRID = [[0, 0, 0, 0], [0, 0, 0, 0], [0, 0, 0, 0], [0, 0, 0, 0]]
DELETE_LINE_AFTER_GRID = [[0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 'L', 0, 0,
0, 0], [0, 0, 0, 'L', 'L', 'L', 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0,
0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0,
0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 'O', 'O', 0, 0, 0, 0], ['I', 'I',
'I', 'I', 'O', 'O', 0, 0, 0, 0], [0, 'T', 0, 0, 0, 'Z', 0, 'J', 'J', 0], [0, 'T',
'T', 0, 'Z', 'Z', 0, 'J', 'O', 'O'], [0, 'T', 0, 0, 'Z', 0, 0, 'J', 'O', 'O'], ['Z',
'Z', 0, '0', '0', 0, 0, 0, 0, 'L'], [0, 'Z', 'Z', '0', '0', 'L', 0, 'L', 'L', 'L'],
[0, 'Z', 'Z', 'L', 'L', 'L', 0, 'Z', 'Z', 0], ['0', '0', 0, '0', '0', 0, 0, 0, 0,
0], [0, 0, 0, '0', '0', 0, 0, 0, 0], [0, 0, 0, 0, 'S', 'S', 0, 0, 0], [0, 0,
0, 'S', 'S', 0, 0, 'O', 'O', 0], [0, 0, 'L', 'O', 'O', 0, 0, 'O', 'O', 'L'], ['L',
'L', 'L', '0', '0', 0, 0, 'L', 'L', 'L']]
DELETE_LINE_BEFORE_GRID = [[0, 0, 0, 0, 0, 'L', 0, 0, 0, 0], [0, 0, 0, 'L', 'L',
'L', 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0],
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0, 0, 0, 0, 0], [0, 0, 0, 0, 0, 0,
0, 0, 0, 0], [0, 0, 0, 0, 'O', 'O', 0, 0, 0, 0], ['I', 'I', 'I', 'I', 'O', 'O', 0,
0, 0, 0], [0, 'T', 0, 0, 0, 'Z', 0, 'J', 'J', 0], [0, 'T', 'T', 0, 'Z', 'Z', 0, 'J',
'O', 'O'], [0, 'T', 0, 0, 'Z', 0, 0, 'J', 'O', 'O'], ['Z', 'Z', 0, 'O', 'O', 0, 0,
0, 0, 'L'], [0, 'Z', 'Z', 'O', 'O', 'L', 0, 'L', 'L', 'L'], [0, 'Z', 'Z', 'L', 'L'
0, '0', '0', 0, 0, 0, 0, 0], [0, 0, 0, '0', '0', 0, 0, 0, 0, 0], [0, 0, 0, 0, 'S',
'S', 0, 0, 0, 0], [0, 0, 0, 'S', 'S', 0, 0, 'O', 'O', 0], [0, 0, 'L', 'O', 'O', 0,
```

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```
classmethod setUpClass() \rightarrow None
           Set up the test class by initializing the settings and game objects.
     test_check_line() → None
           Test the check line method of the Game class.
     test_check_tetromino_above_top() → None
           Test the check_tetromino_above_top method of the Game class.
     test_delete_line() \rightarrow None
           Test the delete_line method of the Game class.
     \textbf{test\_init\_properties()} \rightarrow None
           Test the init_properties method of the Game class.
     test_random_tetromino() \rightarrow None
           Test the random_tetromino method of the Game class.
tetris.tests.test menu module
class tetris.tests.test_menu.TestMenu(methodName='runTest')
     Bases: TestCase
     Test case class for testing the Menu class.
     setUp() \rightarrow None
           Hook method for setting up the test fixture before exercising it.
     \textbf{test\_main}(mock\_display\_update, mock\_draw\_buttons, mock\_check\_hover, mock\_check\_events) \rightarrow None
tetris.tests.test tetrominos module
class tetris.tests.test_tetrominos.TestTetromino(methodName='runTest')
     Bases: TestCase
     Test case class for testing the Tetromino class.
     CHECK_DOWN_POS = [[21, 3], [21, 4], [21, 5], [21, 6]]
     LEFT\_EDGE\_POS = [[1, 0], [1, 1], [1, 2], [1, 3]]
     RIGHT\_EDGE\_POS = [[1, 9], [1, 8], [1, 7], [1, 6]]
     \textbf{classmethod setUpClass()} \rightarrow None
           Set up the test class by initializing the settings, game, and tetromino objects.
               Parameters
                   cls – The class object.
               Returns
                   None
     test\_check\_down() \rightarrow None
           Test the check down method of the Tetromino class.
```

```
\label{eq:test_check_move_left()} \textbf{$\rightarrow$ None} Test the check move left method of the Tetromino class.  \textbf{test\_check\_move\_right()} \rightarrow \textbf{None} Test the check move right method of the Tetromino class.  \textbf{test\_check\_touch()} \rightarrow \textbf{None}
```

Test the check touch method of the Tetromino class.

#### **Module contents**

# 1.2 Submodules

## 1.2.1 tetris.controls module

```
class tetris.controls.Controls(settings: Settings)
      Bases: object
      Class for the controls screen
      check\_events() \rightarrow bool \mid None
            Checks for events
                 Returns
                     True if go back button is pressed, None otherwise
                 Return type
                     (bool | None)
      \textbf{create\_controls()} \rightarrow None
            Creates the controls
      create\_title() \rightarrow None
            Creates the title of the controls
      draw\_controls() \rightarrow None
            Draws the controls
      draw_title() \rightarrow None
            Draws the controls title
      main() \rightarrow None
            Main method for the controls screen, draws everything and checks for events
```

## 1.2.2 tetris.game module

```
class tetris.game.Game(settings: Settings)
    Bases: object
    Class contains main game logic and methods to draw game elements
    add_score(lines_cleared: int) → None
        Add score for cleared lines
```

```
check_events() \rightarrow None
     Check pygane events and react to them
check\_hover() \rightarrow None
     Checks if mouse is hovering over the buttons and changes the cursor accordingly
check_line() → bool
     Check if there is a line of tetrominos and delete it
          Parameters
              None -
          Returns
              True if there is a line of tetrominos, False otherwise
          Return type
              (bool)
check\_lvl\_up() \rightarrow None
check\_pressed\_down\_movement() \rightarrow None
     Check if down movement keys are pressed and react to them
check\_pressed\_rotate() \rightarrow None
     Check if rotation keys are pressed and react to them
check\_pressed\_side\_movement() \rightarrow None
     Check if side movement keys are pressed and react to them
check\_tetromino\_above\_top() \rightarrow bool
     Check if there is a tetromino above visible top of the grid
create_game_windows() → None
     Create game windows
db_insert_user() \rightarrow None
     Insert user into database
delete\_line(row) \rightarrow None
     Delete line from grid and move all tetrominos above it down
draw_end_of_game_btns() \rightarrow None
     Draw buttons displayed at the end of the game, after loss
draw_game_window() → None
     Draw game window on screen
draw_grid() \rightarrow None
     Draw grid with tetrominos on game window
draw_lvl() \rightarrow None
     Draw score window and score on
draw_lvl_title() \rightarrow None
     Draw score title on screen
draw_lvl_window() → None
     Draw score window on screen
```

```
draw_next_tetromino() → None
     Draw next tetromino on next tetromino window
{\tt draw\_next\_tetromino\_title()} \rightarrow None
     Draw next tetromino title on screen
draw_next_tetromino_window() → None
     Draw next tetromino window on screen
draw_score() \rightarrow None
     Draw score window and score on
draw_score_title() \rightarrow None
     Draw score title on screen
draw_score_window() → None
     Draw score window on screen
game_window: Surface
game_window_rect: Rect
get\_username() \rightarrow None
grid: list[list[int]]
init\_properties() \rightarrow None
     Initialize game properties
lines_cleared: int
lvl: int
lvl\_up() \rightarrow None
lvl_window: Surface
lvl_window_rect: Rect
main() \rightarrow None
     Main game loop
move_down_key_pressed: bool = False
next_game() \rightarrow bool
     Check if user clicked on next game button or menu button
next_tetromino_grid: list[list[int]]
next_tetromino_window: Surface
next_tetromino_window_rect: Rect
print\_grid() \rightarrow None
     Print grid in console
```

```
random_tetromino() → Tetromino
           Return random tetromino
               Returns
                   Random tetromino
               Return type
                   (Tetromino)
     score: int
     score_window: Surface
     score_window_rect: Rect
     space_down: bool = False
     username: str
1.2.3 tetris.leaderboard module
class tetris.leaderboard.Leaderboard(settings: Settings)
     Bases: object
     Class for the leaderboard screen
     check\_events() \rightarrow bool \mid None
           Checks for events
               Returns
                   True if go back button is pressed, None otherwise
               Return type
                   (bool | None)
     create_draw_row(rank: int, user: User) → None
           Creates and draws a row of the leaderboard
     create\_header() \rightarrow None
           Creates the header of the leaderboard
     create\_leaderboard() \rightarrow None
           Creates the leaderboard
     create\_title() \rightarrow None
           Creates the title of the leaderboard
     draw_header() \rightarrow None
           Draws the leaderboard header
     draw_title() → None
           Draws the leaderboard title
     main() \rightarrow None
           Main function of the leaderboard screen that draws everything and checks for events
```

## 1.2.4 tetris.main module

```
tetris.main.main() \rightarrow None
```

Main function of the game, creates the settings, menu and game objects and runs main functions of them in the loop

#### 1.2.5 tetris.menu module

```
class tetris.menu.Menu(settings: Settings)
      Bases: object
      Menu class for the game
      CONTROLS_CHOICE: str = 'controls'
      GAME_CHOICE: str = 'game'
      LEADERBOARD_CHOICE: str = 'leaderboard'
      QUIT_CHOICE: str = 'quit'
      RULES_CHOICE: str = 'rules'
      \textbf{check\_events()} \rightarrow bool \mid None
           Checks for pygame events QUIT and MOUSEBUTTONDOWN and reacts to them
               Returns
                   True if game, leaderboard, controls or rules button is pressed, None otherwise
               Return type
                   (bool | None)
      check\_hover() \rightarrow None
           Checks if mouse is hovering over the buttons and changes the cursor accordingly
      choice: str = ''
      create\_buttons() \rightarrow None
           Creates menu buttons and its rects
      \textbf{draw\_buttons()} \rightarrow None
           Draws the buttons on the screen
      main() \rightarrow str
           Main menu loop, waits for the user to press a button and returns the choice
               Returns
                   Choice of the user
               Return type
                    (str)
```

#### 1.2.6 tetris.rules module

```
class tetris.rules.Rules(settings: Settings)
     Bases: object
     A class to show the rules of the game
     TEXT: list[str] = ['The goal of the game is to get the highest score', 'possible.
     You earn points by moving down tetrominos', '1 point for soft drop and two points
     for hard drop.', 'You can also earn points by clearing lines.', '1 line is 100
     points, 2 lines is 300 points,', '3 lines is 500 points, and 4 lines is 800
     points.', 'Each 10 lines cleared, the level increases.', 'The level increases the
     speed of the tetrominos.', 'The game ends when the tetrominos reach', 'the top of
     the screen.']
     check\_events() \rightarrow bool \mid None
          Checks for events
             Returns
                 True if go back button is pressed, None otherwise
             Return type
                 (bool | None)
     create\_draw\_text() \rightarrow None
          Creates and draws the text of the rules
     create\_title() \rightarrow None
          Creates the title of the controls
     draw_title() → None
          Draws the controls title
     main() \rightarrow None
          Main method for the controls screen
1.2.7 tetris.settings module
class tetris.settings.Settings
     Bases: object
     Settings class for the game
     BG_COLOR: tuple = (0, 0, 100)
     CELL_BORDER_COLOR: tuple = (119, 136, 153)
     CHECK_KEYS_PRESSED_MOVEMENT_DOWN_TIME: int = 50
     CHECK_KEYS_PRESSED_MOVEMENT_SIDE_TIME: int = 80
     CHECK_KEYS_PRESSED_ROTATION_TIME: int = 150
     CONTROLS_ONE_KEY_X: float = 650.0
```

CONTROLS\_TEXTS: list[str] = ['move down', 'move left', 'move right', 'hard drop',

'rotate left', 'rotate right']

```
CONTROLS_TEXTS_X: float = 333.33333333333333
CONTROLS_TEXTS_Y: list[float] = [320.0, 400.0, 480.0, 560.0, 640.0, 720.0]
CONTROLS_TITLE: str = 'CONTROLS'
CONTROLS_TITLE_Y: int = 160
CONTROLS_TWO_KEYS_X: list[float] = [600.0, 700.0]
EMPTY_CELL_TAG: int = 0
END_OF_BTNS_COLOR: tuple = (218, 165, 32)
END_OF_GAME_BTNS_HEIGHT: int = 44
END_OF_GAME_BTNS_WIDTH: int = 125
END_OF_GAME_BTNS_Y: int = 400
END_OF_GAME_MENU_BTN_TEXT: str = 'Menu'
END_OF_GAME_MENU_BTN_X: int = 345
END_OF_GAME_NEXT_BTN_TEXT: str = 'Next'
END_OF_GAME_NEXT_BTN_X: int = 530
FONT_COLOR: tuple = (255, 255, 255)
FONT_NAME: str = 'Tahoma'
FONT_SIZE_CONTROLS: int = 30
FONT_SIZE_CONTROLS_TITLE: int = 40
FONT_SIZE_END_OF_GAME_BTNS: int = 20
FONT_SIZE_GET_USERNAME: int = 23
FONT_SIZE_INFO_TITLES: int = 30
FONT_SIZE_LEADERBOARD: int = 15
FONT_SIZE_LEADERBOARD_HEADER: int = 20
FONT_SIZE_LEADERBOARD_TITLE: int = 40
FONT_SIZE_RULES: int = 30
FONT_SIZE_RULES_TITLE: int = 40
FONT_SIZE_SCORE_LVL: int = 30
FONT_SIZE_TETRIS_TITLE: int = 80
FPS: int = 60
GAME_BORDER_COLOR: tuple = (255, 0, 0)
GAME_WINDOW_HEIGHT: int = 600
```

```
GAME_WINDOW_WIDTH: int = 400
GET_USERNAME_INPUT_BOX_HEIGHT: int = 40
GET_USERNAME_INPUT_BOX_WIDTH: int = 250
GET_USERNAME_INPUT_BOX_X: float = 588.2352941176471
GET_USERNAME_INPUT_BOX_Y: float = 392.0
GET_USERNAME_TEXT: str = 'ENTER YOUR USERNAME (ENTER)'
GO_BACK_BTN_X: int = 30
GO_BACK_BTN_Y: int = 40
GO_BACK_ICON_FILENAME: str =
'C:\\studia\\tetris\\tetris\\assets\\arrow_back.png'
GRID_CELL_HEIGHT: int = 30
GRID_CELL_WIDTH: int = 40
GRID_N_OF_COL: int = 10
GRID_N_OF_ROWS: int = 22
HARD_DROP_KEY_FILENAME: str =
'C:\\studia\\tetris\\tetris\\assets\\space_key.png'
HARD_DROP_LOOP_SLEEP_TIME: float = 0.01
I: tuple = (0, 255, 255)
INFO_WINDOW_HEIGHT: int = 150
INFO_WINDOW_WIDTH: int = 219
J: tuple = (0, 0, 255)
L: tuple = (255, 165, 0)
LEADERBOARD_BORDER_COLOR: tuple = (128, 128, 128)
LEADERBOARD_BORDER_WIDTH: int = 1
LEADERBOARD_BORDER_X: float = 62.5
LEADERBOARD_FIRST_ROW_Y: float = 352.2222222222223
LEADERBOARD_HEADERS_TEXTS: list[str] = ['RANK', 'USERNAME', 'SCORE', 'LVL', 'GAMES
PLAYED']
LEADERBOARD_HEADER_BORDER_WIDTH: int = 3
LEADERBOARD_HEADER_HEIGHT: int = 100
LEADERBOARD_HEADER_TEXT_Y: float = 272.2222222222223
LEADERBOARD_HEADER_Y: float = 222.222222222223
```

```
LEADERBOARD_ROW_HEIGHT: float = 40.0
LEADERBOARD_TEXT_WIDTH: float = 175.0
LEADERBOARD_TEXT_X: list[float] = [107.14285714285715, 282.14285714285717, 500.0,
675.0, 850.0]
LEADERBOARD_TITLE: str = 'LEADERBOARD'
LEADERBOARD_TITLE_Y: int = 160
LEADERBOARD_WIDTH: float = 875.0
LVL TITLE: str = 'LEVEL'
LVL TITLE Y: float = 410.2564102564103
LVL_WINDOW_X: int = 40
LVL_WINDOW_Y: float = 444.444444444446
MENU_BTNS_FIRST_Y: int = 200
MENU_BTNS_HEIGHT: int = 100
MENU_BTN_GAP: int = 20
MENU_CONTROLS_TEXT = 'Controls'
MENU_LEADERBOARD_TEXT = 'Leaderboard'
MENU_QUIT_TEXT = 'Quit'
MENU_RULES_TEXT = 'Rules'
MENU_START_GAME_TEXT = 'Start game'
MIGRATION_COMMAND: str = 'python db/scripts/migration.py migrate'
MOVE_DOWN_ACCELERATION_PER_LVL: int = 19
MOVE_DOWN_START_TIME: int = 1000
MOVING_DOWN_KEY_1_FILENAME: str =
'C:\\studia\\tetris\\tetris\\assets\\s_key.png'
MOVING_DOWN_KEY_2_FILENAME: str =
'C:\\studia\\tetris\\tetris\\assets\\down_key.png'
MOVING_LEFT_KEY_1_FILENAME: str =
'C:\\studia\\tetris\\tetris\\assets\\a_key.png'
MOVING_LEFT_KEY_2_FILENAME: str =
'C:\\studia\\tetris\\tetris\\assets\\left_key.png'
MOVING_RIGHT_KEY_1_FILENAME: str =
'C:\\studia\\tetris\\tetris\\assets\\d_key.png'
```

```
MOVING_RIGHT_KEY_2_FILENAME: str =
'C:\\studia\\tetris\\tetris\\assets\\right_key.png'
NEXT_TETROMINO_CELL_HEIGHT: int = 37
NEXT_TETROMINO_CELL_WIDTH: int = 54
NEXT_TETROMINO_N_OF_COL: int = 4
NEXT_TETROMINO_N_OF_ROWS: int = 4
NEXT_TETROMINO_TITLE: str = 'NEXT'
NEXT_WINDOW_X: float = 740.7407407407406
NEXT_WINDOW_Y: int = 200
N_OF_LINES_TO_LVL_UP: int = 10
0: tuple = (255, 255, 0)
POINTS_FOR_HARD_DROP: int = 2
POINTS_FOR_SOFT_DROP: int = 1
POINTS_PER_LINES: dict = {1: 100, 2: 300, 3: 500, 4: 800}
ROTATE_LEFT_KEY_FILENAME: str =
'C:\\studia\\tetris\\tetris\\assets\\z_key.png'
ROTATE_RIGHT_KEY_1_FILENAME: str =
'C:\\studia\\tetris\\tetris\\assets\\w_key.png'
ROTATE_RIGHT_KEY_2_FILENAME: str =
'C:\\studia\\tetris\\tetris\\assets\\up_key.png'
RULES_LINE_HEIGHT: int = 40
RULES_TEXT_Y: float = 266.6666666666667
RULES_TITLE: str = 'RULES'
RULES_TITLE_Y: int = 160
S: tuple = (0, 255, 0)
SCORE_NEXT_TITLE_Y: int = 160
SCORE_TITLE: str = 'SCORE'
SCORE_WINDOW_X: int = 40
SCORE_WINDOW_Y: int = 200
SCREEN_HEIGHT: int = 800
SCREEN_WIDTH: int = 1000
SECOND_BG_COLOR: tuple = (0, 0, 0)
```

```
T: tuple = (128, 0, 128)
TETRIS_TITLE: str = 'TETRIS'
TETRIS_TITLE_Y: int = 50
Z: tuple = (255, 0, 0)
check\_go\_back\_btn\_hover() \rightarrow None
     Checks if mouse is hovering over the go_back button and changes the cursor accordingly
create\_end\_of\_game\_btns() \rightarrow None
     Creates buttons displayed after the game is lost
create\_get\_username\_text() \rightarrow None
     Creates the input box for the username
create_go_back_btn() \rightarrow None
     Creates the go back button
create\_titles\_properties() \rightarrow None
     Create properties for the titles
draw_go_back_btn() → None
     Draws the go back button
draw_tetris_title() → None
     Draws the tetris title
```

## 1.2.8 tetris.tetrominos module

```
class tetris.tetrominos.Itetromino(game: Game)
      Bases: Tetromino
      NEXT_TETROMINO_GRID_POS: list[list] = [[1, 0], [1, 1], [1, 2], [1, 3]]
      SPAWN_POS: list[list] = [[1, 3], [1, 4], [1, 5], [1, 6]]
      TAG: str = 'I'
      pos0() \rightarrow None
           Rotates the tetromino to position 0
      pos1() \rightarrow None
           Rotates the tetromino to position 1
      pos2() \rightarrow None
           Rotates the tetromino to position 2
      pos3() \rightarrow None
           Rotates the tetromino to position 3
      rotate_left() \rightarrow None
           Rotates the tetromino left
      rotate\_right() \rightarrow None
           Rotates the tetromino right
```

```
class tetris.tetrominos.Jtetromino(game: Game)
     Bases: Tetromino
     NEXT_TETROMINO_GRID_POS: list[list] = [[1, 0], [2, 0], [2, 1], [2, 2]]
     SPAWN_POS: list[list] = [[0, 3], [1, 4], [1, 3], [1, 5]]
     TAG: str = 'J'
     pos0() \rightarrow None
          Set the tetromino to position 0
     pos1() \rightarrow None
          Set the tetromino to position 1
     pos2() \rightarrow None
          Set the tetromino to position 2
     pos3() \rightarrow None
          Set the tetromino to position 3
class tetris.tetrominos.Ltetromino(game: Game)
     Bases: Tetromino
     NEXT_TETROMINO_GRID_POS: list[list] = [[2, 0], [2, 1], [2, 2], [1, 2]]
     SPAWN_POS: list[list] = [[1, 3], [1, 4], [1, 5], [0, 5]]
     TAG: str = 'L'
     pos0() \rightarrow None
          Set the tetromino to position 0
     pos1() \rightarrow None
          Set the tetromino to position 1
     pos2() \rightarrow None
          Set the tetromino to position 2
     pos3() \rightarrow None
          Set the tetromino to position 3
class tetris.tetrominos.Otetromino(game: Game)
     Bases: Tetromino
     NEXT_TETROMINO_GRID_POS: list[list] = [[1, 1], [2, 1], [1, 2], [2, 2]]
     SPAWN_POS: list[list] = [[1, 4], [1, 5], [0, 4], [0, 5]]
     TAG: str = '0'
     rotate_left() \rightarrow None
          Do nothing because the tetromino is a square
     rotate\_right() \rightarrow None
          Do nothing because the tetromino is a square
class tetris.tetrominos.Stetromino(game: Game)
     Bases: Tetromino
```

```
NEXT_TETROMINO_GRID_POS: list[list] = [[2, 0], [2, 1], [1, 1], [1, 2]]
      SPAWN_POS: list[list] = [[1, 3], [1, 4], [0, 4], [0, 5]]
      TAG: str = 'S'
      pos0() \rightarrow None
           Set the tetromino to position 0
      pos1() \rightarrow None
           Set the tetromino to position 1
      pos2() \rightarrow None
           Set the tetromino to position 2
      pos3() \rightarrow None
           Set the tetromino to position 3
class tetris.tetrominos.Tetromino(game: Game)
      Bases: object
      Tetromino class for the game
      LAST_COL_IDX: int = 9
      NEXT_TETROMINO_GRID_POS: list[list]
      SPAWN_POS: list[list]
      TAG: str
      {\tt check\_cell\_available\_for\_rotation}(\mathit{cell:}\ \mathit{list[int]}) \rightarrow \mathsf{bool}
           Check if the cell is available for rotation
                Parameters
                    cell (list[int]) - Cell to check
                Returns
                    True if the cell is available for rotation, False otherwise
                Return type
                    (bool)
      check\_down() \rightarrow bool
           Checks if the tetromino is at the bottom of the grid
                    True if the tetromino is at the bottom of the grid, False otherwise
                Return type
                    (bool)
      check\_move\_left() \rightarrow bool
           Check if the tetromino can move left by checking if it is at the left edge of the grid or if it is touching another
           tetromino on the left
                Returns
                    True if the tetromino can move left, False otherwise
                Return type
                    (bool)
```

```
check\_move\_right() \rightarrow bool
```

Check if the tetromino can move right by checking if it is at the right edge of the grid or if it is touching another tetromino on the right

#### Returns

True if the tetromino can move right, False otherwise

#### Return type

(bool)

#### $check\_touch() \rightarrow bool$

Check if the bottom of the tetromino is touching another tetromino

#### Returns

True if the bottom of the tetromino is touching another tetromino, False otherwise

#### Return type

(bool)

 $clear() \rightarrow None$ 

Clears the grid from the tetromino

#### **clear\_next\_tetromino\_window()** → None

Clears the next tetromino window

 $hard\_drop() \rightarrow None$ 

Hard drops the tetromino

 $move\_down() \rightarrow bool \mid None$ 

Moves the tetromino down

 $move\_left() \rightarrow None$ 

Moves the tetromino left

 $move\_right() \rightarrow None$ 

Moves the tetromino right

pos: list[list]

 $pos0() \rightarrow None$ 

Rotates the tetromino to position 0

 $pos1() \rightarrow None$ 

Rotates the tetromino to position 1

 $pos2() \rightarrow None$ 

Rotates the tetromino to position 2

 $pos3() \rightarrow None$ 

Rotates the tetromino to position 3

#### put\_on\_next\_tetromino\_window() → None

Puts the next tetromino on the next tetromino window

 $rotate_left() \rightarrow None$ 

Rotates the tetromino left

 $\textbf{rotate\_right()} \rightarrow None$ 

Rotates the tetromino right

```
spawn() \rightarrow None
           Set the spawn position
     update_on_grid() \rightarrow None
           Updates the grid with the new position of the tetromino
class tetris.tetrominos.Ttetromino(game: Game)
     Bases: Tetromino
     NEXT_TETROMINO_GRID_POS: list[list] = [[2, 0], [2, 1], [2, 2], [1, 1]]
     SPAWN_POS: list[list] = [[1, 2], [1, 3], [1, 4], [0, 3]]
     TAG: str = 'T'
     pos0() \rightarrow None
           Set the tetromino to position 0
     pos1() \rightarrow None
           Set the tetromino to position 1
     pos2() \rightarrow None
           Set the tetromino to position 2
     pos3() \rightarrow None
           Set the tetromino to position 3
class tetris.tetrominos.Ztetromino(game: Game)
     Bases: Tetromino
     NEXT_TETROMINO_GRID_POS: list[list] = [[1, 0], [1, 1], [2, 1], [2, 2]]
     SPAWN_POS: list[list] = [[0, 3], [1, 4], [0, 4], [1, 5]]
     TAG: str = 'Z'
     pos0() \rightarrow None
           Set the tetromino to position 0
     pos1() \rightarrow None
           Set the tetromino to position 1
     pos2() \rightarrow None
           Set the tetromino to position 2
     pos3() \rightarrow None
           Set the tetromino to position 3
```

# 1.3 Module contents

1.3. Module contents

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