

6. „Snake and Ladder board game.

Create a "Snake and Ladder" board game.

The game board consists of n -numbered consecutive numbered fields. Players start the game from the field no. 1, roll the dice and take as many steps forward as the dice showed. If the player stands on a field with a ladder - moves to the field displayed by the ladder (forward), and if the player stands on a field with a snake head - moves to the field with a snake tail (back). The player who reaches the last field wins first.

Implement the game using **doubly linked list**.

User of a program can:

- create game fields from a structured document, file format can be chosen by a student) (json, csv, or any other, but **NOT** .txt)), (0,5 point)
- append a new game field to the game board (at a certain position), (0,5 point)
- add snakes and ladders to the created game fields, (0,7 point)
- delete the field from the given position, (0,5 point)
- delete/clear created game fields, (0,2 point)
- start the game and determine how many players will be (up to 3), (0,2 point)
- roll the dice and go through the rolled number of steps, (0,5 point)
- stop the game (go back to the menu), (0,2 point)
- exit the game. (0,2 point)

Hidden operations and functionalities:

- 1, 2 or 3 players, (1 point)
- follows the player's position on the game board. (0,3 point)
- end of the game, (0,2 point)

UI:

- it is possible to clearly understand the ongoing processes and results: the result of dice roll, where the player stood, whether the field is a ladder or the head of a snake, and etc. (1 point)

Graphically, the realization of the game board is not necessary. Additional points can be earned for an invented and implemented visual solution.

Game field structure: field number, special value (depends on the idea of the game come up by the student). (1 point)

File: game fields information document.

100	99	98	97	96	95	94	93	92	91
81	82	83	84	85	86	87	88	89	90
80	79	78	77	76	75	74	73	72	71
61	62	63	64	65	66	67	68	69	70
60	59	58	57	56	55	54	53	52	51
41	42	43	44	45	46	47	48	49	50
40	39	38	37	36	35	34	33	32	31
21	22	23	24	25	26	27	28	29	30
20	19	18	17	16	15	14	13	12	11
1	2	3	4	5	6	7	8	9	10

The image shows a 10x10 grid representing a game field. The numbers 1 through 100 are arranged in a boustrophedon pattern, starting from the bottom-left (1) and ending at the top-left (100). Various game pieces are placed on the grid:

- Blue and yellow snakes:** One is on cells 98 and 97; another is on cells 19 and 18.
- Pink snakes:** One is on cells 83 and 84; another is on cells 78 and 77.
- Black snakes:** One is on cells 62 and 61; another is on cells 57 and 56.
- Black snakes with red tips:** One is on cells 87 and 88; another is on cells 74 and 73.
- Black snakes with red tips:** One is on cells 68 and 69; another is on cells 53 and 52.
- Black snakes with red tips:** One is on cells 48 and 49; another is on cells 33 and 32.
- Black snakes with red tips:** One is on cells 28 and 29; another is on cells 13 and 12.
- Black snakes with red tips:** One is on cells 8 and 9; another is on cells 3 and 4.