

SUDOKU

Nivele:

- easy (4 x 4)
- medium (6 x 6)
- hard (9 x 9)

Stări (exemple):

STARE ÎNȚIALĂ	STARE FINALĂ																																																																																																																																																																		
<table><tr><td>1</td><td></td><td></td><td>2</td></tr><tr><td></td><td></td><td>3</td><td>1</td></tr><tr><td>3</td><td>2</td><td>1</td><td></td></tr><tr><td>4</td><td></td><td>2</td><td></td></tr></table>	1			2			3	1	3	2	1		4		2		<table><tr><td>1</td><td>3</td><td>4</td><td>2</td></tr><tr><td>2</td><td>4</td><td>3</td><td>1</td></tr><tr><td>3</td><td>2</td><td>1</td><td>4</td></tr><tr><td>4</td><td>1</td><td>2</td><td>3</td></tr></table>	1	3	4	2	2	4	3	1	3	2	1	4	4	1	2	3																																																																																																																																		
1			2																																																																																																																																																																
		3	1																																																																																																																																																																
3	2	1																																																																																																																																																																	
4		2																																																																																																																																																																	
1	3	4	2																																																																																																																																																																
2	4	3	1																																																																																																																																																																
3	2	1	4																																																																																																																																																																
4	1	2	3																																																																																																																																																																
<table><tr><td></td><td></td><td>6</td><td></td><td>2</td><td>5</td></tr><tr><td></td><td>2</td><td>5</td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>3</td><td></td><td>5</td><td>4</td></tr><tr><td>5</td><td></td><td>1</td><td></td><td>4</td><td>2</td></tr><tr><td></td><td>4</td><td>2</td><td>5</td><td></td><td></td></tr></table>			6		2	5		2	5												3		5	4	5		1		4	2		4	2	5			<table><tr><td>4</td><td>3</td><td>6</td><td>1</td><td>2</td><td>5</td></tr><tr><td>1</td><td>2</td><td>5</td><td>4</td><td>3</td><td>6</td></tr><tr><td>6</td><td>5</td><td>4</td><td>2</td><td>1</td><td>3</td></tr><tr><td>2</td><td>1</td><td>3</td><td>6</td><td>5</td><td>4</td></tr><tr><td>5</td><td>6</td><td>1</td><td>3</td><td>4</td><td>2</td></tr><tr><td>3</td><td>4</td><td>2</td><td>5</td><td>6</td><td>1</td></tr></table>	4	3	6	1	2	5	1	2	5	4	3	6	6	5	4	2	1	3	2	1	3	6	5	4	5	6	1	3	4	2	3	4	2	5	6	1																																																																																										
		6		2	5																																																																																																																																																														
	2	5																																																																																																																																																																	
		3		5	4																																																																																																																																																														
5		1		4	2																																																																																																																																																														
	4	2	5																																																																																																																																																																
4	3	6	1	2	5																																																																																																																																																														
1	2	5	4	3	6																																																																																																																																																														
6	5	4	2	1	3																																																																																																																																																														
2	1	3	6	5	4																																																																																																																																																														
5	6	1	3	4	2																																																																																																																																																														
3	4	2	5	6	1																																																																																																																																																														
<table><tr><td>8</td><td></td><td></td><td>2</td><td></td><td>3</td><td>5</td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td>5</td><td></td><td></td><td>9</td><td></td></tr><tr><td>9</td><td>5</td><td>2</td><td></td><td></td><td>1</td><td></td><td></td><td>3</td></tr><tr><td></td><td>3</td><td></td><td>8</td><td></td><td></td><td></td><td></td><td>9</td></tr><tr><td></td><td></td><td></td><td>9</td><td>7</td><td>6</td><td></td><td>5</td><td></td></tr><tr><td></td><td></td><td>8</td><td></td><td></td><td>5</td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>7</td><td>3</td><td></td><td></td><td></td><td>8</td><td></td></tr><tr><td></td><td></td><td></td><td></td><td>8</td><td></td><td>6</td><td>3</td><td>5</td></tr><tr><td>3</td><td>8</td><td>6</td><td></td><td></td><td></td><td>9</td><td></td><td>7</td></tr></table>	8			2		3	5							5			9		9	5	2			1			3		3		8					9				9	7	6		5				8			5						7	3				8						8		6	3	5	3	8	6				9		7	<table><tr><td>8</td><td>6</td><td>4</td><td>2</td><td>9</td><td>3</td><td>5</td><td>7</td><td>1</td></tr><tr><td>1</td><td>7</td><td>3</td><td>6</td><td>5</td><td>8</td><td>2</td><td>9</td><td>4</td></tr><tr><td>9</td><td>5</td><td>2</td><td>7</td><td>4</td><td>1</td><td>8</td><td>6</td><td>3</td></tr><tr><td>6</td><td>3</td><td>5</td><td>8</td><td>2</td><td>4</td><td>7</td><td>1</td><td>9</td></tr><tr><td>4</td><td>2</td><td>1</td><td>9</td><td>7</td><td>6</td><td>3</td><td>5</td><td>8</td></tr><tr><td>7</td><td>9</td><td>8</td><td>1</td><td>3</td><td>5</td><td>4</td><td>2</td><td>6</td></tr><tr><td>5</td><td>4</td><td>7</td><td>3</td><td>6</td><td>9</td><td>1</td><td>8</td><td>2</td></tr><tr><td>2</td><td>1</td><td>9</td><td>4</td><td>8</td><td>7</td><td>6</td><td>3</td><td>5</td></tr><tr><td>3</td><td>8</td><td>6</td><td>5</td><td>1</td><td>2</td><td>9</td><td>4</td><td>7</td></tr></table>	8	6	4	2	9	3	5	7	1	1	7	3	6	5	8	2	9	4	9	5	2	7	4	1	8	6	3	6	3	5	8	2	4	7	1	9	4	2	1	9	7	6	3	5	8	7	9	8	1	3	5	4	2	6	5	4	7	3	6	9	1	8	2	2	1	9	4	8	7	6	3	5	3	8	6	5	1	2	9	4	7
8			2		3	5																																																																																																																																																													
				5			9																																																																																																																																																												
9	5	2			1			3																																																																																																																																																											
	3		8					9																																																																																																																																																											
			9	7	6		5																																																																																																																																																												
		8			5																																																																																																																																																														
		7	3				8																																																																																																																																																												
				8		6	3	5																																																																																																																																																											
3	8	6				9		7																																																																																																																																																											
8	6	4	2	9	3	5	7	1																																																																																																																																																											
1	7	3	6	5	8	2	9	4																																																																																																																																																											
9	5	2	7	4	1	8	6	3																																																																																																																																																											
6	3	5	8	2	4	7	1	9																																																																																																																																																											
4	2	1	9	7	6	3	5	8																																																																																																																																																											
7	9	8	1	3	5	4	2	6																																																																																																																																																											
5	4	7	3	6	9	1	8	2																																																																																																																																																											
2	1	9	4	8	7	6	3	5																																																																																																																																																											
3	8	6	5	1	2	9	4	7																																																																																																																																																											

$O_p = \{N, S, E, V\}$

- pentru completarea unei zone
- pentru completarea întregului joc

$S = \{S_i, S_f, O_p\}$

- funcție de validare a poziției în zonă și în joc – sudoku
- generare stare inițială aleatoare:
 - easy (4 x 4) – între 1 și 3 căsuțe completate
 - medium (6 x 6) – între 2 și 5 căsuțe completate
 - hard (9 x 9) – între 3 și 7 căsuțe completate