

## Section C: OTHERS

In section **C** is participated **9** entries from **9** authors from **6** countries.

List of entries:

Nr.	Author	Country	Problems	Count
1	Bandžuch Imrich	SVK	h#2, h#5,5	2
2	Bourd Evgeni	IZR	ser-x10	1
3	Coakley Jeff	CAN	*mathematic	0,5
4	Denkovski Ivan	MAC	PG 19,5	1
5	Frolkin Andrey	UKR	*mathematic	0,5
6	Lörinc Juraj	SVK	mathematic	1
7	Packa Ladislav	SVK	mathematic	1
8	Skoba Ivan	CZE	h#5	1
9	Storisteanu Adrian	CAN	mathematic	1

\* co-autor

A rest nine problems I have assigned in this section. Because all problems are very specific I have decided to award each of them.

1<sup>st</sup> PRIZE

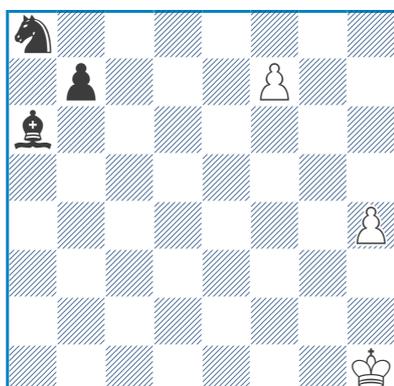
| Section C

**Juraj Lörinc**

Marián Križovenský 55 JT

C 4.4.2016

1<sup>st</sup> Prize



White king visits in series of moves all chessboard corners and returns to h1 in the shortest possible time.

How many solutions?

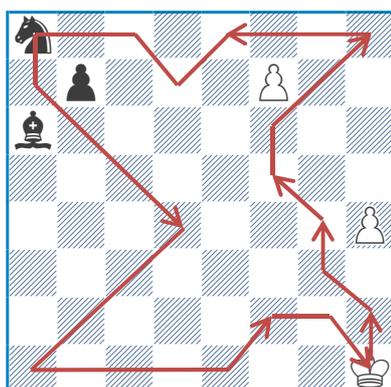
See text! →

(3+3)

Detailed solution:

The distance between any two corners is the same, 7 moves. I.e. the theoretical minimal length of series is 28. Is such minimal roundtrip possible?

The join  $h1 \leftrightarrow a8$  is excluded as  $Pb7$  and  $Ba6$  guard each other. Also the route in direction  $a1 \rightarrow a8$  is excluded as  $Sa8$  and  $Pb7$  guard squares  $a6, b6, c6$ , included in each shortest path  $a1 \rightarrow a8$ . But the opposite direction  $a8 \rightarrow a1$  is allowed as  $Sa8$  will be captured first, only then  $wK$  will pass through  $b6$ . Thus  $a8$  must be entered from  $h8$  and  $bK$  must continue to  $a1$ . As a consequence we have formed the only possible sequence of corners  $h1 \rightarrow h8 \rightarrow a8 \rightarrow a1 \rightarrow h1$ , composed of 4 segments. Example of one specific journey:



Each of four segments of the king's journey is independent of other, thus any specific journey in one segment is possible to combine with any journeys in other segments. As a consequence, it is enough to find number of ways from one corner to the following and then multiply these numbers.

How is it possible to find number of ways from corner to corner? For two neighbouring corners it is sufficient to realize the following principles, resulting in the recursive calculation. We will show the on the movement from corner (0,0) – e.g. a1 – to corner (7,0) – e.g. h1. We will denote number of ways to square (x,y) as  $P(x,y)$ .

1. There is exactly 1 possibility how the king can move in 0 moves from corner (0,0) to the same square, i.e.  $P(0,0) = 1$ .
2. For squares that cannot be entered by king while moved from corner to corner and (for  $x < 0$  or  $y < 0$ ), i.e. for coordinates out of board,  $P(x,y) = 0$ .
3. For all other squares while moving in direction from (0,0) to (7,0), the recursive formula holds:  

$$P(x,y) = P(x-1, y-1) + P(x-1, y) + P(x-1, y+1)$$

0	0	0	a	2a+b	0	0	0
0	0	a	a+b	0	4a+4b+2c	0	0
0		b	a+b+c	2a+3b+2c		p	0
1		c	b+c			q	p+q

The following table demonstrates these rules with some examples (red cell denotes square that cannot be visited by the king).

[Table 1] (corner1 → corner 2)

			1	4			
		1	3	9	25		
	1	2	5	12	30	76	
1	1	2	4	9	21	51	127

In the case of the empty chessboard, the number of the shortest ways from corner to corner is 127 for neighbouring corners (as shown in the following table, empty cells correspond to zeros, as there is no even theoretical shortest way via them) and 1 for opposite corners (but this was already excluded in the present problem).

[Table 2] (corner 1 → corner2)

Let's have a look now on the individual segments of the proposed journey of wK in the form of tables:

							91
						56	35
					21	22	13
				4	9	8	5
				1	3	5	
					1	2	2
						1	1
							1

[Scheme 1] (h1 → h8)

11	11	11	5	2	2	1	1
			6	3		1	
			0	1	1		
			0	0			

[Scheme 2] (h8 → a8)

1							
1							
	1	0					
1		1	0				
1	2		1				
3	3	3					
6	9						
15							

[Scheme 3]

(a8 → a1)

			1	1			
		1		6	7		
	1	2	5		30	22	
1	1	2	4	9		15	37

[Scheme 4]

(a1 → h1)

As the last step of solution it is necessary to multiply results for individual segments, to get the total number of solutions:

$$91 \times 11 \times 15 \times 37 = 555\ 555.$$

Author sent me this problem first without solution to try solve it myself. After about two hours I have concluded I have found a solution algorithm and I estimated outcome as 5555. Wenn I then looked at authors solution, I find that my appraisal was exactly 100 times smaller. Perfect symbiosis of author's background as mathematician as well as chess composer. It is here more problems with similary stipulation of count of solution but outcome of this problem is amazing. Doubtless deserved first prize!



38. 1. ♖f3 2. ♗e4 3. ♘d4 4. ♙c5 5. ♚d6 6. ♛d7 7. ♜c8 8. a3 9. ♞b8 10. ♟:a8 x
39. 1. ♖f3 2. ♗e4 3. ♘d4 4. ♙c5 5. ♚d6 6. ♛d7 7. ♜c8 8. d4 9. ♞b8 10. ♟:a8 x
40. 1. ♖f3 2. ♗e4 3. ♘d4 4. ♙c5 5. ♚d6 6. ♛d7 7. ♜c8 8. d3 9. ♞b8 10. ♟:a8 x
41. 1. ♖f3 2. ♗e4 3. ♘d4 4. ♙c5 5. ♚d6 6. ♛d7 7. ♜c8 8. g4 9. ♞b8 10. ♟:a8 x
42. 1. ♖f3 2. ♗e4 3. ♘d4 4. ♙c5 5. ♚d6 6. ♛d7 7. ♜c8 8. d6 9. ♞b8 10. ♟:a8 x
43. 1. ♖f3 2. ♗e4 3. ♘d4 4. ♙c5 5. ♚d6 6. ♛d7 7. ♜c8 8. ♞b8 9. a4 10. ♟:a8 x
44. 1. ♖f3 2. ♗e4 3. ♘d4 4. ♙c5 5. ♚d6 6. ♛d7 7. ♜c8 8. ♞b8 9. a3 10. ♟:a8 x
45. 1. ♖f3 2. ♗e4 3. ♘d4 4. ♙c5 5. ♚d6 6. ♛d7 7. ♜c8 8. ♞b8 9. d4 10. ♟:a8 x
46. 1. ♖f3 2. ♗e4 3. ♘d4 4. ♙c5 5. ♚d6 6. ♛d7 7. ♜c8 8. ♞b8 9. d3 10. ♟:a8 x
47. 1. ♖f3 2. ♗e4 3. ♘d4 4. ♙c5 5. ♚d6 6. ♛d7 7. ♜c8 8. ♞b8 9. g4 10. ♟:a8 x
48. 1. ♖f3 2. ♗e4 3. ♘d4 4. ♙c5 5. ♚d6 6. ♛d7 7. ♜c8 8. ♞b8 9. d6 10. ♟:a8 x
49. 1. ♖f3 2. ♗e4 3. ♘d4 4. ♙c5 5. ♚d6 6. ♛d7 7. ♜c8 8. ♞b8 9. ♟a7 10. ♟:a8 x
50. 1. ♖f3 2. ♗e4 3. ♘d4 4. ♙c4 5. ♚c5 6. ♛d6 7. ♜d7 8. ♞c8 9. ♞b8 10. ♟:a8 x
51. 1. ♖f3 2. g4 3. ♗e4 4. ♘d4 5. ♙c5 6. ♚d6 7. ♛d7 8. ♜c8 9. ♞b8 10. ♟:a8 x
52. 1. ♖f2 2. ♗e2 3. ♘d3 4. ♙c4 5. ♚c5 6. ♛d6 7. ♜d7 8. ♞c8 9. ♞b8 10. ♟:a8 x
53. 1. ♖f2 2. ♗e2 3. ♘d3 4. ♙d4 5. ♚c5 6. ♛d6 7. ♜d7 8. ♞c8 9. ♞b8 10. ♟:a8 x
54. 1. ♖f2 2. ♗f3 3. ♗e4 4. ♘d4 5. ♙c5 6. ♚d6 7. ♛d7 8. ♜c8 9. ♞b8 10. ♟:a8 x
55. 1. g4 2. ♖f3 3. ♗e4 4. ♘d4 5. ♙c5 6. ♚d6 7. ♛d7 8. ♜c8 9. ♞b8 10. ♟:a8 x

Interesting condition for count of solutions but injury it needs auxiliary condition "No short solutions". There is one single 9-move solution. But pieces arrangement presents symbol 55 what is thematic item too.

Original, thematic, economic!

3<sup>rd</sup> PRIZE

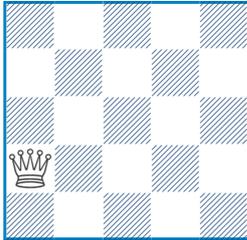
| Section C

**Adrian Storisteanu**

Marián Križovenský 55 JT

C 4.4.2016

3<sup>rd</sup> Prize



a)

Add ♚♚♚♚♚ for a symmetrical position of five guarded pieces with 55 moves

b)

Add ♜♚♚♚♚ for a position of five unguarded pieces with 55 moves

5x5 board

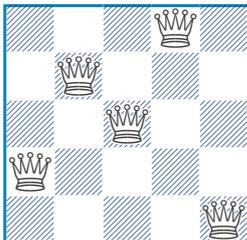
5 guarded pieces (♚♚♚♚♚) in a)

5 unguarded pieces (♜♚♚♚♚) in b)

55 available moves

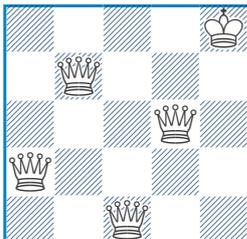
The wQ already provided in the diagram ensures a unique solution, out of the possible rotated and reflected settings. A better alternative to the term 'guarded' (or 'defended'), commonly used in such construction tasks, might be 'observed' (especially given the presence of a K in twin b).

Solution



a)

There are 18 base positions (not counting the usual rotations and reflections, that is) of 5 guarded Qs with 55 available moves on a 5x5 board. Only one setting is symmetrical. The given wQ in the diagram is not on the axis of symmetry of the final position, which may complicate a potential solver's attempts...



b)

There is one base position of unguarded K + 4Qs that have a total of 55 possible moves on a 5x5 board.

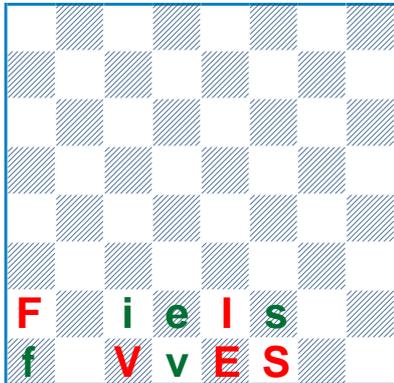
Five-level variations on famous problem of eight queens. A bit breakneck additional conditions but result is noteworthy. Only by solution must be man more mathematician as composer.

1<sup>st</sup> HONOURABLE MENTION | Section C

**Andrey Frolkin**  
**Jeff Coakley**

Marián Križovenský 55 JT  
C 4.4.2016

1<sup>st</sup> Honourable Mention

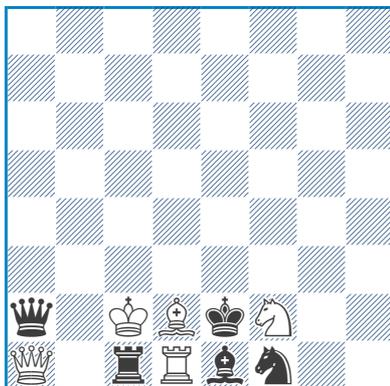


See text! → (5+5)

Each letter represents a different type of piece.  
Upper case is one color, lower case is the other.

Determine the position.

Riešenie



(5+5)

There are five pairs of letters on the board: **F/f I/i V/v E/e S/s** ('fives'). Of these, only **I/i** occupy non-adjacent squares. This means that they are kings. If **v** is a queen or a bishop, the king on e2 is in illegal check from **vd1**. Thus two options remain for **V/v**: knight or rook. If this letter stands for a knight, **E/e** can only represent a bishop; otherwise **Ke2** is in illegal check from **Ee1**. The remaining vacancies are queen and rook; in both cases (**F/f** = queen, **S/s** = rook or vice versa) the kings are in check simultaneously, which is impossible. Therefore, **V/v** = rook. The king on c2 is in check; if **e** or **s** represents a queen, the other king is also in check; hence one of these letters is a knight and the other is a bishop. If **Ee1** is a knight, then **Kc2** is in illegal double check from **Rc1** and **Se1**. So **E/e** = knight and **S/s** = bishop. The only possibility remaining for **F/f** is to represent the queens. Again the king on c2 is in double check, but this time it is legal because last move must have been **b2: ♖/♔/♞c1=♚++**

This is something for crosswords lovers.

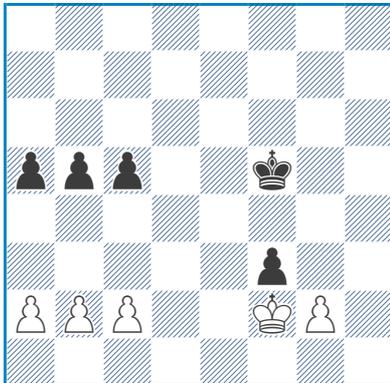
Their favorite form "puzzle" authors wittily applied onto the tourney's theme. I wonder how they would manage with two sixes...

2<sup>nd</sup> HONOURABLE MENTION

| Section C

**Ladislav Packa**

Marián Križovenský 55 JT  
C 4.4.2016  
2<sup>nd</sup> Honourable Mention



See text! → (5+5)  
Duplex

The side which makes the first move, must make such a move that the opposing side remains with an equal number of continuation as in the initial position on the diagram.

How many solutions?

It is 5 solutions for every side.  
Count of pieces is 5+5 (but it works also without ♖g2)

White to move: 1. a3, 1. a4, 1. b3, 1. c3, 1. c4  
Black to move: 1. ♚e5, 1. ♚e6, 1. ♚f6, 1. ♚g5, 1. ♚g6

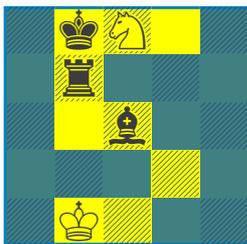
Very original stipulation mainly in connection with duplex! Technical realization is easy but I appreciate approach to the theme adaptation.

3<sup>rd</sup> HONOURABLE MENTION

| Section C

**Ivan Skoba**

Marián Križovenský 55 JT  
C 4.4.2016  
3<sup>rd</sup> Honourable Mention



H#5 (2+3)

Hole a5 e5 a4 c4 d4 e4 a3 d3  
e3 a2 b2 c2 e2 a1 d1 e1  
b) + Hole d5  
C+

a)  
1. ♜b3 ♞:b3 2. ♠b4 ♞d2 3. ♚c5 ♚c1 4. ♚d5 ♞b1 5. ♠c5 ♞c3#  
b)+ Hole d5  
1. ♠d2 ♞b3 2. ♠c3 ♞d2 3. ♚c5 ♚c1 4. ♜b5 ♚b1 5. ♠b4 ♞b3#

– H#5, twin  
– board 5 x 5  
– in every position altogether 5 pieces  
– symbolic problem (55)

A reduced board 5x5 author still more minimized by using of holes (marked by darkgreen color). Squares of that curtailed boards form symbol of fives in every twin. Known elements joined in new combination. Very graceful.



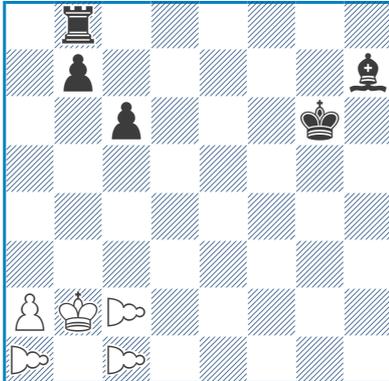
3<sup>rd</sup> COMMENDATION

## | Section C

**Imrich Bandžuch**

Marián Križovenský 55 JT

C 4.4.2016

3<sup>rd</sup> Commendation

H#5.5    2 solutions    (5+5)

1...a4 2.b5 a:b5 3. ♖g8 b:c6 4. ♔h5 c7 5. ♖g5 c8=♚ 6. ♗g6 ♚h3#

1...c4 2.b5 c:b5 3. ♖g8 b:c6 4. ♔h5 c7 5. ♖g5 c8=♚ 6. ♗g6 ♚h3#

Sleeping Pawn (SP): c2,a1,c1

Substituted Sleeping Pawns

(SP): a1,c2

Joke

C+

*Author's solution:*

After first solution, i.e. after 4th of Aprile life jogs to the second 55, sleeping pawn "c2" stands up and goes in the way of life – no very different from that first...

2 identical solutions are because even second 55 after 4th of Aprile to look like of that first!

If you dont like sleeping pawns "a1, c1", you have there 2 nice white promoted queens – together white pieces are also 5!

If you would like change anything in your life, only replace pawns "a2, c2" by substituted pawns from "a1, c1". Entranced new pawns not change the solution, because destiny of life is given and goes in its predestinated road just on and on...

This problem is possible composedly assign to category "conversational chess", eventually "literary chess", because to understanding is needed tell one's story.

Email was sended additionally on 1st of April at the time 05.55, let alone of those "5" at full blast...

Chess unassuming but in relation to the comment it is interesting story.

**Marián Križovenský**

Bratislava, June 2017