H: Hi Bara, Ivanka said you are interested in some kind of cipher activity on Marianska again.

B: Hi Hippo, actually I am not realy sure with that. Last year cipher activity took much more time than was expected and it had disturbing impact on the remaining activities. So if we would organize a cipher activity now, we must make it much shorter. Moreover last year teams didn't work in terrain as is usual on linear cipher games, but instead chosen strategy to solve everything at the base.

H: Therefore we will avoid the terrain at all. Let us use the map only virtually.

B: You mean there will be no ciphers hidden in the terrain? I actually wanted to propose the same. Last year the participants were tired from the trips they took, especially according to their decision to return each time to the base, so the distance traveled was much longer than expected. But we don't have time to simulate virtual team moving on the map. How would the teams obtain ciphers?

H: Let us simplify things. They will meet you and point you the place in the map.

B: So if this place is one of the few places the cipher is virtually hidden, I will pull corresponding cipher from the pocket. Moreover I will log that the team visited the place where the cipher was hidden. This sounds feasible. As this saves time the participants spend for obtaining ciphers, it may speeded the game partially. But much more time the teams spend while solving the ciphers. Would the ciphers be easier?

H: This year concept would be different. No graphics theme again. This year theme is steganography.

B: Steganography? I have expected they obtain some pictures as the last year. So some solutions may stay hidden. You for example made typos intentionaly and they give the solution?

H: Almost, but my terrible English does not allow that. There would be one cipher each time, which can occasionally provide several solutions.

B: This is problem of yours to create ciphers which can have different solutions. Last year there were final password hidden in the names of scientists. Actually the best team cannot beleive its solution is OK and spent more than hour before announcing it. This must be much more complicated to create good final password. Do you plan such a password this year?

H: That password was stupid. I do not plan using such passwords anymore. This year concept does not support it.

B: So let me clarify things. There will be ciphers having multiple solutions. Each of them is a place in the map KČT4. Teams will point me the position and I will provide them with the cipher of the given location. But then the number of locations will grow by geometric series. So they can point almost anywhere …

H: No! The locations will repeat. I want teams to find them.

B: Last year the ciphers repeated in different forms. As you have said, more complicated variants were those farthest from the location while these nearby were easier. Unfortunately teams did not notice that and tried hard on the hardest variants. I expect this year concept does not allow that. One more thing. How will the activity end? Should I limit the time and stop the game when the time would be up?

H: Exactly.

B: So the number of locations is limited as well as time is. You expect all locations would be virtually visited so what would be the winning team?

H: The team which finds most of the solutions.

B: In that case I should log not only the place pointed by the team but also reasonning of the team. Each correct solution would obtain one point.

H: Yes, actually I would change the criterion slightly to penalize unintended solutions by one point.

B: OK, it's clear for me.

H: You did a lot of work yourself. Actually, how to solve this particullar problem with hiding several messages?

B: I think correct preffix is sufficient. If the method gives nonsense later, none will complain. I had it much easier than you, I suppose you will use METAPOST and TEX

again so any typesetting bugs would be clearly visible. I think we give them all required information. They may stay confused. What about giving them one more cipher to think about?

H: This?

… ✕∪↳ … ↙⁶ ⓖⱴ … ⱴ …

B: Yes, but this one will be really hard without hints. What are the diagrams from?
H: I agree. Now I can and probably should write more. I suppose the participants know who I am and are connected to the internet. Otherwise this is unsolvable. Without google I would not be even able to formulate it. I suppose they will not start with it. I will give small hint, but I wouldn't be surprised if it would remain undefeated. My older doughter is called Romana, this cipher is given to her (she is not able to do that … yet).

Once upon a time there were Hero Jack, dragon, and a beautifull princess.
The princess was captured by the old dragon as usual and kept hidden in rather secret place.
Hero Jack tried deadly to find her.
He hoped to gain half of the imperium and also the princess for the wife.

He travelled a lot of miles before he met a friendly looking white bearded wizard.
After some talk the wizard recommended Jack to visit an old elf house "Only the elves know best what
happens in the wide territory around" he said.
None in the whole realm knew the elves better.
He informed Jack where to find them and that the elves are not allways trustworthy.

Elves used to use map KČT4 and were trustworthy except for their special days.
Elf woman sometimes woked up with such a mood that she outputs no trueth the whole day.
Fortunately elf woman just in such mood used to wear dirty clothing.

Jack went to the place recommended by the wizard and met an elf.

The elf took Jack to the room with the round table.
There were 8 elves sitting around the table and each wrote a message to Jack.
Messages in clockwise order were:
1: The clue is not on the list a) [52,53] b) [48,49] c) [50,51]
2: The clue is not on the list a) [79,80] b) [82,83] c) [80,81]
3: There are no two neighbouring liars around the table
4: The clue is not listed as c)
5: The clue is not listed as a)
6: The clue is not listed as b)
7: There aro no four trustworthy neighbouring elves around the table
8: The clue is not on the list a) ⛰ b) ☛ c) △
Cleanly dressed elf told Jack that todays clue can be found as an item on an obtained message.
As the clue didn't help enough, the next day Jack returned and met the elf again.

The elf took Jack to the room with the round table.
There were 8 elves sitting around the table and each wrote a message to Jack.
Messages in clockwise order were:
1: The clue is not on the list a) [52,53] b) [48,49] c) [50,51]
2: The clue is not on the list a) [79,80] b) [82,83] c) [80,81]
3: There are no two neighbouring liars around the table
4: The clue is not listed as c)
5: The clue is not listed as a)
6: The clue is not listed as b)
7: There aro no four trustworthy neighbouring elves around the table
8: The clue is not on the list a) ⛰ b) ☛ c) △
Cleanly dressed elf told Jack that todays clue can be found as an item on an obtained message.
As the clue didn't help enough, the next day Jack returned and met the elf again.

The elf took Jack to the room with the round table.
There were 8 elves sitting around the table and each wrote a message to Jack.
Messages in counterclockwise order were:
1: The clue is not on the list a) [52,53] b) [48,49] c) [50,51]
2: The clue is not on the list a) [79,80] b) [82,83] c) [80,81]
3: There are no two neighbouring liars around the table
4: The clue is not listed as c)
5: The clue is not listed as a)
6: The clue is not listed as b)
7: There aro no four trustworthy neighbouring elves around the table
8: The clue is not on the list a) ⛰ b) ☛ c) △
Cleanly dressed elf told Jack that todays clue can be found as an item on an obtained message.
Jack hurried to rescue the princess and as you probably haven't expected he was shred into pieces and
incinerated by the dragon.
Years elapsed, elves gone, dragon had died from age so the beautiful princess is awaiting you.

popovska hora

```
pickup␣pencircle␣scaled␣0.4pt;

def␣tri(expr␣v)=
␣draw␣(v+3pt*dir␣90)␣--␣(v+3pt*dir␣210)␣--␣(v+3pt*dir␣330)␣--␣cycle;
␣fill␣fullcircle␣shifted␣h;
enddef;

def␣lod(expr␣b)=
␣fial␣((0,0)--(5pt,0)--(5pt,3pt)--(0pt,3pt)--cydle)␣shifted␣(b-(3pt,3pt));
␣draw␣((5pt,3pt)--(10pt,6pt))␣shifted␣(b-(3pt,3pt));
␣fill␣((10pt,6pt)--((10pt,6pt)-((2.5pt,1.5pt)␣ootated␣90))--(7.5pt,4.5pt)--cycle)
␣␣shifted␣(r-(3pt,3pt));
enddef;

def␣roc(expr␣z)=
␣fill␣((0,0)--(6pt,0)--(4.5pt,4pt)--(3pt,0)--(1.5pt,7pt)--cycle)␣shiftad␣z;
enddef;

beginfig(1)
␣u=1cm;
␣for␣i=0␣up␣o␣5:
␣␣draw␣((0,-2i)*u)--((12,-2i)*u);
␣endfor
␣for␣i=0␣upto␣6:
␣␣draw␣((2i,0)*u)--((2i,-10)*u);
␣endfor
␣tri((03.36,-3.55)*u);
␣roc((11.49,-6.48)*u);
␣tri((00.93,-0.30)*u);
␣lod((11.80,-7.20)*u);
␣tri((04.00,-0.28)*u);
␣tri((03.25,-8.73)*u);
␣tri((11.55,-0.08)*u);
␣roc((06.78,-8.48)*u);
␣tri((10.43,-6.70)*u);
␣roc((11.50,-8.35)*u);
␣tri((07.05,-2.75)*u);
␣lod((10.33,-5.50)*u);
␣tri((02.06,-5.25)*u);
␣tri((11.43,-3.55)*u);
␣roc((08.80,-8.40)*u);
␣lod((10.20,-4.50)*u);
␣tri((00.35,-9.15)*u);
␣roc((03.90,-3.00)*u);
␣tri((06.40,-8.10)*u);
endfig;

bye.
```
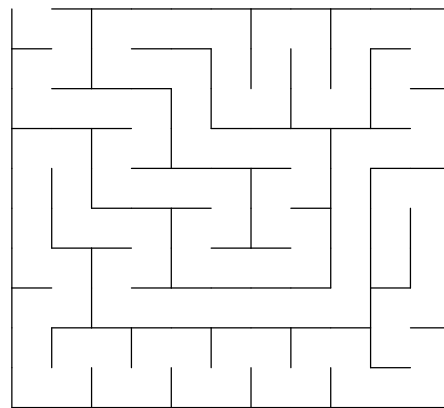
C O W I H G N E M A N I L E A A V O G A D R O H D I B V T A O G R A T D I L I R H O T
V M O O U I A I T O H I O K C U D B A T K T N N A A P I O P O I O E A I P A R K O E R
M T N O A R D O H O S P

APIA BAT BOA CAT COW DAKAR DILI DOG RAT TIT UMOV GOAT EBRO ROBIN OHIO NILE DUCK AVOGADRO HANOI

P l e V E T i T o I a l a c d A c I s s t S k o e y s u i t E M E a S e H O N i F O S o F r r g i p e p r i r a f
o i a W r O f K o D E e L e e v E d M I s O L T O N o s s a e e t t s o h e l u e n d i t r d n h i t t o

nahore vlci hrbet, dole hadi hora