1. Find the maximum value of the function $f(x) = \ln \ln \sin(x)$.
2. What is algorithm complexity?
3. How to check if three vectors are coplanar?
4. How do you detect a loop in a singly linked list?
5. What is the geometrical sense of the curve's curvature? What information is needed to compute the curvature of a curve?
6. Can you explain the difference between new and new[]? Is it possible to delete memory using delete[] allocated within the new operator?
7. What will happen if an exception is thrown within a constructor?
8. How do you create a virtual constructor and virtual destructor for a class? Why would you do this?
9. Can you find an even number greater than 4, that is not a sum of two prime numbers?
10. Does the following code have any issues?

```
// Returns the number of solutions of the equation ax + b =
    0; -1, if there is infinite number of solutions.
int solve(double a, double b) {
   if (a != 0) {
      return 1;
   }

   if (b != 0) {
      return 0;
   }

   return -1;
}
```

11. Can you find several consecutive integer numbers with mean value equal to $678934587906,25$?
12. Dan painted each of the edges of a cube into one of N colors. For each pair of the colors $(color_1, color_2)$, there exists a pair of edges of the cube with common vertex and such that one edge is painted in $color_1$ and another one is painted in $color_2$. Find the biggest possible value of N.

13. How do you find duplicates in an array?

14. How would you solve the previous task for the array of chars?

15. In order to construct a fence, one needs to build columns; the distance between two neighbor columns cannot be bigger than 3 meters. Compute the minimal number of columns needed to build a fence around a triangle-shaped garden with lengths of the sides equal to 86, 92 and 191 meters.