Algorithms Division   **Winter 2020**
TU Braunschweig

Prof. Dr. Sándor Fekete
Christian Rieck

Question Sheet
Quiz 7 for Jan 12, 2021
The code is 64 70 06 3

Which is the correct answer?

Question 1:

What is the running time of Fortune's algorithm?

- $O(1)$

- $O(n)$

- $O(n \log n)$

- $O(n^2)$

Question 2:

During Fortune's algorithm, what separates the part of the plane for which the Voronoi diagram is known from the part that may still change?

- The sweep line

- A bisector

- The beach line

Question 3:

The beach line consists of...

- ... at most n bisectors.

- ... at most $2n - 1$ bisectors.

- ... at most $n - 1$ parabolic arcs.

- ... at most n parabolic arcs.

- ... at most $2n - 1$ parabolic arcs.

Question 4:

The continuous sweep can be discretized by keeping track of....

- ... site events.

- ... circle events.

- ... both.

Question 5:

What can be said about the correspondence between creating parabolic arcs in the beach line and events?

- Parabolic arcs can be created both at circle and site events.

- Parabolic arcs are only created at site events.

- Parabolic arcs are only created at circle events.

Question 6:

What can be said about the correspondence between disappearing parabolic arcs from the beach line and events?

- Parabolic arcs can disappear both at circle and site events.

- Parabolic arcs only disappear at site events.

- Parabolic arcs only disappear at circle events.

Question 7:

What is critical for achieving optimal running time for Fortune's algorithm?

- Choosing a fast sorting algorithm.

- Using a balanced binary tree for keeping track of objects and events.

- Updating only a constant number of events when the beach front changes.

- Both the second and the third option.

- The first, second and third option.

Question 8:

A higher-dimensional interpretation of a complete run of Fortune's algorithm uses

- 2D

- 3D

- 4D

- 5D