Pode previsualizar este teste mas se fosse uma tentativa real seria bloqueado porque:

Este teste não está disponível

Informação

Please carefully read the description of the software system below and answer the questions **always justifying them succinctly and clearly**, eventually mentioning the bibliography or references that fundament them. When needed, you should explicit all the assumptions you did to answer the questions.

The mini-test consists of 9 questions: 1 open answer (20 pts) and 8 multiple choice (10 pts each). Each question requires a very short justification for the choice, in free text (max. 6 lines). The minimal value of a question is 0 points.

There's always one answer that values 10 points, but depending on the question, there might be other answers that still provide value (e.g. 5 pts).

In any case, to obtain the maximum points you **must write a short justification**. If the answer is correct and the explanation is totally wrong or missing, the value of the question will be 0 points. If the justification is partially wrong, or not convincing, the value of question will be somewhere between 0 and the maximum points of the answer selected.

Informação

SimpleDraw is a graphical vector editor with very basic support for fundamental geometric figures (rectangles, circles, triangles, hexagons, etc.), though deliberatively designed towards exceptional extensibility capabilities, ranging from new types of objects to new tools and operations. A very preliminary analysis produced to following *desiderata*:

1. The editor should support simultaneously opened documents;
2. Documents may contain figures, groups, and *objects* from other documents;
3. Each document is persisted autonomously, though it may contain references to other documents;
4. The editor should be easily extended with new geometric/object figures (pie, arrow...);
5. The editor should be easily extended with new tools (drag, rotate...);
6. The editor should be easily extended with new operations (subtract, intersect...);
7. The editor should provide different views of the *same* document in different panes (2D, hierarchical...);
8. A document may be displayed using different styles (zoomed, stroke only,...);
9. There should be arbitrary undo/redo support throughout all editor;
10. The editor should import and export the same under different formats (JSON, XML, binary...).

Pergunta 1

Por responder Pontuação 10,000

Consider the concerns and goals of Software Architecture. The primary concern when "defining the architecture" of a given system is:

a. To define the common paradigms and high-level relations of — and among — its components;

b. To enumerate the system's functional requirements — by the architect — in a way that the developers can further implement it.

c. To define the programming languages to be used — e.g. Java — and the technological infrastructure — e.g. Microsoft SQLServer.

d. To structure the system to better define the team and the appropriate development methodologies.

Pergunta 2

Por responder Pontuação 10,000

Consider the concerns and goals of the software architect. The primary concern when "studying the architecture" of a given system is:

a. To fix the structure of the system to better define the development team and the appropriate development methodologies.

b. To validate the system's non-functional requirements to see if the developers can further implement them.

c. To redefine the programming languages to be used — e.g. Java — and the technological

infrastructure — e.g. Microsoft SQLServer.

d. To understand the common paradigms and high-level relations of — and among — its components.

Pergunta 3

Por responder

Pontuação 10,000

Identify the main architectural style(s) of the SimpleDraw system.

a. Event-driven

b. Blackboard

c. Layers

d. Microservices

Pergunta 4

Por responder

Pontuação 10,000

Most of SimpleDraw's purpose is to provide a GUI for the user. Considering this, which architectural pattern(s) is the most suitable to manage such component?

a. Layers

b. Pipes-and-Filters

c. Master-Slave

d. Model-View-Controller

Pergunta 5

Por responder Pontuação 10,000

Consider the grouping operation. Which design pattern(s) seems suitable to capture its intention?

a. Factory Method

b. Façade

c. Observer

d. Composite

Pergunta 6

Por responder Pontuação 10,000

Consider desiderata 5 and 6. Which design pattern(s) is the best to enable the dynamic, in run time, addition of new tools and operations?

a. Template Method

b. Strategy

c. Decorator

d. Composite

Pergunta 7

Por responder

Pontuação 10,000

Consider desiderata 9. Which design pattern(s) would be more suitable to support arbitrary undo/redo operations?

a. Strategy

b. Command

c. State

d. Visitor

Pergunta 8

Por responder Pontuação 10,000

Consider desiderata 10. Which design pattern(s) would be more suitable to support import/export to multiple formats?

a. Strategy

b. Command

c. Visitor

d. Proxy

Pergunta 9

Por responder Pontuação 20,000

Consider the following two problems which we talked about during the live programming session of SimpleDraw. Also consider desiderata 4, 5 and 6, where the intention is to define a datatype (e.g. Circle and Rectangle) by cases, where one can add new cases to the datatype (e.g. Hexagons) and new functions over the datatype (e.g. Translate), without recompiling existing code. At that time, we had the following pseudo-code:

```
class Circle {
      translate() { ... }
}

class Rectangle {
      translate() { ... }
}

draw() {
      if (obj instanceof Circle) {
        d3.select(`#${this.id}`).append('circle')
            .attr('id', obj.id)
            .attr('cx', obj.x)
            .attr('cy', obj.y)
            .attr('r', obj.r)
      } else if (obj instanceof Rectangle) {
        d3.select(`#${this.id}`).append('rect')
            .attr('id', obj.id)
            .attr('x', obj.x)
            .attr('y', obj.y)
            .attr('width', obj.width)
            .attr('height', obj.height)
      }
}
```

a. Someone suggested we extracted the inner code of each IF branch to specific operations inside each object that would be responsible to correctly draw using d3. There were advantages and disadvantages in doing this. Discuss.

b. Someone mentioned that the translate operation shouldn't be part of the object. Discuss.