Software Architecture Exercise: Quality Attributes

Consider standard alarm clocks that you have seen. For this exercise, consider each of the following to be representative of an architectural style of alarm clocks:

- An LED alarm clock for a bedroom,
- A LCD travel alarm,
- An analog alarm clock (there are several varieties; choose one).

1. Quickly brainstorm a list of quality attributes that are relevant to alarm clocks, generally. You will likely need to invent non-traditional QA names. Write each of these QA’s in the table below. Rate each of the three types of alarm clock based on how well they can satisfy each QA on a High (H), Medium (M), Low (L) scale.

<table>
<thead>
<tr>
<th>Readability</th>
<th>LED Plug-in</th>
<th>LCD Battery</th>
<th>Analog</th>
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<tbody>
<tr>
<td></td>
<td>H</td>
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<td>Weight</td>
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2. Tradeoffs

(a) In designing a travel alarm clock, what are some of the design tradeoffs that engineers must make (e.g., A vs. B)?
   i. 
   ii. 
   iii. 

(b) Express two of the tradeoffs using our template. (Template: Because <QA1> is higher priority than <QA2> for this system, we chose <technical decision>, accepting <drawback>.
   i. 
   ii. 

3. Consider just two uses: traveling and at home.

(a) For each alarm clock, how would you describe its suitability to traveling and home use?
(b) Which clock would most people choose? Who might choose differently than you or most people?
(c) In which cases is the normal choice unsuitable?
(d) What is the best architecture for an alarm clock?
4. Imagine that you come across the following vague requirement: “The clock must be reliable”. Can you rewrite it as QA scenarios using the full template? You will have to make reasonable guesses because not enough information has been provided.

- Source:
- Stimulus:
- Environment:
- Artifact:
- Response:
- Response Measure:

5. Advanced: Consider your last software development project.

(a) Describe at least one tradeoff that you consciously made

(b) Describe at least one tradeoff that is now apparent in hindsight, but that you did not consider at the time (e.g., a technology choice or a design that promoted one quality attribute at the expense of another)