Assignment 2: Architecture for Big Brother Driver (BBD)

This assignment is to come up with an architecture that meets specific quality requirements for the Big Brother Driver (BBD) system by using appropriate tactics to develop the architecture that meets the specified Quality Attribute Scenarios below.

Due	Monday 23hr 16 October
Submit	Via ADB (see note)
Worth	7% of final grade for SOFTENG 325

Note: Assignments not submitted through the ADB (in particular those emailed to me) will not be marked. You should get permission from me first before making any assumptions.

Deliverables

You must hand in a document that describes an architecture that meets the Quality Attribute Concrete Scenarios given below, and also describes how you developed that architecture, that is, what tactics you used in its development and how you used them. In the interests of brevity, you should limit yourself to the following:

- A section that describes your architecture. I am assuming you will use diagrams as the main description aid, plus some explanatory text. I don't expect the text to be more than about 2-3 pages.
- A section that describes what tactics you have used in your architecture, and a brief explanation why you chose the tactics you did. I don't expect much more than a paragraph for each tactic (for example, you don't need to explain what the tactic means). However it must be clear as to how your architecture results from the use of the tactics.
- A section that justifies how your architecture meets the stated quality attributes. If you have done a good job of explaining your use of tactics, this won't need to be much. It may, for example, consist of only one paragraph, but even so should not need to be very long.

You should not provide an introduction or conclusion, or other similar sections that would normally appear in a technical report — think of this as being something that will be combined with work done by other members of the architecture team (such as the people dealing with other quality attribute scenarios), which all together will be the final report.

Assessment

Your report will be assessed according to the following criteria.

- Is your architecture adequately described, that is, have you provided enough information that it can be evaluated by someone who is technically competent but not knowledgeable about your architecture?
- Is your explanation that your architecture meets the quality requirements consistent with the architecture description, and is it convincing?
- Are the tactics you claim to use actually used in your architecture, and is your explanation of their correct use in the development of your architecture convincing?
- Have you put sufficient effort into the development of the architecture?
- Is your document concise, that is, has no unnecessary repetition or irrelevant detail?

There is no specific presentation criteria. It is expected that your writing and presentation will be to professional engineering standard, however poor presentation will reduce your mark. It is not up to us to try to figure out what

you might be trying to say, you have to explain it clearly. If there is insufficient detail in the system description for you to make the arguments you want, check before making any assumptions.

Quality Attribute Scenarios

Scenario 1

This scenario is intended to capture a performance requirement.

Part	Concrete
Stimulus	Data is sent or received
Source	... by BBD-V
Artefact	... to BBD-Ops
Environment	... during the course of an average year.
Response	The total data use by the app
Measure	... is not more than 5MiB (Links to an external site.)Links to an external site. .

Scenario 2

This scenario is intended to capture a performance requirement

Part	Concrete
Stimulus	A vehicle spends 5 seconds 30kph over the speed limit for the area it is in
Source	... (BBD-V)
Artefact	... (BBD-Ops)
Environment	... with no system problems and no communication failures.
Response	Report vehicle location to Police
Measure	... within 5 seconds of criteria being met by vehicle.

Scenario 3

This scenario is intended to capture a performance requirement.

Part	Concrete
Source	A journey ends
Stimulus	... by a user with BBD-V installed on their mobile device
Artefact	...(BBD-V)
Environment	... with no system problems and no communication failures.

Response	A report describing the journey will be available via BBD-M. The report will contain a map showing the route, annotated with acceleration and decelerations, marking when the speed limit was exceeded and the centre-line crossed, and unnecessary lane-changes. A textual summary of the same information will also be provided. The report will contain the identifier for the BBD-V user.
Measure	... within 10 seconds of journey end.

Scenario 4

This scenario is intended to capture a modifiability requirement.

Part	**Concrete**
Source	A mobile device provider
Stimulus	... releases a new device
Artefact	...that must interact with BBD-Ops
Environment	... the functional capabilities of the new device include all of those of previous devices by the same provider, and the provider provides the relevant SDK (including documentation) 1 month before the release of the device to the public.
Response	The BBD-V is able to properly interact with BBD-Ops
Measure	... after not more than 40 hours of development and testing.

Scenario 5

This scenario is intended to capture a security requirement.

Part	**Concrete**
Source	A journey report is received
Stimulus	... by an un-authorised person
Artefact	...through BBD-M
Environment	... during a time when there are no system problems and no communication failures.
Response	The report, the time it was requested, the location it was delivered to, and the identifier of device running BBD-M can be provided
Measure	99.9999% of the time.