

## CS5248 Systems Support for Continuous Media Quiz 2 (10 points)

Answer ALL questions in the space provided. Please state your assumptions (if any) clearly.

1. In Lecture 4 “Rate Adaptations” we learned about 2 layered video coding mechanisms, namely, scalable video coding (SVC) and multiple description coding (MDC). Describe 2 advantages of using a layered codec (SVC or MDC) compared with a non-layered codec in a streaming system. (4 points)

(1) A layered codec allows an adaptation to changing bandwidth with low processing overhead at the server side. Basically, the server just needs to select how many layers it should send at any given time. (The processing complexity of layered coding is during the encoding, which may often be done offline.)

(2) A layered codec can provide different stream qualities to different receivers in the same streaming session. For example, if there exist both high-bandwidth and low-bandwidth clients in the same streaming session then they may receive a different number of layers and hence achieve the best visual quality under the circumstances.

(3) In some sense layered codecs provide “error resilience” in the sense that a receiver can lose some of the data and the effect is that the visual quality will be lower, but there won’t be any “holes” or similar artifacts.

2. In Lecture 5 there was an introduction to Dynamic Adaptive Streaming over HTTP (DASH). We saw that DASH has several advantages compared to traditional RTP/RTSP/RTCP streaming. Here, describe 2 disadvantages of DASH. (4 points)

(1) Generally it is not possible to achieve a very low end-to-end delay with DASH for live streaming sessions. Hence it would not be useful for interactive applications.

(2) Stream quality adaptation is relatively coarse and can usually only be done at streamlet boundaries (intervals), for example every 10 seconds.

3. In Lecture 7 “Error Recovery” we learned about Reed-Solomon (RS) error correcting codes. If you were designing an audio conferencing system (i.e., VoIP), would it be a good idea to use RS codes? If yes, give a reason why. If no, give a reason why not. (2 points)

(1) No. RS codes need to be computed across long sequences of symbols (e.g., packets) to achieve a reasonable overhead. Hence, they are not very suitable for interactive applications.