Fast**National University of Computer & Emerging Sciences, Karachi  
Quiz – II (Spring-2023)**

**Dated: 22 – March - 2023**

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| Student: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Section: \_\_\_\_\_\_\_\_\_ |

**Q1:** Audio processing is a valuable process and widely used in our daily lives for example, microphones or speakers. Let’s take a deep dive into it, that what are the steps involved in this process. Some requirements for the application are listed here. First of all, data acquisition is done which involves capturing the audio or video signal using a microphone or camera, respectively then its preprocessing is required. In this step, the raw signal is cleaned, filtered, and/or normalized to remove noise, artifacts, or unwanted data. Furthermore, feature extraction is done to extracting relevant features such as pitch, frequency, volume, or color. Later on, signal processing is done which involves some operations such as filtration, compression, enhancement, or equalization depending upon the user’s need. After that, Signal encoding and decoding is done which converts the signal into a digital format (encoding) and decoding it back into an analog format for playback.

The application also supports the feature for Storage and retrieval in which user can store the processed signal in some storage medium such as a hard drive, cloud server, or memory card, and retrieving it when needed. Once everything is done, Signal can be transmitted over a network, wireless or wired connection, and received at the destination device.

Now, state which type of Architectural design is useful for this type of architectures and why?

Also draw the architecture diagram for that. **[5]**

**Answer:**

Either pipe and filter architecture or a hybrid approach that uses pipe and filter along with repository arch.

**NOTE TO TA: accept both do some relax marking for arch diagram, check for student’s understanding of modules/subsystems)**

**Q2.** Creating monolithic software should be beneficial or not. Support your answer with any design concept and give appropriate reasoning. **[5]**

**Answer:**

According to design concepts of separation of concerns, modularity and information hiding, creating monolithic software is not beneficial.

**NOTE TO TA: grade student if he/she has discussed wrt any 1 design concept.**