National University of Computer and Emerging Sciences, Lahore Campus

Course:	Software Engineering	Course Code:	CS-3009
Program:	BS (Computer Science)	Semester:	Spring 2024
Duration:	45 Minutes	Total Marks:	25
Quiz Date:	1-April-24	Roll No.	
Section:	6D	Name:	

Question 1 (Marks = 10)

GolfLabs is a dynamic company which allows golf coaches to analyze golf swings of players and advise the players based on the analysis. The coaches have mature rules for swing analysis and the rules need to be embedded in the software functionality. GolfLabs needs a software system that supports the coaches during analysis by processing players' videos. The processing will involve analysis based on the existing rules. The analysis should be automated and the system is expected to generate a report which will be reviewed by the coaches. The coaches approve or disapprove a report after the review and approved reports can be seen by the players using the same system. The disapproved reports are regenerated and presented for review. The main challenge is to perform the video analysis efficiently so that the coaches get the reports for review within 6 hours of high definition recording. Dealing with low accuracy of the analysis is another challenge; when the swing trajectory projection accuracy is below 80% the coaches get overburdened because it becomes mandatory for them to annotate the reports in such cases.

Based on the above description, list 3 functional and 2 non-functional requirements for the software system to be developed for GolfLabs. All requirements should be written in standard format with hierarchical numbering. All requirements should be testable.

Functional Requirements:

1. The system shall generate a swing analysis report (SAR) after processing the submitted video.

1.1. The system shall use the swing analysis rules to generate the SAR

1.2. The system shall allow the coaches to enter the analysis rules to the system

2. The system shall present the SAR to the coaches for review
3. The system shall allow the coaches to annotate the SARs
4. The system shall allow the coaches to review and approve/disapprove SARs
5. The system shall allow the players to view the approved SARs

Non Functional Requirements:

6. The system shall complete the swing analysis and generate the report within 6 hours of HD recording
7. The system shall have minimum 80% swing projection accuracy in more than 90% of the cases

Question 2 (Marks = 10)

Label each of the following requirements as Functional (F) or Non-functional (NF) in appropriate cell against each requirement.

Requirements	F / NF
1. The system shall show the users their existing bookings.	F
2. The system shall be available at all times, with as little downtime as possible for maintenance or updates.	NF
3. The system shall be able to manage 1000 requests at a time.	NF
4. The system shall display available flights, together with information such as departure and arrival timings, layover duration, and ticket price.	F
5. The systems shall provide flight status updates, including delays and cancellations.	F
6. The system shall protect sensitive client data and maintain the security of all transactions.	NF
7. The system shall provide a booking confirmation with a reservation number and itinerary within an hour of booking.	NF
8. Each request to the system shall be processed within 5 seconds.	NF
9. The system shall backup the data every few days.	NF
10. The system shall allow the managers to modify reservation rules.	F

Question 3 (Marks = 5)

Label each of the following requirements as Testable (T) or Not-Testable (NT). If a requirement is NT, rewrite it to make it testable.

- The system shall show the error message in red color. T / NT

- The system shall maintain a backup of the database on a regular basis. T / NT

The system shall maintain a backup of the database daily at 2:00 AM and store it in a designated backup directory.

- The system shall have a response time of 10 milliseconds with maximum 5000 simultaneously connected users. T / NT

- The system shall use the hardware economically to save the memory. T / NT

The system shall not use more than 0.5 GB RAM during its execution.

- The system shall accurately calculate shipping costs for all orders. T / NT

The system shall calculate shipping costs within 5% accuracy of the actual shipping charges.